

A Guide to the Business Architecture Body of Knowledge® **(BIZBOK® Guide)**



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PART 1: INTRODUCTION

Purpose of the *BIZBOK® Guide*

A Guide to the Business Architecture Body of Knowledge® (BIZBOK® Guide) provides an industry standard framework for business architecture practitioners and individuals who wish to use business architecture to address business challenges. This practical guide comes in the form of best practices, gleaned from numerous companies and business architecture leaders. Practitioners of business architecture understand the importance of having a comprehensive yet user-friendly handbook for the growing number of organizations embracing this important discipline.

The *BIZBOK® Guide* benefits organizations at every stage of the business architecture practice. The focus on practitioners is geared at advancing organizations that have already committed at least some resources toward business architecture. Organizations just getting started can use it as a means to establish a foundation for a solid business architecture practice. For those organizations with an established business architecture practice, it enables deployment teams to solidify best practices while incorporating aspects of business architecture that may have been underemphasized in the past.

The *BIZBOK® Guide* also provides a complete picture of business architecture, tying together various concepts, disciplines, principles, and best practices into an overall framework. In addition, it has the capacity to incorporate and leverage a wide range of business practices and emerging disciplines. As a result, it establishes the standard for building, deploying, and leveraging business architecture within an organization. The *BIZBOK® Guide* is practitioner-driven, representing a collective and growing body of contributions from business architecture practitioners across a variety of industries worldwide.

What is Business Architecture?

Dating back to 2008 through 2016, business architecture was defined as “a blueprint of the enterprise that provides a common understanding of the organization and is used to align strategic objectives and tactical demands”. This definition was vetted repeatedly by multiple standards committees and practitioners and stood the test of time, incorporating several important elements that established both the foundation and the justification for business architecture and related best practices.

As the discipline of business architecture matured, its role expanded across business and related architecture domains. This increased visibility led to a cross-disciplinary desire for a common,

revised definition that more accurately reflects the essence of business architecture and its applicability to a business. In January 2017, the Business Architecture Guild® and a number of related professional associations and industry standards organizations ratified new definitions for business and related architecture disciplines. As a result of this holistic industry collaboration, a new business architecture definition emerged as follows.

“Business architecture represents holistic, multidimensional business views of: capabilities, end-to-end value delivery, information, and organizational structure; and the relationships among these business views and strategies, products, policies, initiatives, and stakeholders”.¹

This definition provides a more succinct articulation of foundational business architecture as well as its ability to align and synchronize aspects of the business that range from strategic planning through initiative deployment. While the definition has been updated to more accurately reflect the practice, the value proposition remains consistent. The business architecture value proposition is summarized as:

The value of business architecture is to provide an abstract representation of an enterprise and the business ecosystem in which it operates. By doing so, business architecture delivers value as an effective communication and analytical framework for translating strategy into actionable initiatives. The framework also enhances the enterprise’s capacity to enact transformational change, navigate complexity, reduce risk, make more informed decisions, align diverse stakeholders to a shared vision of the future, and leverage technology more effectively.

While the above value proposition is comprehensive, executives often want an “elevator pitch”, a brief statement that conveys the value of the discipline in a few seconds, getting the point across quickly and efficiently. One such elevator pitch is stated below.

Business architecture enables effective, streamlined strategy execution.

A fundamental aspect of business architecture is that it represents a business ecosystem, signifying that a business does not begin or end at the boundaries of the enterprise. A business ecosystem is defined as “one or more legal entities, in whole or in part, that exist as an integrated community of individuals and assets, or aggregations thereof, interacting as a cohesive whole toward a common mission or purpose.”

The holistic, ecosystem focus ensures that business architecture can and should represent customer, partner, and related external stakeholders; value stream perspectives that, in some cases, exist in part outside of internal stakeholder’s line of sight; outsourced capabilities; and value delivery from a multidimensional viewpoint. In effect, business architecture reflects multidimensional aspects of a real-world business in an abstract format. Figure 1.1 depicts these “abstractions” as high-level business domains within the business architecture.

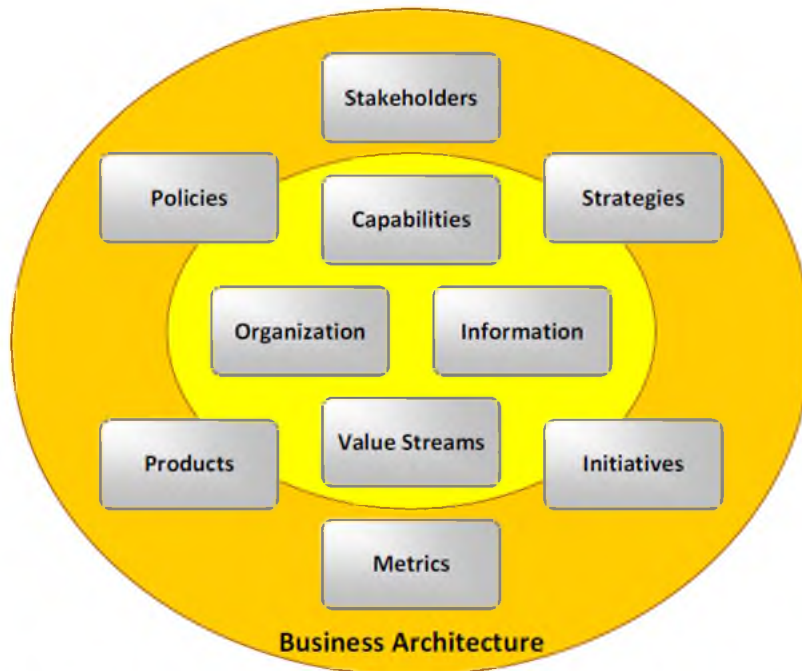


Figure 1.1: Business Domains Represented by Business Architecture

Business architecture domains are business focal points used to establish formal abstractions needed to represent a business. Business architecture domains form the basic building blocks of business architecture and provide the basis for establishing a wide variety of business abstractions, enabling business transparency.

Domains represented in figure 1.1 are related to each other in various ways. For example, a business is broken down into business units, each of which has certain capabilities. Capabilities enable stages within various value streams and require certain information. Organization, capability, value streams, and information comprise the foundation of the business architecture. These four “core” domains, represented by the inner circle in figure 1.1, are considered foundational because they are relatively stable compared to other aspects of the business.

For example, a 100-year-old insurance company would have had similar capabilities as it does today: Customer Management, Insurance Policy Management, and Claims Management. While these capabilities would not have had automation 100 years ago, they still existed, along with certain business units and value streams such as Settle Claim. The company would have also used similar information such as Customer, Insurance Policy, or Claim, and the instances of these domain categories tend to be relatively static.

The extended set of business architecture domains, shown in the outer rim of the circle in figure 1.1, depicts aspects of the business that, in some cases, change more frequently than core domains. These outer rim domain categories extend the business architecture in a variety of ways. For example, stakeholders (such as customers, business partners, and various internal stakeholders) are used to communicate who receives business value and participates in the delivery of that value. These stakeholder categories may have existed long ago, but it is likely that the specific stakeholders in each category have evolved. Similarly, the instances of products being delivered may change frequently along with other domains such as strategy and policy. As a result, updates to the instances of these business architecture domains would be more dynamic than updates to instances of capabilities, information, or value streams.

In all cases, however, business architecture domain categories, once established for a given business, have the capacity to absorb and represent a wide variety of business perspectives. *BIZBOK® Guide* sections 2.2 through 2.5 outline how to build out business architecture core domains while the remaining sections in part 2 discuss building out the extended domain categories. Relationships among business architecture domains, represented through various blueprints, provide the foundation for a robust, highly flexible business architecture that delivers business transparency to address a wide variety of business needs.

Business architecture represents real-world aspects of a business, along with how they interact, to help executives and other stakeholders answer commonly asked questions: who, what, where, when, why, and how. Answers to these questions, derived from the business architecture, are used to develop plans and make and implement business decisions. This understanding is the essence of business architecture and a foundation for the material presented within the *BIZBOK® Guide*. Of course, representing this information is one facet; making it useful to individuals who need only a portion of this information at a given time and have little time or patience to sort through the details introduces another aspect of business architecture: blueprints.

Blueprints are abstract representations of reality that represent a wide variety of viewpoints. There are building blueprints, ship blueprints, and, within this discussion, business blueprints. A given blueprint represents one view of the business. There are many types of business blueprints, as shown in the examples in figure 1.2. These blueprints, along with numerous others, enable organizations to visualize their business from a variety of perspectives, providing management with information about a given domain or domains within a specific context. For example, the Balanced Scorecard, shown in figure 1.2, provides management with measures against certain business goals and objectives.

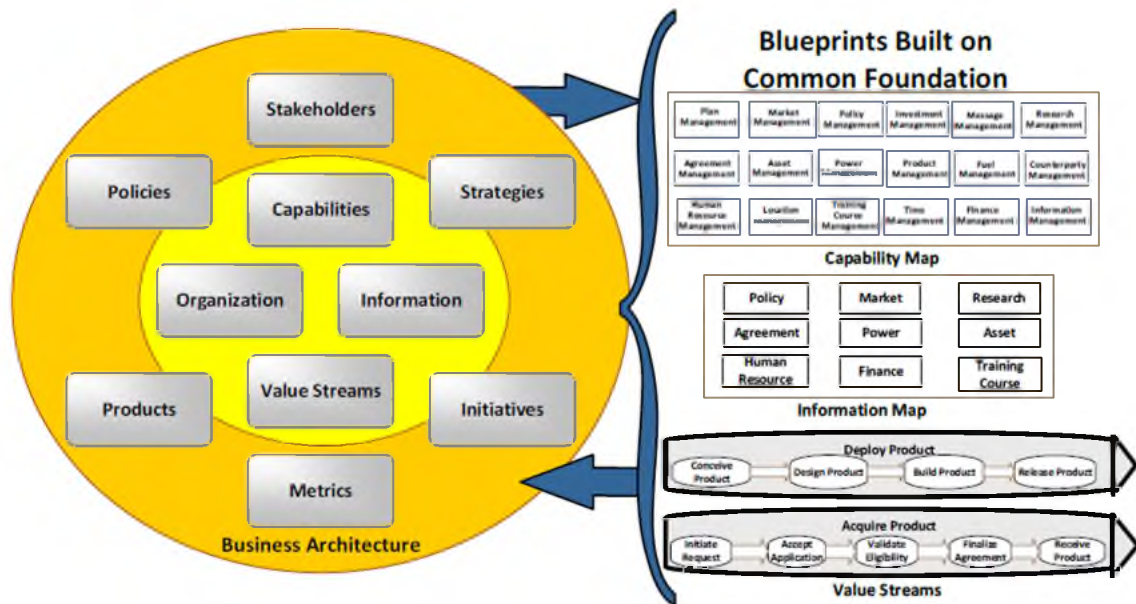


Figure 1.2: Business Architecture Represented Through Business Blueprints

One important difference between business architecture derived balanced scorecards, dashboards, and related blueprints and traditional financial reporting is that business architecture focuses on the essence, structure, and overall transparency of the business, not on financial performance. Just as a blueprint of a ship would not provide statistics on top speed attained on an Atlantic Ocean crossing or average speed per crossing, business architecture does not provide financial analytics. Financial reporting systems will continue to produce financial performance results for business teams. Business architecture, however, identifies how effective the organization is in building financial analytics and where the organization can improve this capability from a holistic perspective.

Business architecture opens up an entirely new level of business transparency that allows management teams to streamline planning, evaluate the value of funded initiatives against strategies, and craft more effective transformation roadmaps. This transparency is possible because business architecture blueprints stem from a common vocabulary, standardized framework, and shared knowledgebase. As such, dashboard results align in practice with value streams, capabilities, information views, business objectives, key performance indicators, initiatives, and related business viewpoints. As a result, executives, managers, planning teams, analysts, and other stakeholders can view the business through a common lens — eliminating much of the confusion found across business units, strategy sessions, and initiatives.

Business architecture is typically used alongside other business and operating models to enable businesses to drive investments based on a shared view of the business. Too often, organizations

establish priorities and investments on a fragmented business perspective based on the needs of individual business unit siloes. As shown in figure 1.3, the well-defined, ecosystem-wide perspective provided by business architecture allows an organization to continually align its operating model to a holistic business strategy via business architecture, which delivers holistic views of operations, markets, customer engagement, and other perspectives which would be lacking in the absence of business architecture.

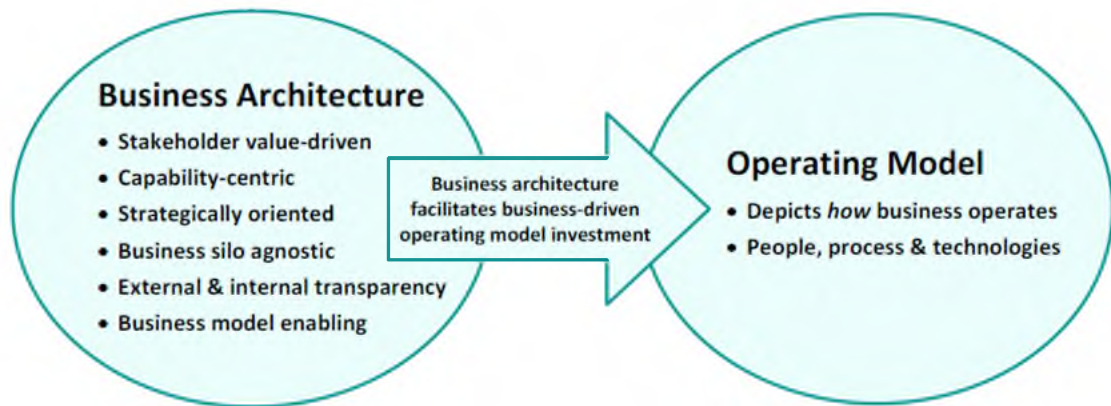


Figure 1.3: Business Architecture’s Alignment with the Operating Model

One misunderstanding that individuals new to business architecture often experience involves confusion between business architecture and the operating model. As shown in figure 1.3, the operating model is process, people, and technology focused. While useful for improving efficiencies and costs as well as implementing detailed changes to the business and IT environments, the operating model lacks the value-driven, capability-based, ecosystem-wide perspective needed to deploy actionable strategies, ensure consistent policy compliance, and optimize initiative investments.

The *BIZBOK® Guide* walks practitioners through the creation and application of business architecture across various scenarios as well as the deployment and governance of the practices. It also provides insights into how to use business architecture to achieve business goals through an overall framework that integrates with customer experience design, business process, case management, business analysis, and information technology disciplines.

Business Architecture Framework

Basic business architecture concepts and the ability to visualize this information in a variety of ways is only part of the business architecture story. Organizing this information in useful ways and being able to relate and combine these concepts require a foundational framework, shown in figure 1.3. The framework concept does not impose prescriptive or restrictive concepts into

the practice of business architecture. Rather, the framework provides a foundation that organizations can build upon and customize based on unique business architecture requirements, driven by real-world challenges.

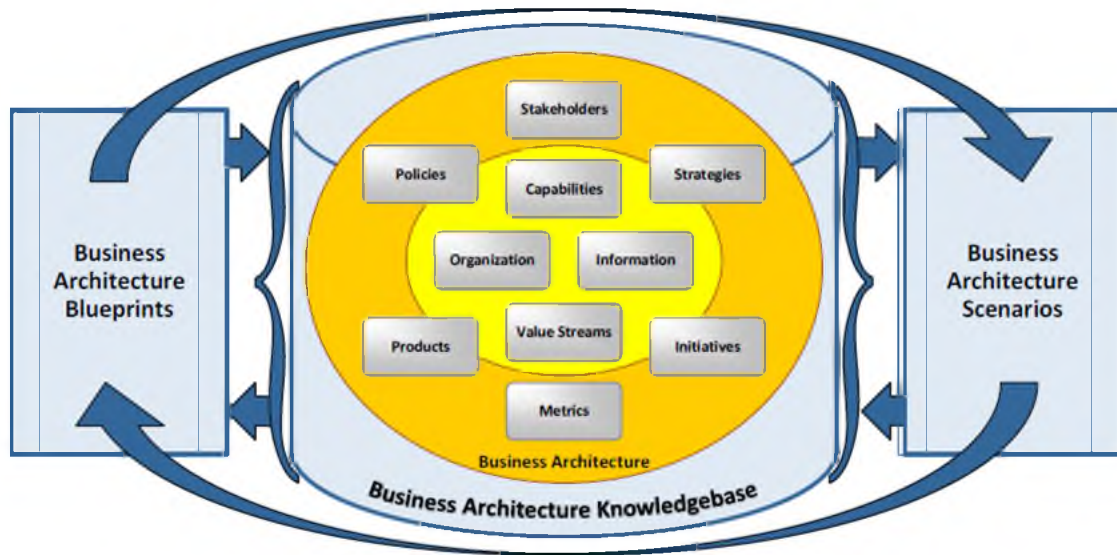


Figure 1.4: The Business Architecture Framework

There are three important components within the business architecture framework: business blueprints, business architecture scenarios, and the business architecture knowledgebase.

As previously noted, business blueprints deliver business transparency that enables and streamlines business transformation across business units, capabilities, and stakeholders. The degree of transparency delivered by these blueprints rarely exists in many organizations. As a result, the participants in strategy planning sessions often miss the essential understanding of how to maximize solution-related investments while ensuring that one business unit's success does not create problems for the enterprise as a whole.

For example, consider the company that was creating multiple, competing enrollment solutions for the same customer base across multiple product lines. The projects could have succeeded in principle, yet they created more complexity and dissatisfaction across the customer base. Business architecture provides the transparency necessary to discover these issues in advance — before money and goods are squandered. Essential business architecture blueprint building and usage are outlined in detail in part 2 of the *BIZBOK® Guide*.

The framework also incorporates the concept of business architecture scenarios, which provide business transparency on specific business initiatives. Business architecture is applied differently

based on the type of scenario at hand. For example, a business team involved in a merger and acquisition would require different information than another team considering how to stem customer attrition. Applying business architecture through various business scenarios, thereby leveraging blueprint views derived from the business architecture knowledgebase, enables business teams to create and deploy a wide variety of transformation roadmaps. Because this approach is based on a common view of the business across business units, it enables improved executive sponsorship and more sustainable funding structures.

Sample scenario topics, a good many of which are covered in the *BIZBOK® Guide*, include:

- Investment Analysis
- Shift to Customer Centric Business Model
- Merger and Acquisition Analysis
- New Product / Service Rollout
- Globalization
- Business Capability Outsourcing
- Supply Chain Streamlining
- Divestiture
- Regulatory Compliance
- Change Management
- Operational Cost Reduction
- Joint Venture Deployment
- IT Portfolio Investment Analysis
- Digital Transformation
- Digital Twin Deployment

These business architecture scenarios define the collective set of initiatives, programs, and projects that leverage business architecture. Of particular importance for each scenario is the creation of a roadmap necessary to advance that particular scenario. Business architecture scenario approaches are discussed in detail in part 4 of the *BIZBOK® Guide* and further augmented by business architecture case studies in part 7.

The business architecture knowledgebase is used to store the information about the business and is organized in concise ways that are customized to a given organization's environment. For example, corporations have divisions and departments while governments may use different terminology. There are generic approaches to knowledgebase structure as well as organization-specific approaches. For example, a government agency would have unique organizational structures in comparison to a hospital or shipping company. Knowledgebase management is discussed in part 5 of the *BIZBOK® Guide* and is also incorporated into various blueprint discussions.

Business Architecture Principles

Business architecture is principle driven. A principle is an agreed upon truth that can guide one's reasoning. This approach offers practitioners a wide degree of latitude in the practice of establishing and leveraging business architecture. Each major section has a set of principles that guide actions associated with individual blueprints and related practice areas.

Core principles that apply to business architecture as a whole are listed below:

1. Business architecture is about the business.
2. Business architecture's scope is the scope of the business.
3. Business architecture is not prescriptive.
4. Business architecture is iterative.
5. Business architecture is reusable.
6. Business architecture is not about the deliverables.

These statements emphasize a principle-based approach to business architecture that provides practitioners the option to employ a variety of methods, visualization techniques, tools, and governance concepts. The common thread is that each approach adheres to a foundational set of principles that aligns the practice of business architecture without dictating how the work is done or restricting the creativity of the practitioner. While using various portions of the *BIZBOK® Guide*, particularly parts 2 and 3, look for the principles section that serves as a foundation for best practices in that particular topic area.

Business Architecture's Role in Strategy Execution

Business architecture plays a critical role in articulating the path towards end-to-end strategy execution, providing ecosystem-wide context and new levels of transparency. With a business architecture in place, it is possible to inform strategies with new insights and opportunities, assess impacts, translate them into comprehensive, actionable steps, scope initiatives, and ensure alignment through deployment, all with end-to-end traceability. Figure 1.5 depicts the strategy execution path as visualized through the strategy execution framework.

This perspective is particularly important because it places business architecture in a strategic, more holistic context, where it is positioned to enable everything from strategy formulation through planning and deployment. The path towards strategy execution is initiated when a stakeholder initiates the need to shift business direction through various scenarios, such as for business model transformation, regulatory change, or integration of a newly acquired company. Business architecture plays an ongoing role and works in partnership with other disciplines, where a series of business architecture-supported actions, shown as boxes below each step, identifies what may be done to achieve a successful strategy. These steps and actions are defined

in appendix B.1 along with deliverables and roles for each step within the framework.

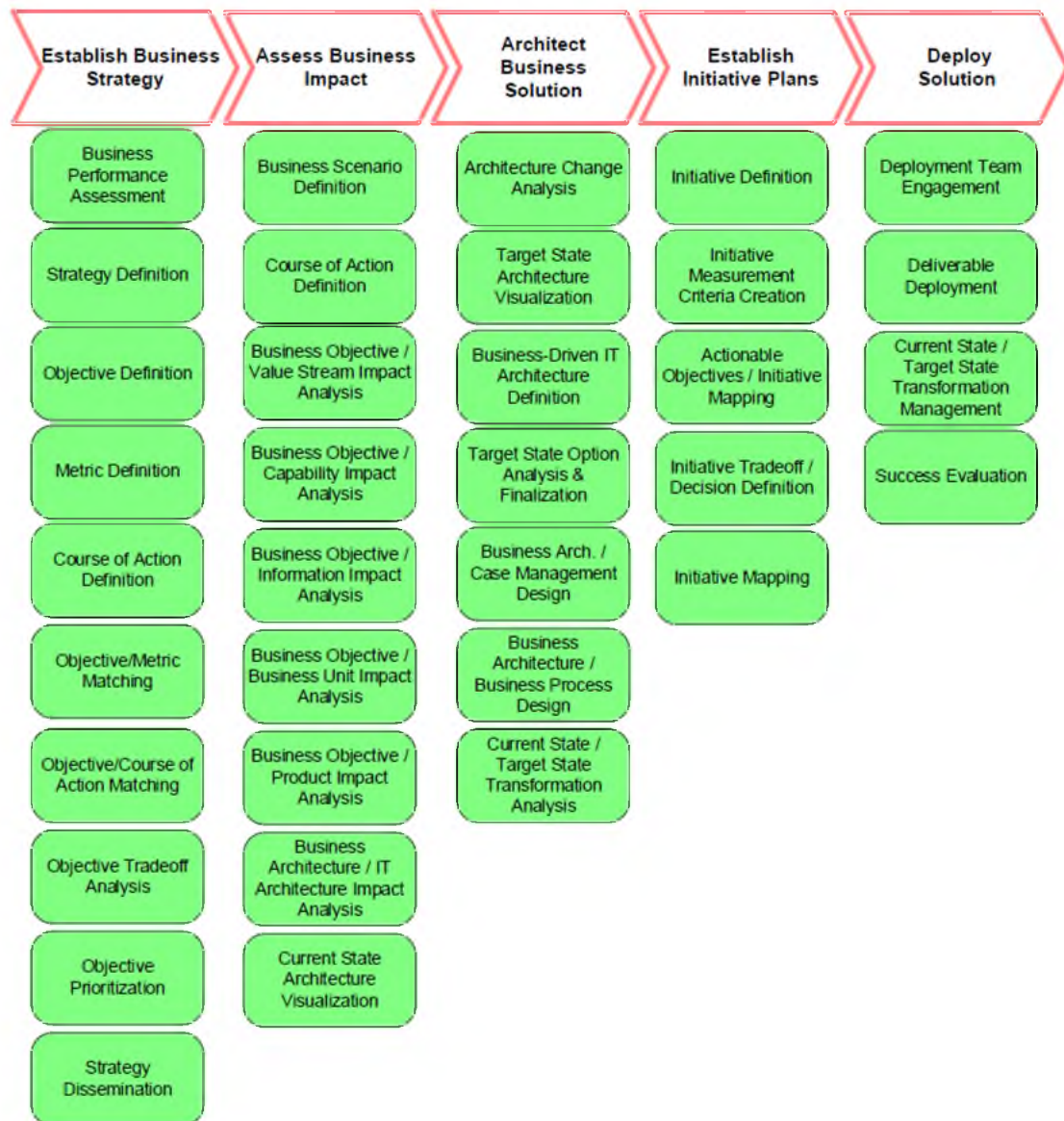


Figure 1.5: Strategy Execution Framework: The Path to Delivering Successful Initiatives

The first step in figure 1.5 stresses the importance of establishing clear business motivations and direction. The second step assesses the impact of that direction within a business architecture context. Using business architecture, the third step establishes a clear view of the enterprise as it relates to the current and target states of the business from viewpoints relevant to the scenario at hand. This step additionally covers how related business disciplines help frame business

solutions based on business priorities and related aspects of the business architecture. The fourth step defines initiatives required to achieve the goals and objectives established in step one and implement solutions crafted in step three. Historically, initiative scoping issues have undermined strategy execution. One important principle in strategy execution is that initiatives are defined by the scope of specific aspects of the business architecture. The last step delivers the ultimate degree of stakeholder value — a deployed solution and confirmation of success.

Note that while there is an action for addressing business-driven IT architecture definition under step three, this path is not meant to encompass all aspects of a software development solution. Inclusion of this action is merely meant to demonstrate that business solutions requiring IT architecture planning and definition would do so within this step. Business/IT alignment concepts are incorporated within part 6 of the *BIZBOK® Guide*.

Traversing the framework in figure 1.5 is not a one-time event but one that will happen many times over based on business issues that arise. In other words, this is a recurring strategy execution framework that organizations will be able to apply for years into the future as new and unique challenges arise. The path leverages the three key aspects of the business architecture framework: blueprints, scenarios, and the knowledgebase. Businesses typically employ customized versions of this path, framing their ability to move from a strategic plan through solution deployment.

The *BIZBOK® Guide* Content Summary

The *BIZBOK® Guide* is organized into eight major parts and a series of supporting appendices. A part may be divided into several sections. An overview of the *BIZBOK® Guide* is shown below.

- **Part 1: Introduction** – Provides an overview of the *BIZBOK® Guide* as incorporated herein.
- **Part 2: Business Architecture Blueprints** – Includes detailed mapping discussion of common business blueprints along with guidelines for how to use these blueprints in practice.
 - **Section 2.1: Business Strategy Mapping** – Discusses how business strategy and objectives play a role within business architecture.
 - **Section 2.2: Capability Mapping** – Details the definition, benefits, development, and use of business capabilities in planning and other business areas. This section also includes information about building the capability map and cross-mapping of capabilities to other business architecture domains.

- **Section 2.3: Organization Mapping** – Discusses mapping organizational structures into the business architecture and covers business unit mapping and inclusion of various stakeholders into the business architecture.
- **Section 2.4: Value Mapping** – Outlines the definition, benefits, development, and detailed value stream mapping approaches and their use in context of business planning, transformation, and related initiatives.
- **Section 2.5: Information Mapping** – Provides a business perspective of information and its role in business architecture and delivering business value.
- **Section 2.6: Initiative Mapping** – Discusses approaches for visualizing business initiatives within the context of business architecture, including viewing initiatives in light of the impact on capabilities, value streams, and delivering business objectives.
- **Section 2.7: Product Mapping** – Maps a business' products and cross-maps them to other business architecture domains, including the capabilities that enable those products.
- **Section 2.8: Stakeholder Mapping** – Identifies stakeholder definition, business criticality, role in business planning and value determination, and formal mapping to value streams.
- **Section 2.9: Policy Mapping** – Outlines approaches to organizing and aligning business policies, a critical business perspective in heavily regulated corporate sectors and government agencies.
- **Part 3: Business Architecture Practice Guide** – Provides perspectives on a wide variety of business architecture practices, like getting started, governance, business model mapping, mapping to related business disciplines, and tooling options.
 - **Section 3.1: Common Approaches for Getting Started** – Discusses how to get started with business architecture and outlines a typical timeline from business planning through deployment.
 - **Section 3.2: Business Architecture Governance** – Incorporates best practices for governing business architecture within an enterprise. Topics include team alignment, role definition, and collaborative governance across a business.
 - **Section 3.3: Business Architecture and Business Models** – Discusses how to use business architecture to interpret business models to achieve actionable results, where a business model describes the rationale of how an organization creates, delivers, and captures value.

- **Section 3.4: Business Architecture and Business Process Management** – Discusses the relationship between business architecture and business process management.
- **Section 3.5: Business Architecture, Case Management, and Dynamic Rules-Based Routing** – Outlines the important business design concept and how business architecture provides a framework for delivering case management solutions by applying an approach called dynamic rules-based routing (DRBR).
- **Section 3.6: Business Architecture and Lean Six Sigma** – Provides guidelines for aligning Lean Six Sigma, a widely used discipline for improving business performance, to business architecture.
- **Section 3.7: Business Architecture and Business Performance Management** – Introduces the role of business architecture in measuring and improving business performance.
- **Section 3.8: Business Architecture and Requirements Alignment** – Discusses how business architecture is used to inform, frame, and improve business requirements analysis.
- **Section 3.9: Business Architecture Maturity Model®** – Provides an overview of a framework for evaluating the overall maturity of a business architecture practice and deployment. It also provides a summary perspective of business architecture maturity and introduces appendix B.3, which contains the complete Business Architecture Maturity Model® (BAMM®).
- **Section 3.10: The Role of the Business Architect** – Outlines what business architecture means for the individuals who practice the discipline.
- **Section 3.11: Business Architecture and Strategy Execution** – Places business architecture within a more transparent and holistic context and provides an overview of how it enables strategy execution.
- **Section 3.12: Business Architecture and Operating Models** – Provides an overview of the operating model concept and discusses the benefits of and approaches to aligning the operating model to business architecture.
- **Section 3.13: Business Architecture and Customer Experience Design** – Discusses the relationship between business architecture and customer experience design and the important benefits of this alignment.
- **Part 4: Business Architecture Scenarios** – Focuses on best practices for addressing common business scenarios, including the list identified in this section and additional

scenarios to be added over time.

- **Part 5: Business Architecture Infrastructure Management** – Discusses the foundational infrastructure for organizing business architecture domains.
 - **Section 5.1: The Business Architecture Knowledgebase** – Overviews how to organize and manage business architecture domains using a formal mapping approach.
 - **Section 5.2: Business Architecture Tooling Options** – Outlines business architecture tool categories that can be leveraged to enable and improve business architecture blueprint creation and related practices.
- **Part 6: Business Architecture and IT Architecture Alignment** – Discusses various approaches for aligning business architecture and IT architecture in order to deliver IT solutions that more effectively meet the needs of the business.
 - **Section 6.1: Business Architecture and IT Architecture Alignment Overview** – Introduces the overall approach and context for business architecture / IT architecture alignment, including a summary of mapping approaches.
 - **Section 6.2: Business Architecture and Enterprise Architecture Framework Alignment** – Provides guidelines for using business architecture within the context of enterprise architecture, with a specific focus on enterprise architecture frameworks that include Open Group's TOGAF®.
 - **Section 6.3: Business Architecture and Systems Development Lifecycle** – Describes a basis for articulating how business architecture provides input to the Systems Development Lifecycle.
 - **Section 6.4: Business Architecture and Application Portfolio Management** – Provides a business-value-oriented approach to application portfolio management.
 - **Section 6.5: Business Architecture and Service-Oriented Architecture Alignment** – Discusses the use of business capabilities in informing and articulating service-oriented architecture from a business perspective.
 - **Section 6.6: Business Information and Data Architecture Alignment** – Outlines how business information, as defined in section 2.5, impacts the evolution of IT data and application architectures.

- **Section 6.7: Business Architecture and Solution Architecture** – Outlines the use of business architecture as a means of informing and influencing solution architecture.
- **Section 6.8: Business Architecture and IT Architecture Transformation** – Outlines how businesses can achieve business-driven, business/IT architecture transformation.
- **Part 7: Business Architecture Case Studies** – Showcases the importance of real-world examples and lessons learned from using business architecture to solve business issues. Case studies will be added to Business Architecture Guild® website on an ongoing basis.
- **Part 8: Industry Reference Models** – Presents industry reference models that serve as a baseline for building a business architecture. It categorizes reference models by vertical industry and includes a variety of business architecture blueprint categories. Reference models are built and published incrementally, representing progress across vertical industries. The number and type of vertical industries defined in this section will grow, along with the breadth and depth of reference models.
 - **Section 8.1: Financial Services Industry Reference Model** – Represents a cross-section of financial industry subsets.
 - **Section 8.2: Manufacturing Industry Reference Model** – Provides a baseline for manufacturing companies focused on producing and moving products.
 - **Section 8.3: Healthcare Industry Reference Model** – Focuses on the healthcare provider and related business architecture mappings that would be useful to that industry.
 - **Section 8.4: Member-Based Association Industry Reference Model** – Provides a member-based association reference model, which is based on the business architecture established for the Business Architecture Guild®.
 - **Section 8.5: Insurance Industry Reference Model** – Provides a baseline for insurance companies, across different sub-verticals, focused on mitigating risk and providing coverage and payment products.
 - **Section 8.6: Common Reference Model** – Provisions vertical industry sector independent views of common value streams, strategic and supporting capabilities, and related business abstractions.

- **Section 8.7: Transportation Industry Reference Model** – Provides vertical industry sector reference model content for a cross-section of shipping, passenger, air, rail, ship, vehicle, logistics, and other transport related business models, including international, regional, and urban transport.
- **Section 8.8: Government Industry Reference Model** – Produces a baseline business architecture that is meaningful and useful to organizations seeking to formally represent a defined ecosystem within the government sector.
- **Section 8.9: Telecom Industry Reference Model** – Offers a baseline business architecture that is meaningful and useful to organizations seeking to formally represent a defined ecosystem within the telecommunications sector.
- **Appendices**
 - **Appendix A: Glossary** – Summarizes terms and definitions used throughout the *BIZBOK® Guide*.
 - **Appendix B.1: Strategy Execution Framework: Business Architecture Role Definition** – Defines the strategy execution framework, steps, enabling business architecture actions, deliverables, and roles.
 - **Appendix B.2: Business Architecture Roles and Competencies** – Provides a list of business architecture roles and competencies typically found in a mature practice.
 - **Appendix B.3: Business Architecture Maturity Model®** – Provides an overview of the Business Architecture Maturity Model® (BAMM®). The latest version of the downloadable BAMM® is available in the [Guild store](#).
 - **Appendix B.4: Business Architecture Metamodel** – Contains an expanded view of the work-in-progress, business architecture metamodel, along with a summary of selected relationships.
 - **Appendix B.5. Dynamic Rules-Based Routing Map Examples** – Provides an expanded example of a routing map and routing map worksheet used to define events and actions associated with case management.
 - **Appendix B.6. Alternative Value Mapping Approaches** – Outlines alternative value mapping approaches, including the Porter value chain, value network, and lean value stream.
 - **Appendix B.7. Business Architecture Tool Evaluator™** – Provides an overview of the tool evaluator worksheet, which enables businesses to assess one or

more business architecture tools to determine suitability to their practice.

- **Appendix C: Study Questions** – Points members to the online CBA® Study Guide, which replaces the previously embedded list of study questions.
- **Appendix D: Version History** – Tracks changes to the *BIZBOK® Guide*, including updates added to the latest release and prior releases.
- **Appendix E: Editorial Board and Contributors** – Provides a list of *BIZBOK® Guide* contributors.

The Business Architecture Guild®

A Guide to the Business Architecture Body of Knowledge® (BIZBOK® Guide) will continue to expand and incorporate an evolving set of best practices emerging in the field. This effort will be accomplished through membership participation in the Business Architecture Guild®, a not-for-profit organization of business architecture practitioners. The Guild is dedicated to advancing the profession of business architecture. The *BIZBOK® Guide* represents the consensus, formalization, and documentation of best practices and knowledge from active members of the Guild.

As this document continues to evolve, comments, corrections, and new contributions from Guild members are appreciated. If you are interested in contributing content, including *BIZBOK® Guide* updates, go to the Guild’s website and consider joining or helping start a collaborative member team.

For more information, go to www.businessarchitectureguild.org.

¹ “Recommendation of FEAPo Taxonomy Working Group for adoption of definitions.” Federation of Enterprise Architecture Professional Organizations (FEAPo) Plenary Meeting and subsequent vote. January 14, 2017. https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/docs/feapo_adopted_architecture_d.pdf. www.feapo.org.

PART 2: BUSINESS ARCHITECTURE BLUEPRINTS

Part 2 of the *BIZBOK® Guide* establishes what can be called “foundational business architecture”. Part 2 provides the background, principles, guidelines, and usage scenarios for establishing and mapping foundational and extended views of the business as introduced in part 1.

Part 2 differentiates itself from other sections of the *BIZBOK® Guide* because it provides the baseline business architecture upon which various business architecture practices and scenarios are grounded. In other words, the practices and scenarios discussed in later sections of the *BIZBOK® Guide* are made possible through the creation of the baseline business architecture detailed in part 2.

Part 1 introduced the concept of foundational and extended views of business architecture (see figure 1.1). Foundational views of business architecture include capability, organization, value, and information and are covered in sections 2.2 through 2.5. Foundational views are relatively stable views of a business and represent the essence of a business upon which other views build, and from which business practices and scenarios flow.

The extended business architecture includes strategy, initiatives, products, stakeholders, and policy, and these are covered in sections 2.1 and 2.6 through 2.9. This list may grow over time, but is differentiated from foundational views insofar as these aspects of a business are more dynamic. These extended views of the business have relationships to the foundational business architecture. These relationships are exploited in various practice disciplines and scenarios. For example, if a business wants to deploy a new product, product mapping (section 2.7) aligns planning concepts to value stream and capability.

In addition to providing a baseline for various business practices and scenarios, each of the sections in part 2 may be used in standalone fashion. For example, section 2.2, Capability Mapping, provides a foundation for capability based costing and analysis of how well various capabilities are performing within an organization. The following overview may be used as a guide to using part 2.

Part 2 – Section Overview

Section 2.1, Business Strategy Mapping, discusses how business strategy and objectives play a role within business architecture. Strategy mapping is included as a first section to highlight its importance in planning a business architecture effort. Section 2.2, Capability Mapping, details the definition, benefits, development, and use of business capabilities in various planning

scenarios. The section includes guidelines and examples for building capability maps and mapping capabilities to other views of the business.

Section 2.3, Organization Mapping, provides a detailed, formal approach to mapping organizational structures into the business architecture, and includes business unit mapping and business unit to capability mapping. Section 2.4, Value Mapping, details the definition, benefits, development, and use of value maps within the context of business architecture. This section includes detailed approaches to value stream mapping and the use of value maps within the context of business planning and transformation. Section 2.5, Information Mapping, provides a business view of information and its role in business architecture.

Section 2.6, Initiative Mapping, discusses approaches for visualizing initiatives across a business within the context of business architecture. Section 2.7, Product Mapping, incorporates the concept of a “product” into the business architecture and includes cross-mapping of product to value maps. Section 2.8, Stakeholder Mapping, formalizes the mapping of stakeholders within business architecture, and ties stakeholders to value streams and other business views. A recent addition, section 2.9, Policy Mapping, reviews mapping implications for policy, which is especially critical in heavily regulated corporate sectors and government agencies.

Using Part 2

Various discussions in part 2 provide a baseline for jumpstarting your business architecture practice. Care should be taken, however, to clarify your goals, scope, and governance structure as a basis for moving forward with any of the mapping sections. For example, if the scope of analysis and business governance are not well defined, then efforts to leverage section 2.2 to build a capability map or section 2.4 to build a value map are likely to produce suboptimal results. Guidelines within these sections address scoping and mapping best practices and should be heeded carefully. Additional governance guidelines are incorporated in the *BIZBOK® Guide* part 3.

As far as where to begin your work, we recommend starting out with section 2.4, Value Mapping, or section 2.2, Capability Mapping. More and more, businesses are drafting value maps before capability maps because a team can deliver mature value maps more quickly, which in turn provides business with a snapshot of how stakeholder value is achieved and establishes a frame of reference for capability – which can be a more intense, elongated effort.

In complex organizational structures, some businesses choose to begin with section 2.3, Organization Mapping. This section is useful for identifying scope for the remaining business architecture mapping efforts. Information mapping, as detailed in section 2.5, is typically based on capability mapping results, so it is usually not an ideal starting point. In most cases, we

recommend beginning with the foundational mapping approaches and deliverables outlined in sections 2.2 through 2.5, and then moving on to the extended mapping efforts identified in other sections of part 2.

One last point involves usability of the work coming out of part 2. A set of value streams or a maturing capability map may provide the essential baseline to beginning benefitting various scenarios or practices. In other words, a given scenario would dictate how much time to spend on any one aspect of the mapping concepts discussed in part 2. For example, a business architecture / Lean Six Sigma alignment effort, as discussed in part 3 of the *BIZBOK® Guide* may only require that a set of high-level value streams be established as discussed in section 2.4. Other scenarios may be achievable by simply using a capability map, a set of value streams, and related cross-mappings. Practitioners should, therefore, understand the scenarios they are seeking to address along with related business objectives, and temper the degree of mapping work as discussed in part 2.

Part 2 Summary

Part 2, Business Architecture Blueprints, provides the foundation for practices and scenarios discussed in other sections of the *BIZBOK® Guide*. The order and degree of mapping is calibrated by what the business wants to accomplish and the scenarios confronting the business architecture team. Prior to undertaking an extensive mapping effort, take care to clearly understand what is to be accomplished and why, along with the scope and related governance of the overall effort.

SECTION 2.1: BUSINESS STRATEGY MAPPING

This section discusses how to create, manage, and utilize business strategy mapping to help organizations govern how they pursue their objectives and execute on a variety of strategies. The section defines strategy, discusses approaches to strategy creation, details strategy mapping techniques, and identifies how to tie strategy to other aspects of business architecture through impact analysis.

Defining Business Strategy Mapping

The creation of business strategy has long been recognized as a key way to help marshal the resources within an organization toward pursuing some set of objectives. One definition of strategy is:

“The pattern or plan that integrates an organization’s major goals, policies, and action sequences into a cohesive whole”.¹

A strategy must be executed in order to achieve its objectives. Consequently, use of the strategy term in business discourse often encompasses the processes by which strategy is created, initiatives for executing the strategy, and techniques for monitoring and supervising initiative execution. Modern strategic practices consider strategy creation, initiative planning, and initiative execution and monitoring to be of equal importance. The main focus of this section is business architecture strategy creation and formulation, whereas initiative planning and execution are addressed in BIZBOK® Guide section 2.6 – Initiative Mapping.

Two well-founded and popular techniques for execution and monitoring are discussed later in this section. The Balanced Scorecard method provides guidance about setting up a monitoring and measurement system for strategic initiatives. The Hoshin Kanri method is a management technique to ensure that there is a common understanding of the strategy and the parts of a strategic initiative that must be executed in coordination by different parts of the enterprise and its partners.

A strategic plan results from documenting the required set of changes along with the reasoning that justifies them. Organizations then establish, staff, and execute initiatives and projects as a means of executing that strategic plan. The Strategy Map², as defined by Norton and Kaplan, is a well-known strategy formulation and documentation method that can be leveraged as a basis for mapping techniques. The Norton Kaplan Strategy Map is also described later in this section.

In a business context (whether for-profit or not-for-profit), strategic objectives are normally

associated with the creation of value as viewed through value streams. In a value stream, value is defined by value items, which are abstractions representing how a stakeholder receives value from capability outcomes associated with a value stream stage. Value streams and their enabling capabilities frame changes that target operating model concepts such as people, process, and technologies. For example, a change may involve adding a missing data input to a process, impacting the behavior of a capability instance. A strategic objective may additionally imply a change in value, creating or modifying value items, value propositions, or value streams to deliver those value propositions. Once strategies have targeted specific value streams and value stream stages, organizations can identify the capabilities enabling and stakeholders participating in those value streams.

As a means of achieving stated objectives, a strategic plan will contain a set of objectives and corresponding courses of action that collectively target capabilities, capability behavior, business units, and stakeholders responsible for the capabilities that produce the outcomes that deliver value. Business units are associated with instances of capabilities, and the capabilities are associated with value stream stages within the value streams that produce the value items.

This modeling approach, which aligns strategy with business architecture perspectives, allows decision makers to contemplate and evaluate strategies without having to immediately take account of the organizational structure of the enterprise. In fact, a high-level strategic plan can be drawn by examining the value streams that produce the value items to be changed by the strategy. From there, planning teams can identify and analyze the outcomes and capabilities associated with those value streams to discover the required changes and related courses of action. This technique utilizes the value stream/capability cross-mapping as defined in *BIZBOK® Guide* section 2.4.

Using Business Architecture for Strategy Justification and Interpretation

The most laborious part of strategy creation is creating and testing the rationale that supports the conclusion that executing the strategic plan is likely to achieve the objective. This rationale must justify the belief that each course of action will result in achieving a specific objective and that the complete set of courses of action will combine to achieve the overall objectives. In addition, a good strategy in a competitive environment must be assessed for effects of possible counter-strategies by competitors. Strategic planners must also contemplate the effects of rare but highly significant events (sometimes called “black swan” or “long tail” events).

The burden of strategy justification can be reduced by choosing an appropriate pattern or framework for examining:

- How a group of outcomes produces different levels of value for a stakeholder (a value

proposition)

- Which capabilities are critical to the production of those outcomes
- The resources (including financing) required to make these capabilities operational
- Behavior of other participants in the marketplace

Many business model frameworks have been proposed and are currently in use. In 2004, Alexander Osterwalder published a Ph.D. thesis³ in which he employed the philosophical notion of ontology to unify many of these frameworks. His thesis was titled “A Business Model Ontology ...” and this title (along with subsequent publications) has given the current meaning to the term “business model”. In the *BIZBOK® Guide*, a business model is defined as “a description of the rationale of how an organization creates, delivers, and captures value”.

The desired end-result of a strategy can be articulated by a business model that portrays how the business should operate once the strategic changes have been applied. In addition, a business model can be used to test the desirability as well as the feasibility of a strategy.

A business model framework (such as the Business Model Canvas⁴) is a template for describing a business model. The framework categorizes and links different business aspects (such as the value proposition, business operations, and strategic partnerships) that need to be considered in order to assess the likelihood that the business being modeled will produce the desired values. In addition, the framework defines the key interactions and relationships between the categories. Section 3.3 – Business Architecture and Business Models – describes how to use business models and business model frameworks in conjunction with business architecture blueprints to align, test, and execute business strategies.

Strategy and Organization Structure

While strategy has its roots in top-down approaches to alignment, organizations are increasingly finding that their plans are too volatile to be left to a central planning function. While central planning can be useful in laying foundational objectives for an organization, the breadth of knowledge required to make the myriad of decisions that lead to the realization of any strategy are too large to be taken at that level.

Decentralized or bottom-up strategy evolution can address some of the limitations of the top-down approach. In a bottom-up approach, strategy is synthesized from the range of possibilities being generated at lower levels within an organization. Decentralized strategy evolution is typically found in large enterprises with multiple business units that are not strongly linked from an economic point of view.

This tension between higher-level organizational objectives and lower-level opportunities is one

that any successful strategy development process must address. This same tension also gives rise to uncoordinated strategy execution, as different business units decide to execute the strategy according to their own, restricted view of the objectives.

Business strategy mapping is a collection of techniques used to enable organizations to gain visibility into the way strategic tradeoffs are made between these competing objectives. These techniques provide a map of how decisions have been reached as well as a guide for what choices are currently under consideration. Taken together, strategy mapping approaches can enable an organization to communicate more effectively and to come to decisions about the courses of action needed to pursue key organizational objectives.

Business strategy can be practiced in different ways. Some organizations operate with only the lightest level of strategy definition because they believe a structured strategy planning process stifles innovation. At the other end of the spectrum, organizations may choose to institute a formal strategy planning and management function in order to achieve a consistent, unified approach to organizational transformation and change.

Strategy has its root in the military domain with the earliest known treatise going back to the 6th century B.C. and Sun Tzu's *The Art of War*. The discipline evolved through the later works of Machiavelli, Napoleon, Rommel, and others. These military examples illustrate an approach to strategy which conceives of it as something that is fully formed using the best efforts of some key group within an organization. However, even with military thinkers, it has long been clear that this viewpoint is shortsighted. General Dwight D. Eisenhower famously commented:

"In preparing for battle, I have always found that plans are useless, but planning is indispensable."

In fact, for many organizations, the exercise of planning remains much more valuable than conforming to any particular strategic plan since those plans quickly become obsolete. Research has shown that organizations develop strategies through the incremental identification of:

- What an organization *might* do
- What an organization *can* do
- What an organization's leadership *wants* to do
- What an organization *should* do

There have been many approaches developed to assist in creating a strategy over the last few decades. Most, if not all, strategic approaches see strategy as a series of overlapping perspectives of an organization that represent different imperatives and result in various courses of action. This section discusses various types of strategy mapping approaches and applications, but first outlines the benefits of applying a strategy mapping framework and the principles of strategy

mapping.

Planning vs. Design Approach

Strategy formulation is a creative task, and research on creative problem solving has shown two general approaches: the “planning approach” and the “design approach”. The planning approach⁵ is characterized by having specific goals and an analytic process that predicts the outcomes for a small number of choices, allowing the decision maker to choose the strategy that provides the best return for an acceptable level of risk. The design approach is characterized by less-specific goals but multiple goal opportunities, and an exploratory process that aims to quickly eliminate infeasible strategies without having to conduct a detailed analysis.

The “design” approach to strategy focuses on business motivation aspects (e.g., vision, mission, and goals) as the core analytic concept rather than on market analysis. Using this approach, strategy builds upon an organization’s existing high-level objectives to provide an actionable path (or paths) toward achieving all or part of those objectives.

Because the objectives are high-level, there are often many strategies that appear to offer the potential to realize them. The design approach is characterized by methods that quickly describe each strategy, and then test it for feasibility and likelihood of realizing desirable or undesirable outcomes. This approach to strategy creation involves trial and error, whereas the planning approach derives the strategic changes directly from an analysis of the market and business operations.

David Norton and Robert Kaplan developed their Strategy Map as a way to describe a strategy option using a design approach to strategy formulation. Norton Kaplan Strategy Maps are easy to draw and capture the essential rationale of the strategy option. Alternative strategy options can be quickly compared to assess the impacts of different strategies on the business.

The aforementioned Business Model Canvas also facilitates the design approach. A brief overview of the canvas illustrates aspects of a business model. Specifically, the nine Business Model Canvas building blocks below interact to determine how an enterprise may achieve its objectives.

- Key partners
- Key activities
- Key resources
- Value propositions
- Customer relationships

- Channels
- Customer segments
- Cost structure
- Revenue streams

The business architecture practitioner collects information about aspects of and the relationships among these nine building blocks. This framework tends to elicit more detail about customer relationships and value delivery than other frameworks. Each building block category may be used as a way to surface and refine high-level goals and more specific business objectives.

Benefits of Strategy Mapping

A structured business strategy covers a variety of viewpoints that are interlinked in order to deliver a cohesive approach to pursuing that organization's objectives. These interlinked points of view capture the balance of forces that every organization must consider when it is delineating its strategy. No single point of view can stand on its own. An integrated strategic framework delivers the following benefits:

- **A strategic mapping framework supports organizational alignment.** Strategies are only as effective as the ability of an organization to align itself behind them. Gaining alignment within an organization involves much more than simply communicating a strategy from the highest levels down to lower levels within an organization. A strategic mapping framework allows a much larger part of an organization to understand and act on ideas about how the enterprise should be aligned to deliver its objectives. Creating this kind of framework opens up a discussion of the implications of the strategic directives. This opening allows strategic gaps to be identified early, blockages to alignment to be located, and the combined knowledge of a much larger organization to be brought to bear upon a proposed approach.
- **A strategic mapping framework improves communication and fidelity of objectives.** While business leaders are typically engaged in the development of business strategies, most executives agree that their organizations fall short in the execution of the strategy.⁶ One of the main reasons for this deficiency is the loss of fidelity of strategic objectives. As strategy is communicated through the layers of the organization, each layer applies its own perspective and interpretation. Some estimates are that roughly half of the original strategic intent makes it to the initiative implementation level. A strategy mapping framework formalizes the strategic intents of executives and links them to specific, unambiguous objectives that can be communicated more effectively. Strategies lacking a communication framework that offers deeper visibility into an organization are likely to have limited buy-in beyond the highest levels of management. These kinds of strategic

initiatives are likely to face organizational resistance that can take many forms and can be difficult for all but the most powerful executive to overcome. Communication is the most fundamental aspect of any organization's successful strategy work.

- **A strategic mapping framework helps organizations adapt rapidly.** With the pace of innovation and the rate of competition increasing in many industries, the ability to innovate is becoming more essential every day. Traditional strategic approaches tend to be very top-heavy and ill-suited to a rapidly changing environment. A strategic mapping framework provides a structured approach that can help organizations incrementally adapt to changes by creating clear relationships among elements within the strategic framework, which permits organizations to incrementally reassess ongoing initiatives against evolving objectives. Such a framework also allows new business opportunities to be identified at lower levels within an organization, enabling much earlier opportunities for strategy adoption.
- **A strategic mapping framework enables the rationalization of initiatives.** Organizations make use of various governance frameworks including gated approval processes, threshold ROI analysis, and cost-benefit evaluations in order to ensure that initiatives are aligned with strategy. However, assessment of initiatives that have already been launched is typically limited to evaluating whether milestones and cost targets have been met. This approach provides limited opportunity for organizations to adjust these initiatives to reflect changes in the organizational environment or organizational objectives that occur after initiatives are launched. By using a strategic mapping framework, organizations gain the ability to create governance frameworks that support regular re-evaluation of initiatives for conformance to the then-current strategic objectives.
- **A strategic mapping framework supports capability-centric investment.** While core investments are generally fully vetted by organizations, there are many smaller investment decisions that have much less visibility. Frequently these investment decisions are not even recognized as such. By tying all decisions to create or enhance capabilities into a strategy mapping framework, it becomes possible for organizations to gain better visibility into these investment decisions and to ensure alignment with capability investment decisions at the strategic level. Mapping of initiatives to strategy is discussed further in section 2.6 – Initiative Mapping.
- **A strategic mapping framework provides the ability to monitor an organization's progress toward strategic objectives.** One of the greatest obstacles to achieving strategic objectives is the inability to drive alignment with those objectives deep into an organization. A strategic mapping framework provides the infrastructure to allow organizations to examine the linkage between the strategic objectives and the details of

how those decisions are decomposed into lower-level objectives, mapped to capabilities, value streams, business units, and information concepts, and pursued via initiatives. This framework enables organizations to build strategic dashboards to allow rapid assessment of the current state of an organization's activities to achieve its strategic objectives.

Principles of Strategy Mapping

While most organizations undertake some level of strategy analysis, integrating these efforts into a cohesive strategy framework remains a challenge. Establishing certain principles facilitates efforts to integrate those strategic objectives into a framework that allows them to be incorporated deep within an organization. The following principles define the key activities required to create this kind of framework.

1. **Business strategies relate to a particular “community of interest”.** There is no such thing as a strategy that makes sense regardless of the parties that have a stake in the outcome of that strategy. Because of this, all strategies must begin with a definition of the set of stakeholders whose value proposition may be impacted by the strategy being defined.

In the simplest case, a commercial organization has the following stakeholders: customers, management, employees, and shareholders. However, this simple case is seldom the whole picture. As organizations move toward a more virtual way of conducting business, the set of stakeholders involved expands to include partners whose integration delivers increased value to customers beyond that which the organization could deliver on its own. Note that capability and value mapping fully support this expanded ecosystem perspective. Within this type of integrated value system, a strategy must address the way in which all stakeholders respond to that strategy.

2. **Business strategies are created to respond to the external environment.** No strategy can be expected to be achieved without considering the environment in which that strategy will operate. The business ecosystem that an organization exists within consists of a range of external constraints and opportunities. Identifying those areas where opportunities exist and where an organization is positioned to take advantage of them is a core part of any effort to define a strategy. An organization's environment contains a wide variety of considerations, including:
 - The relative strength of the organization's capabilities as compared to rival organizations
 - Opportunities to address under-served or new market segments
 - External directives, such as regulatory regimes

- Pricing power, in regards to both customers and suppliers
- Barriers to entry to a marketplace
- Opportunities to disrupt an existing market by introducing new business models driven by items such as technological innovation

3. **Business strategies are evaluated using value analysis⁷.** A business strategy is an approach that enables an organization to preserve and increase the value it delivers to its identified stakeholders. Because of this, value analysis is the key approach for evaluating the relative attractiveness of the various strategic choices that an organization faces.

Many organizations focus their analysis of value on the goods and services delivered and the money transferred between the various parties. However, value analysis goes beyond examining the simple economic exchange captured in financial transactions. To avoid commoditization of an organization's offerings, it is essential to create strong market differentiation. One of the most powerful ways of achieving this is for an organization to create an ecosystem of value.

Once an organization has identified the environmental elements that dictate where it can differentiate itself, it can use value analysis techniques to identify capabilities that should be targeted for investment and potential partnering opportunities. More detailed discussion of value analysis is provided in section 2.4 – Value Mapping.

4. **Business strategies leverage and build upon existing organizational capabilities.** Principles 1-3 provide insight into what an organization *might* be able to achieve. Principle 4 focuses on what an organization *can* achieve. A strategic objective must be able to be reached by the organization within the timeframe defined for that strategy. Determining whether an organization can implement a particular strategy involves understanding the existing capabilities within an organization.

Many organizations have yet to clearly identify the core set of capabilities that provide them with the ability to differentiate themselves. Research has shown that most organizations have a relatively small set of differentiating capabilities and that there is a “coherence premium” for organizations that successfully identify these core capabilities and align their strategies to them.⁸

Business strategies must be tested against an organization's core set of capabilities to determine if the strategy is achievable and coherent. A strategy that requires too rapid an evolution of an organization's capabilities is more likely to fail. A strategy that requires significant investment in non-core capabilities is likely to result in diminished

effectiveness and efficiency. It is also likely to undermine the coherent message that an organization's members must communicate in order to maximize the alignment of activities that produce the value items the organization has targeted. A value item, which is discussed in more depth in section 2.4, is defined as "the judgment of worth, made by an individual or organization, attached to something tangible or intangible and attained in the course of a particular interaction with one or more other parties".

5. **Business strategies are realized through the creation of initiatives that target specific measurable outcomes.** A business strategy is a way of defining how an organization intends to leverage and enhance its existing capabilities in order to deliver differentiated value. However, a strategy itself is nothing more than a set of guidelines for the new value proposition. In order to achieve a strategy, an organization must launch one or more related initiatives.

Managing how initiatives deliver on an organization's strategy is itself a complex undertaking. It is frequently the case that a strategy cannot be pursued by simply creating an initiative designed solely for the purpose of achieving the related strategic outcomes. An outcome is "an end result or final product that is a consequence of an event, action, or a series of events/actions". For example, a strategy, an initiative, or a capability all produce outcomes. In most cases, the initiatives underway within an organization center on delivering operationally focused versus strategically focused outcomes. These operational (i.e., non-strategic) initiatives can represent the largest portion of an organization's initiative budget and often touch upon supporting capabilities across a broad swathe of the organization.

The relative number of operational initiatives versus strategic initiatives often means that strategic outcomes must be at least partially achieved within the context of operational initiatives. This situation makes it imperative that organizations identify the intersection between strategic and operational initiatives to ensure a coherent path is being taken toward its strategic objectives.

6. **Business strategies represent a portfolio of approaches to pursuing objectives.** This principle focuses on what an organization *wants* to do. It is rarely the case that an organization finds an opportunity to pursue an objective that does not involve some trade-off with another potential objective. Because of this, the creation of a business strategy must include the evaluation of how various strategic objectives influence each other.

The interaction between strategic objectives can be broken into two broad categories: benefits and risks. While it is a common simplification to think of benefits as being the

same as the income stream accruing to an organization, in practice the determination of benefits can be a complex exercise in its own right. The intangible value of items such as customer loyalty and brand value are examples of the difficulty of assessing benefits. Projecting benefits into the future is also difficult; environmental issues as well as market and product maturation make extrapolating from the current state problematic.

Organizations must also assess the potential risks associated with any strategy. High-risk strategies are often successfully explored using pilot programs, test markets, or other similar approaches to help gauge the likelihood of the strategy succeeding before an organization commits significant resources. Thus, a strategic approach involves balancing the set of objectives that yield incremental benefits with a set of smaller, riskier objectives that offer potentially greater benefits, but with lower certainty.

7. Business strategies are only as good as the ability to measure progress toward them.

Organizations that identify promising strategies often struggle with how to determine if their organization is successfully pursuing their strategy. Unfortunately, it is seldom possible to directly measure progress toward strategic objectives. Instead, organizations are required to develop a range of measures that serve as some sort of proxy for these objectives.

The commonly used “customer satisfaction” measure is a good example of this problem. There is no way to directly determine how satisfied a customer is. In fact, it is not entirely clear that customers themselves always have a good understanding of this. Asking customers about satisfaction appears to be the most direct way of discovering this measure, but customers who provide this information tend to self-select and may not necessarily be truthful (for any number of reasons).

Since the achievement of strategic objectives often cannot be directly measured, it is essential that organizations develop a framework of potential measures that capture the behaviors that are expected to move in concert with the desired objective. It is also important to take account of the fact that measures contribute toward objectives over differing timeframes. For example, some measures may have an immediate impact while others may only influence the objective over a period of years. Defining these measures involves identifying obtainable measures as well as creating a framework that captures the relative contribution of each measure and the expected time period for such a contribution.

8. Business strategies are dynamic and continuous. The environment that an

organization operates within is never static. Because the environment is one of the primary drivers for strategy development, this implies that a strategy must be dynamic to address these environmental changes. The continuing evolution of strategy makes it essential for organizations to develop effective communication approaches to ensure that evolving strategic objectives are regularly and rapidly communicated throughout an organization. Effective strategy planning is thus a continuous process rather than a yearly or biennial exercise. Organizations must evaluate and change or adjust current strategies on an ongoing basis.

While the environment is a key driver for strategic change, another important driver is organic innovation. Organic innovation happens within an organization when opportunities for changing the value being delivered to a community of interest are discovered outside the senior management ranks. The ability to recognize and capitalize on organic innovation is essential for organizations to supplement the relatively limited visibility into new opportunities that senior management-driven strategy provides.

An organization needs the ability to socialize and pursue strategies across the business in a timely manner, especially given the increasingly narrow window of opportunity that firms have to develop and maintain a competitive advantage. This need exists regardless of whether strategic objectives are developed top-down by senior management or potential opportunities are pulled from the bottom up. Section 2.3 includes organization mapping approaches that provide a basis for innovation to emerge at the periphery of an organization, versus being limited to top-down options.

9. **Business strategies are developed using a variety of analytic frameworks.** This principle focuses on what an organization *should* do. Business strategy development cannot be performed using any single, universally accepted, prescriptive approach. Variations in how strategy is formed are driven by elements as diverse as industry and markets, existing organizational capabilities, and the individuals participating in the strategy process. These variations leave the choice up to each individual organization to decide which specific analytic framework should be used to define strategies.

This variation in analytic approaches does not imply that there is no commonality in how organizations go about driving toward their strategic objectives. The way in which strategic objectives are decomposed into lower-level objectives, how the resulting value is captured by mapping the changed value delivered to the various stakeholders, the ability of the organization's existing capabilities to deliver these expected outcomes, and the validation of the objectives with respect to the environment in which the organization operates all remain consistent.

Strategy Mapping Frameworks Overview

Strategy mapping articulates a strategy in such a way that it can be readily interpreted and acted upon. There are multiple approaches to identifying, mapping, and leveraging business strategy. These approaches are expressed through various mapping frameworks, each of which has certain uses and strengths. The focal point, however, is on strategy mapping. Strategy maps vary but are essentially a graphical depiction of goals, objectives, and related courses of action, often aligned against an organizational backdrop. Some of the more well-known strategy mapping frameworks include:

- Ansoff⁹ Product/Market Grid
- Strength/Weakness/Opportunity/Threat (SWOT) analysis
- Five Forces Model (Michael Porter)¹⁰
- Norton Kaplan Strategy Map¹¹
- Business Motivation Model (BMM)¹²
- Hoshin Kanri¹³

The Ansoff Product/Market Grid, SWOT analysis, and Five Forces Model enable strategy formulation by highlighting focal points that executives should incorporate into strategy planning efforts. SWOT, for example, surfaces internal and external perspectives that should be capitalized upon or otherwise addressed. The Five Forces Model focuses threats through a finer lens of competition, buyers, and suppliers.

The Norton Kaplan Strategy Map, on the other hand, “provides the discipline to ensure that the formulated strategy has specific objectives for shareholders and customers, an explicit customer value proposition, the critical internal processes for creating and delivering the value proposition, aligned human resources, information technology, and organization culture”¹⁴. In other words, the Strategy Map offers a more complete, in-context perspective on business strategy.

In the above list, the last two strategy mapping frameworks provide impact-related perspectives. The Business Motivation Model (BMM) provides a mapping between the “ends” to be achieved (i.e., goals and objectives) and the “means” needed to achieve those ends (i.e., strategies and tactics). Hoshin Kanri provides similar cross-mapping concepts including tying mission, goals, and objectives to courses of action and key performance indicators (KPIs). Both of these mapping approaches advance the implementation of the planning process and are discussed later in this section.

The end result of any strategy mapping process, regardless of the approach taken, is a set of measurable objectives, priorities, and courses of action that management can act upon to deliver change. Each of the aforementioned frameworks helps frame the discussion around identifying and applying a particular approach to strategy formulation.

Ansoff Product/Market Grid

The Ansoff Product/Market Grid, shown in figure 2.1.1, represents one of the earlier attempts to provide a structured approach to strategy planning by suggesting that organizations examine four quadrants that combine New Markets / Current Markets and New Products & Services / Current Products & Services axes to produce four distinct value propositions: Market Penetration, Market Development, Service/Product Development, and Diversification.

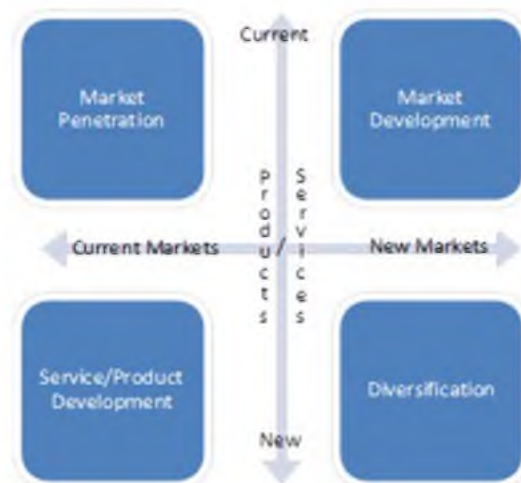


Figure 2.1.1: Ansoff Product/Market Grid

The Ansoff Product/Market Grid demonstrates early thinking on what should go into a strategic planning discussion. As we will see below, these early analysis approaches have matured in various formats. While relatively simple, the Ansoff Grid provides a quick outward-facing market-oriented view of where an organization might find potential opportunities. Unfortunately, the simplicity of the Ansoff model limits its applicability. Many organizations end up with complex combinations of the four quadrants, a situation that the Ansoff approach is unable to address.

SWOT Analysis

In the late 1960s, the SWOT (Strengths, Weaknesses, Opportunities, and Threats)¹⁵ technique emerged. The SWOT framework, shown in figure 2.1.2, followed a path similar to Ansoff's by focusing on a top-down planning approach. However, the SWOT technique uses different perspectives than Ansoff's grid. SWOT combines lenses for an organization's capabilities (strengths and weaknesses) along with an analysis of the environment (market opportunities and threats).

	Helpful	Harmful
Internal	Strengths	Weaknesses
External	Opportunities	Threats

Figure 2.1.2: SWOT Matrix

SWOT analysis is widely used and accepted across many industries. Unlike the Ansoff grid, SWOT incorporates both outward-facing as well as inward-facing perspectives. Once again, the simplicity of the approach makes it an attractive tool, but it is not resilient enough to enable a strategic framework to be built that can be used to guide and govern an organization.

Five Forces Model

The publication of Michael Porter's book *Competitive Strategy: Techniques for Analyzing Industries and Competitors*¹⁶ greatly expanded upon the approaches pioneered by the earlier authors. Porter's approach further subdivided the competitive environment into five forces: Potential Entrants, Suppliers, Buyers, Substitutes, and Industry Competitors, as shown in figure 2.1.3. His set of competitive differentiators also provided a selection of potential value items that organizations could assemble to take advantage of the market situations that were identified using his framework.



Figure 2.1.3: Porter's Five Forces Model

The Five Forces Model provides a comprehensive set of perspectives that encapsulates the external environment and market drivers at play. What the framework lacks is an assessment of

what an organization *can* do and how the objectives of the organization link to each perspective.

Norton Kaplan Strategy Map

Because the Norton Kaplan Strategy Map is one of the best-known examples of strategy mapping, this approach merits additional attention. These authors are probably best known for another technique, the Balanced Scorecard. In *The Balanced Scorecard: Translating Strategy into Action*, the authors observe that most strategic failures result from poor execution, not bad strategy, and they propose the Balanced Scorecard as a method for managing the implementation of a strategy.

This metric-based approach attempts to create strategic alignment by using a series of hierarchical “scorecards”. Each scorecard gathers together a set of broad metrics that are proxies for the outcomes that an organization or individual is expected to achieve. These scorecards are linked into a hierarchy with dependencies mapped between the levels as illustrated in figure 2.1.4.

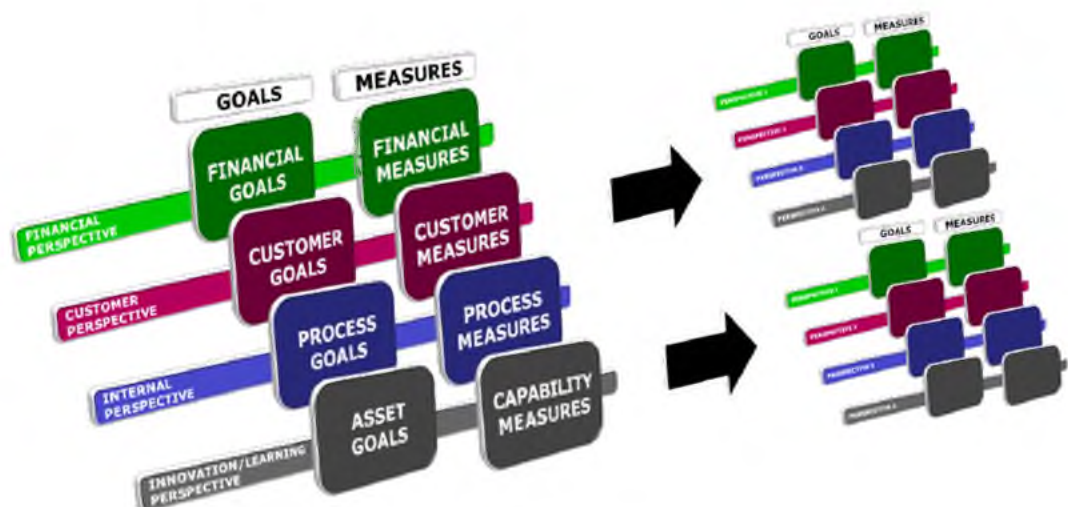


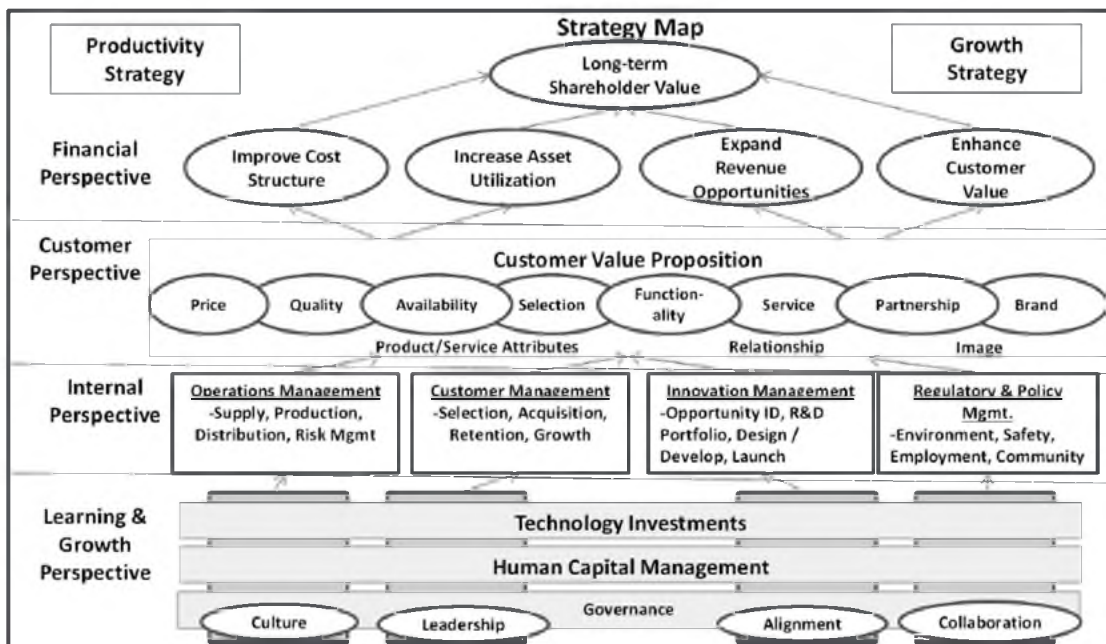
Figure 2.1.4: Balanced Scorecard Hierarchies¹⁷

To ensure that the metrics capture a broad range of the capabilities needed by the organization rather than becoming short-term, operationally focused, Norton and Kaplan proposed that a series of “perspectives” be used to provide a broad view of the organization’s goals. They proposed four categories of these metrics: Financial, Customer, Internal, and Innovation/Learning. A Strategy Map, in turn, aligns each set of strategic goals to one of the four perspectives.

One important objective of the Norton Kaplan Strategy Map is to enable the construction of

Balanced Scorecards. Each objective is traceable back to a set of metrics on the Balanced Scorecard. This approach allows strategic objectives and metrics to be married to each other, enabling organizations to better understand how the metrics they are setting as targets relate to and support the organization's objectives.

The Norton Kaplan approach, exemplified in the sample Strategy Map in figure 2.1.5, has several parallels or similarities to techniques outlined in the *BIZBOK® Guide*. For example, the Norton Kaplan Strategy Map includes a customer perspective that has strong parallels to the value analysis approach that is discussed in section 2.4 of the *BIZBOK® Guide*. However, the approach outlined by Norton and Kaplan does not provide a rigorous framework for how to develop and define value streams, nor does it tie them back to capabilities, market decisions, and environment forces.



*Source: R. S. Kaplan and D. P. Norton, *Strategy Maps: Converting Intangible Assets into Tangible Outcomes* (Harvard Business School Press, 2004)

Figure 2.1.5: Sample Norton Kaplan Strategy Map

The Norton Kaplan Strategy Map should be tied back to business impacts using business architecture as a way to optimize end-to-end strategy execution. This requires associating all mapping perspectives in the Strategy Map framework to the value stream and capability domains within business architecture. As alluded to previously, the Customer Perspective often targets customer-triggered value streams and enabling capabilities, making this set of objective impacts on the business the easiest to frame from a business architecture standpoint.

The Internal Perspective mapping in the Norton Kaplan framework provides a rudimentary approach to tying operational/process metrics back to strategy. However, it does not offer a rigorous approach for how to link the two sets of metrics, nor does it provide guidance about how to resolve conflicts between strategic and operational objectives. Interpreting the value- and capability-related investment impacts of these internal objectives involves associating them with internally as well as externally triggered value streams and enabling capabilities. This technique ensures that a more comprehensive complement of value- and capability-related investments are addressed to ensure a coordinated approach to strategy execution.

Finally, the Learning and Growth perspective offers a rudimentary approach to what has now emerged as the discipline of capability modeling. Many organizations have struggled with this perspective because they lack understanding of how to combine this “enabling” perspective with the other three outcome-based perspectives. Interpreting these objectives requires focusing on specific human resource, asset deployment, and governance value streams along with the enabling capabilities. Mapping the hierarchy of interlinking business objectives to a cross-section of customer, partner, and internally triggered value streams and related capabilities is discussed later in this section.

Whether an organization chooses the Balanced Scorecard approach or another approach to managing strategic initiatives, the method of linking objectives to outcomes and identifying leading or lagging measures that indicate whether or not they are being obtained is an important measure of tracking progress against objectives. A strategy without measures of accomplishment is a “hope” and not a manageable strategy. The task for the business architecture practitioner is to carry out an analysis to extract positive and negative, leading and lagging measures from the Strategy Map initiatives and outcomes and link those measures back into the Strategy Map. This task is typically performed after business stakeholders define and accept an initial strategy portfolio (in principle), and is often performed while elaborating the strategy portfolio to identify business value and feasibility. Section 3.7 – Business Performance Management – further discusses the Balanced Scorecard topic.

Business Motivation Model

The Object Management Group’s Business Motivation Model (BMM), shown in figure 2.1.6, attempts to unify strategic concepts into a formal structure. Architects who use the BMM will typically use only the parts of it that they need and combine the resulting models with other models that contain elements and relationships not available in the BMM. For example, strategies/goals and tactics/objectives are the most commonly used elements of the BMM. The BMM, however, does not address integration with capabilities, value, or information. The architect must provide those linkages outside of the BMM.

The BMM Standard provides an overview of the BMM concept and related objectives: “The Business Motivation Model provides a scheme or structure for developing, communicating, and managing business plans in an organized manner. Specifically, the Business Motivation Model does all of the following:

- Identifies factors that motivate the establishing of business plans
- Identifies and defines the elements of business plans
- Indicates how all these factors and elements inter-relate.”¹⁸

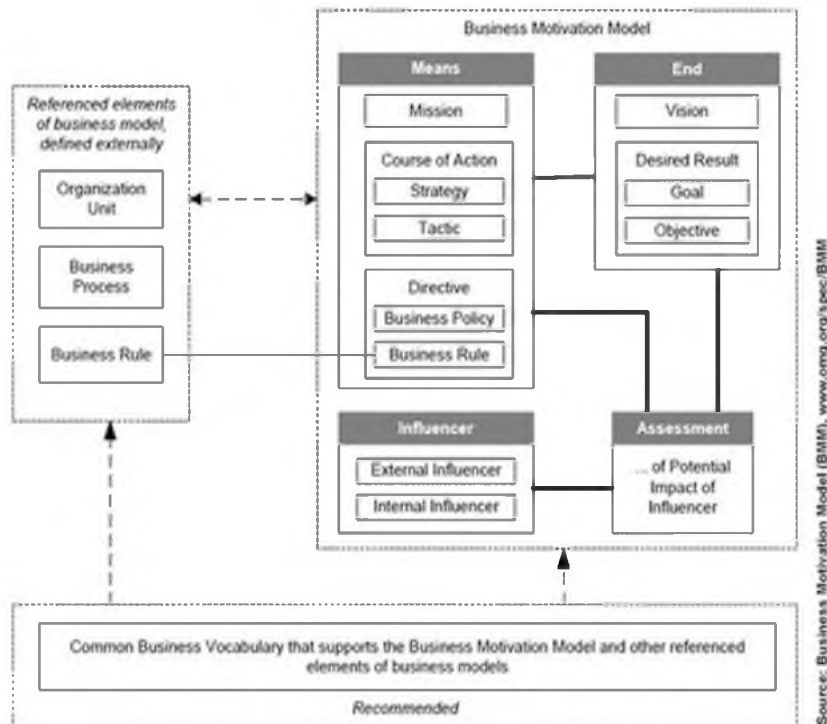


Figure 2.1.6: Business Motivation Model

The BMM has three useful attributes. First, it is simple enough for the practitioner to apply its basic precepts. In practice, teams have used a subset of concepts in the BMM to link the ends to be achieved (i.e., the measurable objective and overall goal) to the strategy and tactic (i.e., the means to achieve those ends). Many teams have found this to be a useful exercise in identifying measurable objectives, which are directly linked to tactics. Teams have additionally found the BMM to be useful at identifying measurable objectives not only for high-level strategies, but as they are refined at the initiative level as well.

Where the BMM stumbles, however, is in limiting the tie-in to the business ecosystem to what is

shown in figure 2.1.6 as the “referenced elements of business model defined externally”, which is limited to organization, process, and business rule. This is a significant limitation as it ignores the basic business architecture concepts defined within the *BIZBOK® Guide*, which include capability, value stream, and information, along with organization. As a result, we recommend that the “referenced elements of business model defined externally” shown in figure 2.1.6 be ignored when tying strategy to the larger business ecosystem.

Because it is an official standard from an international standards organization (i.e., the OMG), the BMM can be used by tool vendors for representing and interchanging a formal perspective on business architecture. Unfortunately, the tie-in to the business ecosystem beyond strategy is not well represented, as previously discussed. Therefore, a tool vendor implementing this perspective must also understand the strategy/business architecture ecosystem mapping.

Hoshin Kanri Map

Hoshin Kanri is a strategic management and quality management technique and tool concept popularized in the late 1950s by Professor Kaoru Ishikawa. Hoshin is Japanese for a compass, a course, a policy, or a plan indicating purpose or vision. Kanri represents management control, or policy deployment in English.

The objective of Hoshin planning is to ensure that all employees in an organization understand the long-term goal; that organizational initiatives are aligned to the strategy and goals; and that employees work together on the same objectives to make the goal a reality. Kanri policy deployment is a method of developing and aligning business objectives, annual operating plans, targets, and goals. It is designed to address the issues of strategic and operating planning being done in isolation and not aligned across teams. Policy deployment combines breakthrough projects (those with the most impact on strategic direction) with operational plans that also achieve short-term performance. It manages long-term requirements by focusing on annual plans that must be met each year to contribute to long-term strategies.

One of the greatest obstacles to achieving strategic objectives is the inability to drive alignment with those objectives *deep* into an organization. The Hoshin Kanri deployment technique facilitates a guiding strategy principle: Business strategies are only as good as the ability to measure progress toward them.

Hoshin Kanri follows a seven-step process that begins with strategy, ties strategy to objectives, aligns objectives to measurable goals, and maps goals to initiatives. The use of this technique establishes a clear message about what is important and ensures less important projects do not compete for the same resources as those needed to enable strategy. Figure 2.1.7 is a simple example of a Hoshin Kanri map – a Strategy Deployment Matrix – that might be used to

communicate the breakthrough strategic objectives and break them down through the rest of the organization in terms of specific initiatives and objectives.

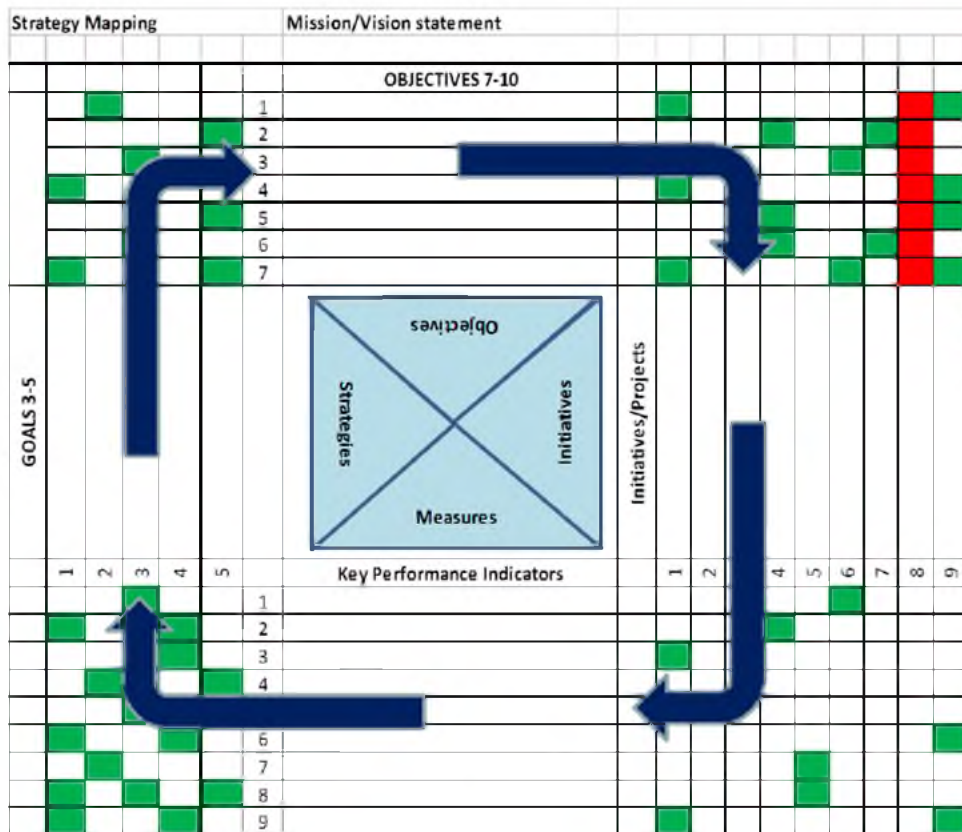


Figure 2.1.7: Simple Hoshin Kanri Map

The matrix aligns initiatives to objectives, whereby each recommended initiative must demonstrate its impact on objectives. Each initiative, in turn, also has an impact on a key performance indicator and each performance indicator ties back to a strategic goal. Management can then assess individual business cases based on overall impact and funding requirements against a prioritized list of initiatives that move the organization toward a strategic goal.

Hoshin Kanri provides a basis for taking the outcomes of a strategy mapping effort and managing the deployment of related initiatives. It provides a complementary operational management perspective to the cross-mappings between strategies, capabilities, and initiatives.

Strategy Mapping and Interpretation: Distillation and Interpretation

While there are a variety of approaches available to *create* a strategy, the business architecture

practitioner needs an effective way to *map* that strategy. Just as important is the practitioner's ability to assess the scope and impact of the stated objectives in terms of what the business does and how it delivers stakeholder value. Finally, the practitioner must assess the impacts from a broader environmental perspective. This section addresses these three elements by distilling a strategy down to an "objective map"; linking objectives to relevant capabilities and value streams; and evaluating objectives and impacts in the context of the overall competitive, economic, legal, and societal environment.

1. Distilling Strategy via Objective Mapping

The core component of strategy is an objective-and-course-of-action chain in which a course of action is defined that will plausibly result in achieving the desired objective. Desired objectives can be estimated and become measurable when distilled into an objective map, which may be represented across the financial, customer, internal, and learning and growth perspectives as defined by the Norton Kaplan Strategy Map. The actual results of a project can be measured and compared with the objectives to determine if the project is achieving the objectives of the strategy and to identify corrective changes to the project.

The top-level objective in the chain is frequently called a "strategic objective". An objective map can be created with the purpose of achieving this strategic objective. The objective map is an articulation of related objectives that collectively aggregate to achieve the far-reaching objectives at the upper end of the map. Strategic objectives are being pursued to change the "status quo" in the enterprise, but often more detailed objectives must be pursued to achieve a higher-level objective. The objective map is a visualization of these upward dependencies.

For example, "improving responses to customer issues" may require "increasing the skills of customer-facing personnel" and "improving the ability to resolve issue escalation". In general, an objective map will consist of a tree-like structure, rooted at the strategic objective. An example of this tree-like structure is shown in figure 2.1.8.

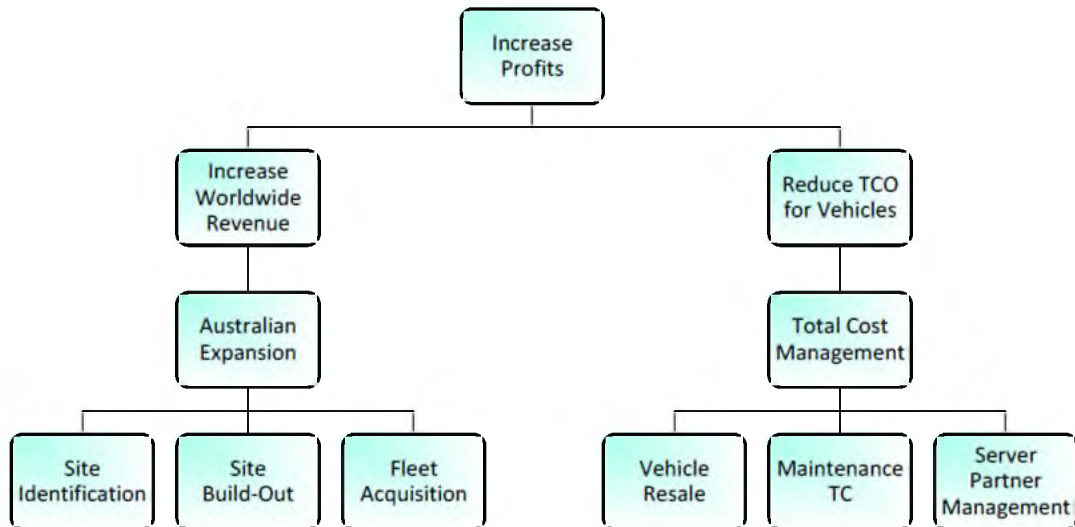


Figure 2.1.8: Objective Map Example

However, enterprises rarely have a single strategic objective. Objectives in one strategy may also oppose desirable objectives that are part of other strategies. For example, “training customer-facing personnel” has the consequence of making these persons unavailable for their usual business activities. A strategy portfolio provides a collection of strategies linked to objectives that support or oppose the objectives associated with other strategies.

Objectives in a strategy will often have pre-conditions that must be met before they can be carried out. In the objective maps, some of the objectives supporting one objective will satisfy the pre-conditions of another objective. Some of the pre-conditions may already be met in the “status quo” of the enterprise.

Norton and Kaplan’s Strategy Map is, in essence, an objective map that represents objectives as oval shapes. The Norton Kaplan Strategy Map combines multiple elements of the overall approach to strategy mapping and represents a superset perspective on the objective map, where the objective map is boiled down to interdependencies among objectives. Generic strategy maps cover an array of analyses and related topics, which increases the importance of having an approach to distilling objective interdependencies down into a simple mapping – i.e., the objective map.

It is not necessary to completely identify all of the objectives, the support/oppose relationships among objectives, and preconditions for courses of action. It is typical to only identify the important actions (i.e., those that may be difficult to execute), the important objectives, and the important oppositional/supportive relationships between objectives. The ability to distinguish

the important and unimportant objectives comes with experience and an understanding of the strategy approach being used. Objectives that are found to be unimportant can always be discarded from the map to avoid distracting the business architecture practitioner and the business stakeholders who will evaluate the strategy proposal.

Every objective map has an associated rationale – a collection of plausible reasons why the courses of action should result in achieving the objectives and why the courses of action may not result in achieving the objectives. The rationale is typically surfaced and discussed in the meetings and discussions leading to the creation of the strategy, but the rationale is often not recorded. If it is not recorded and distributed with the strategy for action planning, there is a risk that executives and managers receiving the strategy will assume a rationale different from the rationale used to create the strategy. Balanced Scorecards and Hoshin Kanri both include practices to ensure that the strategy rationale is also understood.

The strategy rationale contains information that will be useful in linking the strategy and the business architecture. In addition, the rationale contains information that helps link the strategy to the environmental factors that may support or disrupt the strategy.

Various approaches have been taken to help organizations understand the tradeoffs and conflicts between simultaneously pursuing multiple objectives. Some of these approaches involve helping organizations visualize and brainstorm the conflicts in order to find non-conflicting resolutions. These approaches include P-TRIZ¹⁹ and the Current Reality Trees found in the Theory of Constraints²⁰ work. Current Reality Trees are strongly related to objective maps. In addition, a great deal of work has been done to create a formal mathematical basis for decision-making. These approaches involve pair-wise comparisons of individual options at multiple levels to develop objective weightings of the relative value of alternatives. The most prominent of these approaches are the Analytic Hierarchy Process (AHP)²¹ and Analytic Network Process (ANP)²².

2. Linking Objectives to Capability and Value Perspective

An objective is related to value items and value propositions defined in various value streams. Typically, each low-level objective in an objective map will relate to a value item in a value stream. Figure 2.1.9 shows an example based on the objective map example depicted in figure 2.1.8.

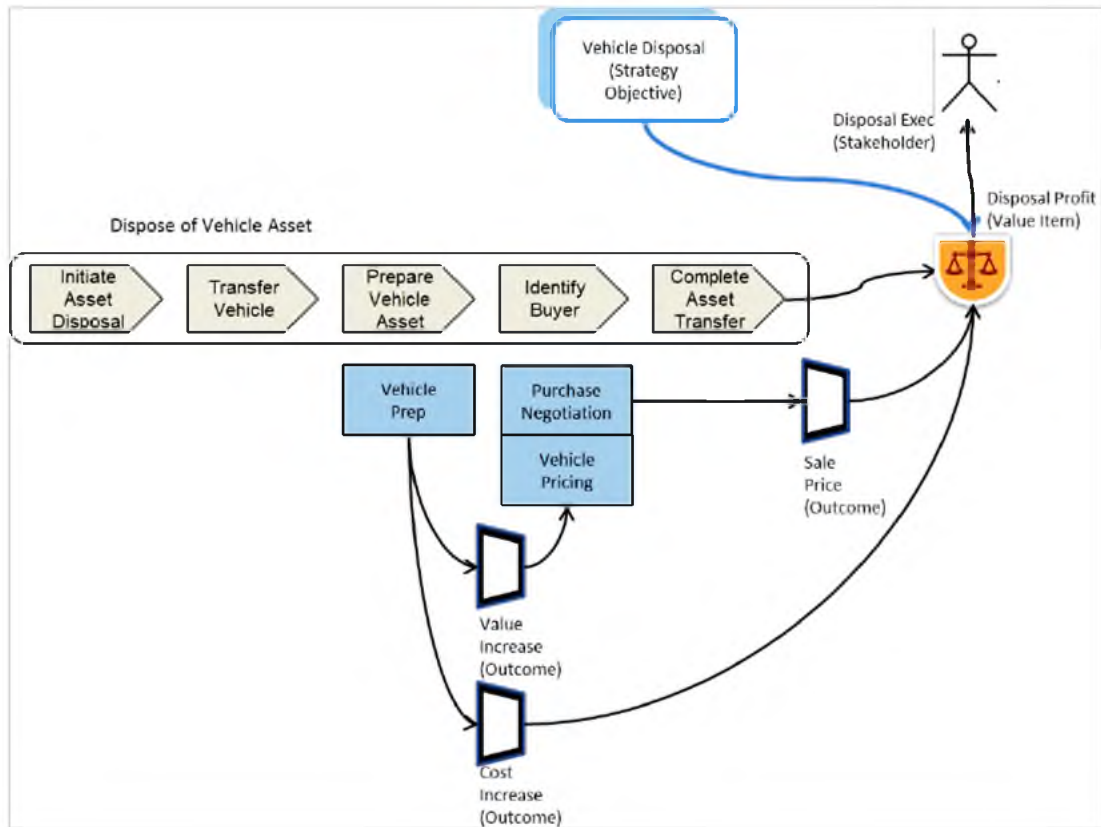


Figure 2.1.9: Objective Relationship to Value Stream

The value item of the last stage of the “Dispose of Vehicle Asset” value stream is “Disposal Profit”, which primary components are the sale price of the vehicle and the cost of the vehicle. The cost would include the cost of acquisition and depreciation as well as the cost of maintenance. The outcomes of various capabilities contribute to the value items. Figure 2.1.9 has been simplified for presentation purposes and does not show all outcomes and value items. To achieve the strategic objective, a course of action must alter capability outcomes by changing the capability instances that produce each outcome.

Linking objectives to value items provides information about changes needed to achieve the objective and provides insight into capabilities that will need to be altered to achieve the objective. To be clear, it is not the capability that is being changed by the strategic course of action, but rather operating model perspectives, such as people, processes, and technologies, that provide resources to the capability instances that carry out the work needed to achieve the outcomes.

A capability instance, introduced in section 2.2, is defined as “a distinct implementation of a capability, as it is utilized within a specific business unit, value stream, or other deployment”. By tracing objective impacts to capability instances via value items, the business architecture practitioner can flesh out details of the course of action, consider alternatives, and determine the capabilities and related business components, such as information or technology, that would be affected.

Carrying out a strategic course of action requires resources. The skills and information resources to carry out a strategic course of action are likely to be found in business units that implement capabilities that can execute the course of action (e.g., project offices). In addition, the strategic course of action will alter the skills, resources, processes, and management practices of business units that are to be changed in order to achieve the strategic objectives. Matching courses of action to capabilities that will carry out the course of action or be altered by the course of action allows the business architecture practitioner to estimate the degree of change to a business that will be needed to execute the strategy.

Identifying capability gaps leads to clarification of required action items to fill those gaps, where each action item should be evaluated based on the value items being delivered, the timing of that delivery, and the investment required. With each value item as a component in the AHP/ANP, it is possible to use pair-wise comparison to evaluate complex alternatives. However, determining value itself is often complex. An approach that uses Quality Function Deployment (QFD)²³ or a similar technique can help by allowing individual features and competitive differentiation to become more focused. By applying this kind of approach to value items from different value propositions, more reliable evaluations of value can be made. Note that some outcomes are simply needed to satisfy preconditions for capabilities and have little direct link to business value.

Applying the value item and capability instance objective impact analysis requires a relatively mature capability map and value streams, and corresponding cross-mapping for value streams impacted by the strategic objectives being assessed. Where there are gaps in these formal business architecture mappings, practitioners will need to quickly mature those mappings to complete the analysis.

3. Linking Objectives to the Environment

Factors in the environment may enhance or diminish the business value of any strategy and related objectives. In other words, these factors limit the set of options that an organization *can* successfully choose to pursue. A couple of approaches to making this determination have been previously discussed: SWOT analysis and Porter’s Five Forces Model. The value of such approaches is that each categorization is associated with a type of assessment; an opportunity in

the SWOT analysis can enhance the business value of a strategic objective if, for example, it carries a “first-to-market” advantage.

These types of analyses are well described in other sources. The task for the business architecture practitioner is to apply them to the organization’s strategy map. Objectives supported by strong capabilities are generally considered to be strengths. However, outcomes with high value, such as customer loyalty, can also be considered to be strengths. Opportunities can be related to strategic objectives and indirectly to the contemplated initiatives that result in the accomplishment of the strategic objectives.

For example, a market survey may reveal a desire for a service that nobody is providing, and the strategic objective is to provide such a service. Threats are external forces that oppose current or contemplated strategic objectives, and a potential response to the threat could be to try to create a stronger market position to overwhelm the threat, to accommodate the threat (e.g., by reducing capacity to maintain profitability while accepting a loss of revenue), or in extreme cases, by abandonment of the strategic objective. An analogous mapping framework can be constructed using the Porter Five Forces Model and other strategy approaches.

Scenario planning is an alternative, dynamic approach to strategy analysis. In this approach, analysts imagine changes in objectives that could be taken by marketplace participants, or situational changes that could happen as the consequence of a natural event (e.g., a major flood, an unusually productive harvest, or the discovery of a substantial natural resource) or a man-made event (e.g., an economic downturn). Because these changes are external to the enterprise that is the subject of the business architecture, they are typically called “events”.

To evaluate these events, businesses create strategy maps to realize business value on the occurrence of a particular event. The strategy is implemented when the corresponding event is determined to have taken place, eliminating delay and loss of initiative that would result if the strategic response had not been planned for in advance. The ability to act quickly and decisively in such a situation can produce a competitive advantage. However, it is important to be clear about the rationale for saying that the occurrence of the event will lead to the opportunity to which the strategy is directed. The possibility that the occurrence of the event will create a hazard for the strategy must also be considered, or that the hazard will adversely affect another part of the business.

Scenario planning can be linked to strategy maps by linking the event outcomes to the objectives of the strategy that they support. The resulting strategy map then becomes contingent on observing the event action or its outcome taking place. An example of this approach can be found in *The Knowing Organization*²⁴. Royal Dutch Shell used scenario planning to anticipate the formation of oil cartels and the resulting shortages of 1973, and to then acquire other strategic

reserves. In this case, the event outcome was a loss of supply from certain reserves, and the action was the reduction of supplies by cartel nations. A preceding action (and precondition) was the formation of the cartel. The potential outcome of this event was countered by the strategic acquisition of supplies from unaffected reserves according to the contingent strategy.

Approach to Strategy Mapping

The discipline of strategy mapping falls within the bounds of the “Establish Business Strategy” stage of the strategy execution framework depicted in figure 1.5 in the *BIZBOK® Guide*. The strategy mapping approach and guidelines that follow utilize a template to map the hierarchy of business objectives described in the Norton Kaplan Strategy Map. The template discussion includes an example of a partially completed objective map.

Strategy Mapping Template

The strategy mapping template shown in figure 2.1.10 is based on the tiered objective mapping hierarchy defined by the Norton Kaplan Strategy Map. The hierarchy seeks to provide a standard way of organizing and associating business objectives across different strategic planning perspectives to create rationalized, actionable, and interrelated business targets for an organization.

Norton Kaplan Strategy Map — Objective Mapping					
Financial Perspective	Customer Perspective	Internal Perspective	Technology Investments	Human Capital Perspective	Governance Perspective

Figure 2.1.10: Strategy Mapping Template

The strategy mapping template leverages Norton and Kaplan’s work on creating related sets of objective hierarchies.²⁵ The six tiers are aligned as corresponding columns in the mapping template. An organization should consider the following perspectives as it articulates its business objectives.

The financial perspective focuses on tangible outcomes in traditional financial terms, decomposed into productivity and growth strategies. Productivity focuses on improving cost structures and increasing asset utilization. Growth strategies focus on expanding revenue opportunities and enhancing customer value. These top-level objectives provide revenue-generating and cost-optimization drivers that serve as a basis for defining customer and other supporting objectives.

The customer perspective, which defines value propositions that target customers, decomposes into price, quality, availability, selection, functionality, service, partnership, and brand objectives. Each of these subtopics provides a unique lens into improving the customer experience.

The internal perspective considers a wide range of operational, customer management, innovation, and regulatory business objectives, each of which should support customer and financial strategies. Organizations would often find these objectives linked to the needs and directives of directors and other mid-level management.

The learning and growth perspective frames objectives linked to investments in technology, human growth, and governance. Incorporating these learning and growth perspectives into the strategy map ensures that a balance is struck between automation, human resource management and training, and organizational governance in support of financial and customer-related objectives. Note that organizations often fall into the trap of leading with technology-related objectives and directives that are decoupled from clearly defined financial, customer, and related internal business objectives. Connecting technology-related objectives into the strategy map helps ensure that technology serves as an enabler of well-formed business objectives and does not supplant or displace those business objectives.

Strategy Mapping Guidelines

The guidelines that follow are not meant to replace Norton and Kaplan's published works on strategy mapping, but are intended to reinforce an organizing approach that leverages the template in figure 2.1.11, which is based on the Norton Kaplan approach. Organizing business objectives into a formal structure enables management to envision how related objectives enable other objectives across different business perspectives. Formal mapping also provides a means to capture distinct strategic planning inputs to the business impact analysis phase that follows.

A prerequisite to mapping strategies in a formal template involves gathering inputs that include documentation containing management goals, objectives, and related directives. Where available, mapping teams should also obtain annual reports, investor call transcripts, completed business models, input from directors and managers, and business architecture effectiveness and impact ratings, as defined in *BIZBOK® Guide* section 3.7.

Mapping teams should strive to frame each objective in an actionable, measurable, and attainable format, with the understanding that objectives framed from a financial or customer perspective will be positioned at a higher level and, therefore, be less actionable than would internal, technology, human capital, and governance objectives. General strategy mapping guidelines are as follows.

1. Consider the financial perspective a starting point; derive revenue, profit, and asset and cost optimization from strategic directives, annual reports, and investor calls.
2. Examine each aspect of the customer perspective and incorporate objectives relating to each of those perspectives with input sources coming from customer experience teams and related research.
3. Identify internal perspectives that support financial and customer perspectives with a focus on:
 - Operations, including optimizing or realigning work, consolidating or retooling operating environments, improving performance, and streamlining partner and supplier engagement
 - Customer management, including customer support, service design and delivery, and the ability to recognize customers across business units and regions
 - Innovation, including investments in product design, customer engagement, or breakthroughs in automation
 - Regulatory objectives focused on policy compliance, risk management, crisis management, or other directives from management and regulatory agencies
4. Consider learning and growth perspectives:
 - Technology and automation investments that enable and support internal, customer, and financial objectives
 - Human capital investments in terms of positioning and maximizing personnel, training, mentoring, and competency-matching
 - Governance as it relates to organizational design, restructuring, and other changes
5. Where appropriate, leverage effectiveness and impact metric ratings for value streams and capabilities to highlight potential areas where management may have overlooked weaknesses in stakeholder value delivery and related enabling capabilities.

Using the strategy mapping template, figure 2.1.11 shows an example of four financial objectives, where the financial objective Enhance Customer Value is traced through each succeeding tier, from customer through governance. The mapping example cascades to show one objective decomposition for one objective defined in the preceding tier. Each objective should be coupled with a KPI, the accompanying threshold of success associated with that KPI, and an action item, if one can be determined at this stage.

Norton Kaplan Strategy Map - Objective Mapping					
Financial Perspective	Customer Perspective	Internal Perspective	Technology Investments	Human Capital Perspective	Governance Perspective
Improve Cost Structure					

Norton Kaplan Strategy Map - Objective Mapping					
Financial Perspective	Customer Perspective	Internal Perspective	Technology Investments	Human Capital Perspective	Governance Perspective
Increase Asset Utilization					
Expand Revenue Opportunities					
Enhance Customer Value					
	Know the customer				
		Have one view of customer across ecosystem			
			Establish single data source of truth		
				Retrain support teams	
					Consolidate customer contact centers

Figure 2.1.11: Strategy Mapping Example

Examining figure 2.1.11, one can see similarities across various strategic objectives levels, with objectives becoming more specific and more measurable as they move into the internal and the learning and growth perspectives. One point to make with regard to the technology objective is that, in isolation, the objective to create a single source of truth for customer data may seem admirable but hard to justify. When this technology objective is linked to financial, customer, and internal objectives, it becomes easier to create widespread justification for related investments.

In practice, organizations typically craft a set of business objectives on an annual basis, but these are often framed as directives to take action as opposed to what the business seeks to achieve. This common situation often means that what the business seeks to achieve is lost as projects and budgets are quickly formed across business units. The fallout from taking a directive versus an objective-oriented strategic planning approach often results in unclear measures of success and the inability to determine if an objective is met or if an initiative failed or succeeded.

When directives are not linked to clear business objectives, unforeseen business challenges tend to surface in areas that appeared to be unrelated to the directive at hand. For example, issuing a directive to introduce a new Customer Relationship Management (CRM) system, when there are already multiple systems in place that track customers, is likely to create more customer discontinuity that further hampers the customer experience.

To prevent these and other problematic outcomes, business architecture practitioners may be called upon to reinterpret unexplained, seemingly disconnected management directives and

recast them into well-articulated business objectives. The Business Strategy Impact Analysis Mapping Template that follows provides a useful means of addressing the lack of clarity with associated strategies that don't have well-defined objectives.

Business Strategy Impact Analysis Mapping Template

Tying business strategy to business architecture leverages basic concepts that are generally common or derivable from the strategy mapping incarnations viewed previously within this section. The idea is as follows: Strategy mapping highlights goals and objectives along with identified courses of action to be taken to achieve those goals and objectives. If the objectives and courses of action can be quantified, they can be mapped to the impacted aspects of the business using business architecture domains, which in turn provides context for establishing initiatives and related solutions.

Figure 2.1.12 depicts the strategy perspectives an organization seeks to attain and corresponding business architecture domain impacts. Goals, defined as “an end toward which effort is or should be directed” provide strategic context on achieving a vision. Corresponding objectives state the specific, quantifiable, and achievable results to be achieved to meet that goal. KPIs and related KPI metric targets provide the means of determining if an objective has been met or has failed to meet expectations. The guidelines that follow provide insights into how to perform strategy impact analysis and complete the aforementioned template.

Strategy Impact Analysis Template						
Goal	Objective	KPI / Metric	Course of Action	Value Stream Impacts	Capability Impacts	Initiative Impacts

Figure 2.1.12: Strategy Impact Analysis Mapping Template

Business Strategy Impact Analysis Guidelines

1. Populate the objectives and related goals defined in the strategy mapping template into the impact analysis mapping template.
2. Work with business SMEs to articulate KPIs, corresponding metric thresholds to achieve, and action item(s) for accomplishing that objective.
3. Examine the objective statement to derive keywords that help target value stream impacts including:
 - Nouns that target triggering or participating stakeholders
 - Nouns targeting business object names in the value stream name or description
 - Verbs that provide action indicators pointing to value streams and related stages

4. List the value streams impacted by each objective and related action item.
5. Where applicable, narrow the objective impact analysis to specific value stream stages and identify those accordingly.
 - The template may be expanded to show impact points for value stream stages
6. Leverage value stream / capability cross-mapping blueprints to filter the capabilities that enable impacted value stream stages targeted by the corresponding business objectives and action items.
7. For each set of candidate capabilities, revisit the objective and action item(s) to identify referenced nouns in the objectives and action items that equate to business objects in the capability map.
8. Leveraging the initially targeted value streams and capabilities, expand the analysis to identify:
 - Information concepts used or modified by the impacted capabilities
 - Stakeholders targeted by the objective in context of the value stream and related stages
 - Products used within the context of the targeted value streams
 - Candidate business units where the value streams and capabilities might have a secondary impact
9. Based on the timing of the analysis, identify potential, proposed, or in-flight initiatives that would need to be engaged to meet the stated objective or are secondarily impacted by the work being targeted by the action item.

Figure 2.1.13 highlights a goal, objective, KPI, action item, and related business impacts. This example represents one format that may be applied to determining and conveying business impacts of a given business objective. It serves as the basis for reasoning out the next steps when examining the overall scope of change impacts of a given business objective.

Strategy Impact Analysis Template						
Goal	Objective	KPI / Metric	Course of Action	Value Stream Impacts	Capability Impacts	Initiative Impacts
Know the Customer	Recognize customer 100% of time regardless of contact point, business unit, or contact method	Customer recognition percentage	Consolidate all views of customer across business ecosystem	Establish Financial Account Execute Transaction Settle Payment Obtain Help Modify Customer Information	Customer Management Submission Management Agreement Management Financial Account Management Work Management	Customer Consolidation Program

Figure 2.1.13: Business Strategy and Tactic Derivation Using Business Architecture

When a given objective touches a capability, value stream, or information concept, the ripple effect may be unnoticeable to executives. The business architecture practitioner can depict the impacts of a given strategy, which may include tracking business artifacts to the IT architecture as discussed in the *BIZBOK® Guide* part 6.

Once these impacts are clearly identified and articulated, management may shift its strategy. For example, if a project is focused on customer improvements for a given division, the cross-business unit analysis provided by value streams, capabilities, and information maps may trigger the need for a more comprehensive, holistic solution. In other words, the additional perspectives delivered by business architecture often result in management reevaluating and refining its approach and related funding models.

Defining Strategy within the Business Architecture Knowledgebase

Incorporating capabilities into the larger business architecture is important because business-to-business and business-to-IT cross-mappings provide the basis for much of the analysis associated with business/IT transformation.

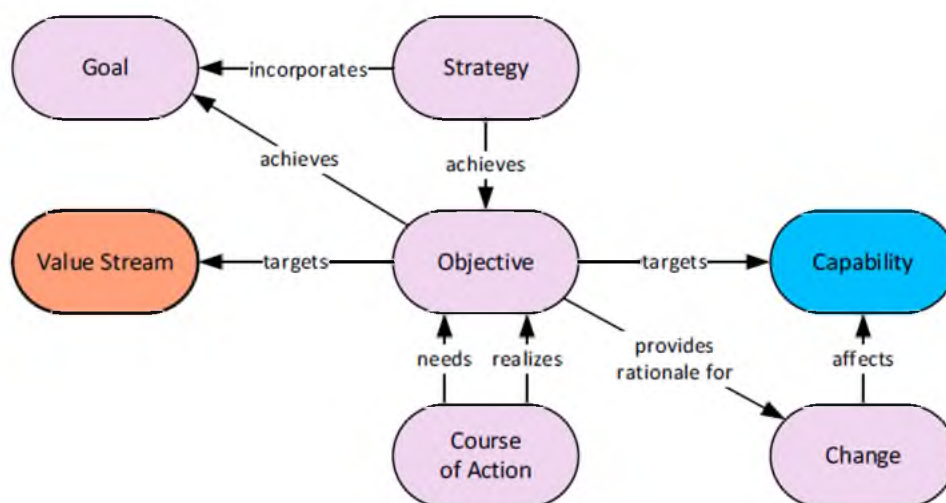


Figure 2.1.14: Strategy Knowledgebase Relationships

The following represent the key relationships that are required to support these analyses.

1. Strategy incorporates one or more goals.
2. Strategy achieves one or more objectives.
3. An objective, which is actionable and measurable, achieves a goal.
4. Objective targets one or more value streams.
5. Objective targets one or more capabilities.
6. Course of action realizes an objective.
7. Objective is realized through a course of action.
8. Objective needs a course of action, which implies a dependency on a course of action that realizes another objective.

9. Objective provides a rationale for change.
10. Change affects a capability.

Interpreting this set of relationships can be summarized as follows. Assume a strategy has one goal that is achieved by two objectives. Satisfying one objective is a prerequisite for completing the second. The course of action associated with the second objective needs the first objective to be achieved as an input. Each objective produces a rationale for a change, and a change affects one or more capabilities.

Extended views in other domain models support the broader strategy mapping perspective. For example, once a capability is targeted for a change, driven by a given objective, analysts may extend that change impact to one-to-many instances of that capability and specific behaviors associated with each of those capability instances. Capability targeting leads to subsequent targeting of information concepts associated with those capabilities and the business units where those capabilities are realized in practice. Refer to these extended business knowledgebase mappings to information, organization, and other domains in other sections in *BIZBOK® Guide* part 2.

Summary

By creating an integrated framework for strategy definition and execution, organizations can rapidly communicate core values and objectives. A formal framework establishes a way for innovation to be identified within an organization and for potential differentiators to be explored. The choice of strategy mapping approach is driven by the specifics of a particular organization as well as the strategy formulation approach employed.

A strategy mapping effort must produce clearly defined, actionable business objectives. Strategy mapping formalization is an important step in interpreting the impacts of a set of business goals and objectives, while impact analysis involves associating objectives with value streams, capabilities, and related business perspectives.

¹ J. B. Quinn, “Strategies for Change: Logical Incrementalism”, *Academy of Management Review* (Homewood, IL: Richard D. Irwin, Inc., 1980).

² The capitalized term “Strategy Map” refers to the Norton Kaplan blueprint structure while lower case references to “strategy map” refer to generic mappings of strategy.

³ Osterwalder, A. *The Business Model Ontology: A Proposition in a Design Science Approach*, Ph.D. Thesis, Université de Lausanne, 2004.

⁴ Osterwalder, A., Pigneur, Y., Clark, T., *Business Model Generation: a handbook for visionaries, game changers, and challengers*, Wiley, Hoboken, N.J., 2010.

⁵ R. Rollinson and E. Young, *Strategy in the 21st Century*, (Chicago: Looking Glass Publishing, 2010).

⁶ *Harvard Business Review* survey of 1,000 executives, 2010.

⁷ Value analysis refers to the general set of techniques for determining whether and how value is created. Its use in this document should not be confused with the specific technique called “value analysis” or “value engineering” that was developed at GE during World War II. See *BIZBOK® Guide* section 2.4 for more background on value analysis.

⁸ P. Levinand and C. Mainard, *The Essential Advantage: How to Win With a Capabilities-Driven Strategy* (Boston: Harvard Business School Press, 2011).

⁹ I.H. Ansoff. “Strategies for Diversification”. *Harvard Business Review* (September/October 1957).

¹⁰ “The Five Competitive Forces That Shape Strategy”, *Harvard Business Review*, Jan. 2008.

¹¹ R. S. Kaplan and D. P. Norton, *Strategy Maps: Converting Intangible Assets into Tangible Outcomes* (Boston: Harvard Business School Press, 2004).

¹² Business Motivation Model (BMM), *Object Management Group*, 1997-2013, www.omg.org/spec/BMM.

¹³ Hoshin Kanri: Visual Strategic Mapping, *Hoshin Kanri: Visual Strategic Mapping*, 1997-2013, <http://www.hoshinkanripro.com>.

¹⁴ M. Lagace, “Mapping Your Corporate Strategy”, *Harvard Business Review*, Harvard Business School, 2004, <http://hbswk.hbs.edu/item/3888.html>.

¹⁵ E.P. Learned, C.R. Christiansen, K. Andrews and W.D. Guth, *Business Policy, Text and Cases* (Homewood, IL: Richard D. Irwin, Inc., 1969).

¹⁶ M. E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: Free Press, 1980).

¹⁷ Source: Neal McWhorter, Cofounder, Business Architecture Guild.

¹⁸ Business Motivation Model, Version 1.1, *Object Management Group*, May 2010, <http://www.omg.org/spec/BMM/1.1/PDF/>

¹⁹ Howard Smith, *Introducing PTRIZ*, 2006, <http://trizmethods.blogspot.com/2006/01/introducing-p-triz.html>.

²⁰ Eliyahu M. Goldratt, *What is this thing called Theory of Constraints and How Should it be implemented?* (Barrington, MA: North River Press, June 1990).

²¹ Thomas L. Saaty, *Fundamentals of Decision Making and Priority Theory with the Analytic Hierarchy Process*, Vol . 4, 2nd ed. (Pittsburgh: RWS Publications, 2006).

²² Wikipedia, *Analytic Network Process*, http://en.wikipedia.org/wiki/Analytic_network_process

²³ Wikipedia, *Quality Function Deployment*, http://en.wikipedia.org/wiki/Quality_function_deployment

²⁴ C. W. Choo, *The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge, and Make Decisions*, 2nd ed. (New York: Oxford University Press, 2006) 24-27.

²⁵ R. S. Kaplan and D. P. Norton, *Strategy Maps: Converting Intangible Assets into Tangible Outcomes* (Boston: Harvard Business School Press, 2004).

SECTION 2.2: CAPABILITY MAPPING

This section discusses how to identify, map, manage, and utilize business capabilities. The primary blueprint resulting from this exercise is the capability map. Capabilities do not stand alone. Therefore, understanding how capabilities are used in planning, issue analysis, solution framing, and gaining visibility into every aspect of the business is just as important as understanding how to articulate those capabilities. This section defines capability, discusses related benefits, outlines mapping principles and guidelines, details the mapping process, discusses capability-based planning, and ties capability to other aspects of business architecture.

Defining the Business Capability

A business capability, or simply a “capability”, defines *what* a business does. It does not communicate or expose where, why, or how something is done — only *what* is done. Specifically, the business capability is “a particular ability or capacity that a business may possess or exchange to achieve a specific purpose or outcome”.¹ This phrasing is the standard definition for a capability and has been in common use for many years in the business architecture community.

Understanding *what* a business does is just as important as understanding *how* something is being done. Focusing on what a business does provides a method to analyze complex business environments in ways that can be digested readily by executives and planning teams. Viewing a business as a set of basic capabilities opens the door to being able to visualize business ecosystems in a wide variety of ways while not obfuscating the message. More detail is available by zooming in on lower levels within a given capability. Each level of detail, however, continues to identify *what* is being done — not how, where, or why.

The capability map in its entirety delivers a concise, non-redundant, business-centric view of the business at its most basic level, and it encompasses a complete picture of what that business does. Capabilities represent the basic building blocks of a business. These building blocks can be used, improved, rearranged, and leveraged in a variety of ways to achieve an infinite range of business objectives; however, a business must first define those building blocks.

Once a capability map is in place, issues, strategies, and plans at any level or within any business unit can leverage a common vocabulary. When an issue that crosses organizational boundaries arises, the ambiguity that envelops meeting after meeting and project after project is replaced by a common understanding of exactly what is being discussed. As a result, resolutions can be achieved in less time and with less confusion and infighting that is often attributed to misunderstandings that arise when attacking problems that cross business unit and political boundaries.

A capability can appear simple enough on the surface. Consider the example of a capability called Partner Management. This capability is common to most public and private sector businesses. Partner Management is considered a level 1 capability. Level 2 capabilities define subsequent decompositions of Partner Management. Capabilities are decomposed as required to clearly articulate what a business does to the level of granularity desired or required. Figure 2.2.1 depicts Partner Management decomposed down to level 3.

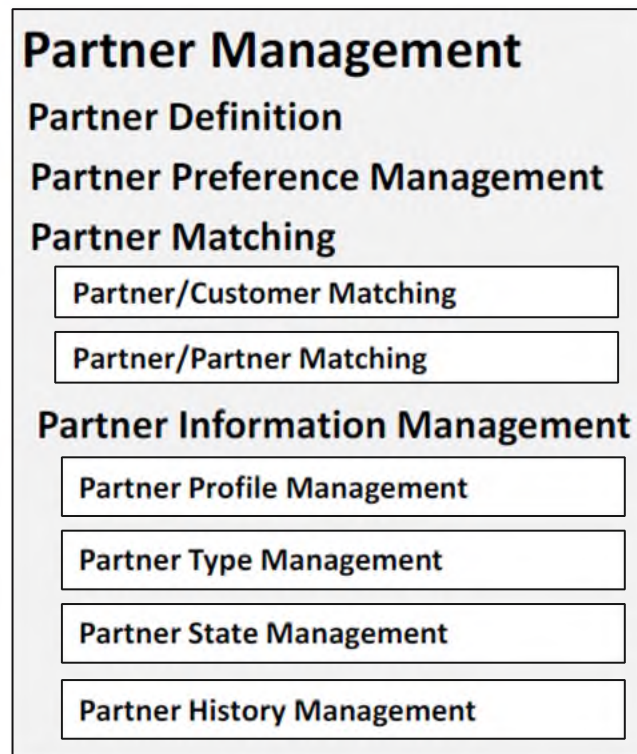


Figure 2.2.1: Capability Decomposition Example

Figure 2.2.1 shows a common approach for representing capabilities with the highest level (i.e., level 1) in a boxed-in area called Partner Management that decomposes to levels 2 and 3. This mapping represents an easy way to depict capabilities that is accessible to business professionals. Figure 2.2.1 introduces concepts that are explored further in this section and include:

- Basing level 1 capabilities on a distinct business object (e.g., Partner) that enables a separation of concerns from other business objects, such as an Agreement
- Using a Matching capability that enables a Partner, for example, to be associated with a Customer or another Partner
- Establishing a Partner Information Management capability unique to this business object to ensure that all information aspects of this business object are managed effectively

A business object is defined as follows.

“A representation of a thing active in the business domain, including at least its business name and definition, attributes, behavior, relationships, and constraints, that may represent, for example, a person, place, or concept.”²

Objects in the context of capability mapping include stakeholder category, contract, asset, product, message, and more conceptual items such as an operation, work item, channel, or network.

The separation of business concerns enables a business to separate the management of Partners, Customers, Agreements, Assets, Products, and other distinct objects, and further relate those objects in a wide variety of ways needed to further business viability. The advantages of this type of separation become clearer as this section outlines principles, guidelines, and additional examples.

Deconstructing Business Capability

Deconstructing the capability, which is an abstraction of what a business does, provides a sense as to how capabilities fit within an organization. Figure 2.2.2 provides a capability perspective based on how capability relates to and enables a business. For example, a Customer Risk Management capability would rely on customer, location, agreement, and other information, and also modify customer information. Multiple business units, shown as an organization relationship, have Customer Management abilities, and Customer Management capabilities enable value streams that deliver customer value. These relationships are shown in figure 2.2.2.

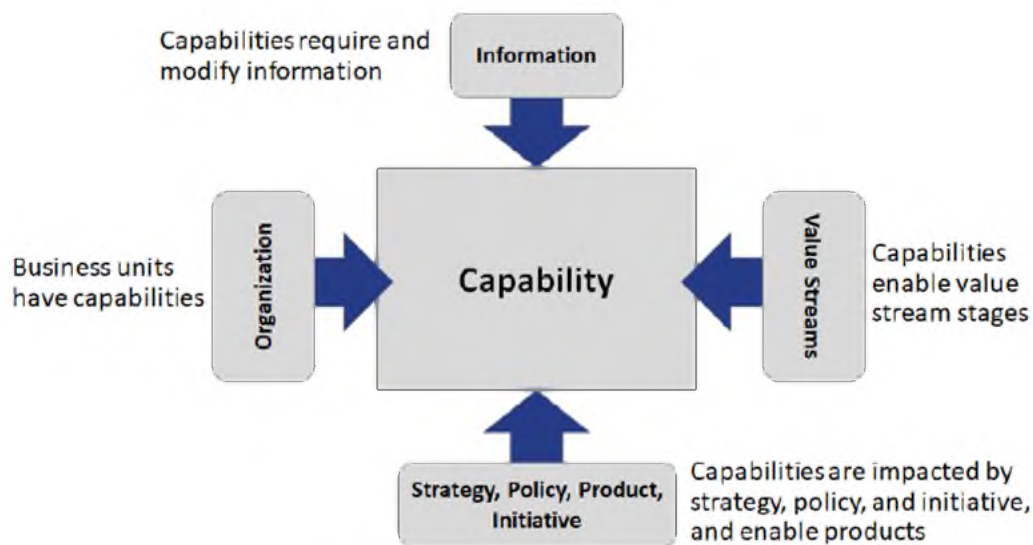


Figure 2.2.2: Capability Relates to Other Aspects of a Business

The aforementioned figure 2.2.2 relationships show how capability is the core domain that links the remaining core domains of information, organization, and value streams. The relationship between capabilities and value streams in particular is the main vehicle for organizing a business's thinking about how capabilities may be arranged, improved, or added to improve stakeholder value delivery. All three of these relationships collectively establish the centerpiece of business architecture as a means to impact and deliver business strategy. More details on these domain relationships to capability are covered in the information, organization, and value mapping sections of *BIZBOK® Guide* part 2.

Additional relationships shown in figure 2.2.2 involve other aspects of business architecture as well as IT architecture. For example, a strategy may contain business objectives that directly impact one or more capabilities. In addition, certain policies can impact a set of capabilities. Capabilities also support products by enabling product entitlements that represent the service aspects of a product. These important relationships are explored in the strategy mapping, policy mapping, product mapping sections of *BIZBOK® Guide* part 2. In addition, IT architecture's role in capability automation is discussed further in *BIZBOK® Guide* part 6.

Note that figure 2.2.2 does not imply that a capability contains or subsumes organization, information, value streams, resources, or any other aspect of the business. This misperception has resulted in confused capability mapping efforts and has created flawed views of the business. Relationships between business capability and other aspects of the business are just that — relationships. It is the power of these relationships that provides the visibility required to assess the root cause of an issue and determine what it will take to find and deploy a solution. For example, if four business units share Agreement Management capabilities linked to the same business partners or vendors, it is likely that workflow and related information tied to the management of third parties and related agreements are being managed in ineffective ways that result in high costs and inefficiencies.

If these capabilities are poorly deployed, highly fragmented, poorly coordinated, and cost the company more than they should, management can assess which specific lower-level capabilities are causing the problem. Tracing capabilities to value stream implementations and dozens of parallel, yet uncoordinated, processes — each of which relies on disparate software systems and tracking databases (i.e., IT resources) — provides the key to assessing a wide variety of business and technology reasons underlying the problem. The capability, in this case, is the linchpin to identifying the business units, suppliers, processes, information, technologies, and other resources requiring attention.

While redundancies and inconsistencies are the source of numerous business challenges for many organizations, they are not always problematic. It is expected, for example, that life, health,

and property and casualty business units within an insurance company would each have a Claims Management capability. In this case, organization, information, and related relationships may be leveraged to establish new ways to collaborate across business units to increase the effectiveness of this business capability.

The relationships to any given capability can number in the hundreds and these complexities often remain hidden. When this happens, executives, planners, and deployment teams struggle to gain a common understanding of key issues and solutions. Business capability and related business abstractions provide a vocabulary, analytical discipline, and formal mapping structure that can be institutionalized to address a wide variety of business challenges that emerge on a regular basis. Two important concepts, capability instance and capability behavior, help define the context of capabilities from a practical usage perspective.

The Capability Instance

As a rule, capabilities exist in multiple business units and enable multiple value streams and value stream stages. As a result, a useful concept called a “capability instance” has emerged that allows practitioners to associate unique attributes, such as effectiveness or automation levels, with specific instances of a given capability in practice. A capability instance is defined as “a specific realization of a capability, as it exists or is envisioned to exist, in the context of a given business unit or other situational context”. In practice, identifying capability instances provides the business architecture practitioner and consumer with the flexibility to assign unique heat map values and other ratings to a capability based on its effectiveness or impact within a given business unit or value stream.

The capability instance becomes increasingly important when viewing capabilities within context of a given value stream stage, business area, or technology-enabled solution. While the idea of broadly consistent capabilities, related outcomes, and behaviors is ideal, the reality is that fragmentation and redundancy across business ecosystems result in widely disparate capability deployments and gaps from business unit to business unit. The capability instance allows a business to articulate and target these issues and disparities in heat maps and similar metric analyses as input to planning and investment strategies.

Capability Behavior

Capabilities can take on unique characteristics or conduct themselves in dissimilar ways across different business units. These differences are represented in capability mapping as capability behavior, which is defined as follows.

“The way in which a capability acts or conducts itself in certain circumstances or instances”.

Differences in capability conduct are not unusual, and in some cases can be cause for concern. For example, three different loan groups, across product lines or divisions, may each have an instance of a Customer Risk Determination capability. A customer applying for a loan under the same scenario and with the same background information should have a similar risk rating across all three divisions. However, if the behavior of the Customer Risk Determination capability varies from business unit to business unit, one loan department may issue a loan to a customer deemed low risk while that same customer was turned down as high risk by another group or division. In this example, the business may prioritize addressing these variances in capability behavior.

Benefits of Using Business Capabilities

The emergence and growing popularity of the business capability map is due to the fact that organizations using business capabilities see both immediate and lasting business benefits. The benefits of capability mapping are as follows:

- **Capabilities provide businesses with a common vocabulary.** Having a common language for “what” a business does enables rapid situation analysis of critical issues and streamlines efforts to craft solutions to those challenges. This is particularly true for business issues that cross divisional, business unit, or enterprise boundaries. For example, if the Product Design capability is impaired, executives have a common language to discuss the problem, regardless of the division, department, or outsourced business units involved. Business meetings spend too much time trying to gain a common understanding of what people are saying. Even worse, individuals think they understand a situation, but, actually, the degree of understanding varies among individuals and contains gaps that result from multiple, disparate perspectives. Concepts such as account, product, customer, solution, and service are a short list of commonly misunderstood and inconsistently defined terms that dramatically slow situation analysis and resolution.
- **Capabilities provide a way to see what is common across a business.** This benefit follows from the previous discussion on vocabulary as well as the orientation of capabilities around business objects. Once the essence of a business is boiled down to common capabilities, management can see which business units have the same or different capabilities and seek common ways to improve them. For example, if Product Design is done poorly across multiple divisions, maybe the problem is systemic and requires a more comprehensive solution. Investments can be shared and allocated more effectively under this framework. Common capabilities also provide insight into value stream improvement, process streamlining and consolidation, organizational alignment, and IT investment.

- **Capabilities enable laser-like business investment focus.** An enterprise invests heavily to ensure that certain capabilities adequately support the business. If, for example, business leaders determine that a Monetary Amount Management capability is underperforming, they can invest in improving that capability. Another view on this same scenario may be that the organization is already investing in improving Monetary Amount Management, but executives cannot articulate how much budget is allocated to these efforts across the enterprise. Capability-based investment analysis is a growing trend that enables business leaders to focus efforts on all essential aspects of the organization that impact that capability. Monetary Amount Management, for example, may be implemented in numerous processes across dozens of business units and application systems, each of which uses conflicting information views. Capability-based planning allows analysts and planning teams to cut through the surrounding noise and focus on the portions of the business that require resolution, while ensuring that the corresponding investment is maximized across multiple areas and not replicated or inconsistently applied.
- **Capabilities serve as a baseline for strategic planning, change management, and impact analysis.** Capabilities provide a business-oriented starting point for discussions around strategic planning and the impacts of those plans from an enterprise perspective. Within the Monetary Amount Management example, there are countless processes, information views, and technology resources that enable this capability. As a rule, there is little visibility into the impacts of any change driven by a strategy to realign Monetary Amount Management based on weaknesses in the current business model or deployment of that model. Capabilities serve as the common starting point for tracking the horizontal and vertical impacts of strategic and tactical directives coming down from the executive team.
- **Capabilities are the basis for transformational design and deployment.** Business architecture is established by the business and for the business. As a result, capabilities create a baseline for business/IT transformation and alignment discussions. Because capabilities represent a business-focused abstraction of what a business must do to thrive and survive, they establish a fundamental focal point for discussions on business requirements from informational and automation perspectives. Capabilities provide a concise set of definitions that can be leveraged by IT to create deployable services that automate those capabilities. Services automate “a common way to do the same thing” across the entire enterprise with predictability. Establishing a common vocabulary across business units, supported by common information views and value streams, provides a foundation for business/IT transformation planning. This foundation has been missing in organizations for years

and has resulted in IT spending too much and delivering too little.

Using the business capability as the focal point for problem analysis, strategic planning, investment determination, and initiative funding allows management to cut through the complexity inherent in most enterprises. Capability analysis offers executives, planning teams, and steering committees a way to communicate *what* must be resolved without initially delving into the details of the *how*. At the same time, it allows the *how* to be tied directly to the *what*, formalizing alignment and enabling validation that a given effort is achieving the desired business results.

Principles of Business Capability

Defining, using, and representing business capabilities can initially be challenging for an organization. Establishing certain principles (“agreed upon truths to guide our actions”) streamlines efforts to create a common set of business capabilities and understand how they are used in crafting and delivering business solutions. These capabilities are in keeping with the high-level business architecture capabilities discussed in part 1 of the *BIZBOK® Guide*. Important principles of business capability include:

1. **Capabilities provide business-centric views of an organization.** Capabilities describe what a business has the ability to do. If a business has a given ability, even if it is weak, it is a capability. Keep the discussion of systems on the sidelines while going through this exercise. Capabilities are not about systems but about the business. As the capability work matures, the team can further validate capabilities by mapping them to information assets, value streams, business units, and IT assets.
2. **Capabilities are defined in business terms.** A capability is a short, concise name for a particular business ability. For example, Product Management is a common capability. Business professionals, from the frontlines to the executive suite, should be able to see a business capability and immediately understand what it means. Definitions will help clarify capabilities, but the intent is to use the language the business can easily digest.
3. **Capabilities are based on business objects.** The business object/action-based capability naming convention (e.g., Investment Management, Asset Management) is derived from the practice of defining capabilities based on real-world business objects and defining the actions taken against those objects in practice. This convention reinforces the fact that a capability defines *what* a business does, centered on the business object as the focal point. Basing capabilities on business objects establishes a clearly discernible boundary for a capability and its children. The approach also simplifies the ability to identify information tied to and used by a given capability.

The business object/action-naming convention reflects a key differentiator of a capability; capabilities represent a passive business perspective or the business “at rest”. For example, asset in the state of being managed would be called Asset Management. This at-rest concept contrasts with value streams and business processes, which represent an active business perspective, or business “in motion”, using a verb-noun naming convention such as Acquire Product.

Basing capabilities on business objects requires using a noun construct in the name, such as an agreement, asset, or payment. However, mapping teams should avoid the use of verbs disguised as nouns in the form of a gerund, which is a verb functioning as a noun and readily identified because gerunds end in “ing”. For example, marketing and accounting are gerunds. Mapping teams should avoid using gerunds as the basis for capability names as they are not business objects and are only nouns in a nominal sense.

4. **Capabilities define what a business does.** When individuals are asked what they do, they tend to provide a programmed response to describe how something is done. This comes into play when an organization is drafting its business capabilities. Resist the temptation to mix the concepts of *what* is done versus *how* something is done. Conflating these concepts will destabilize the use of business capabilities downstream. Ensuring that a capability identifies what is being done is the number one test to determine if a capability is a capability and not a value stream, business process, or a technology deployment. It is important to keep in mind that how or how well a capability is implemented does not determine if it is or is not a capability. A poorly implemented, fully manual capability is still a capability just as a highly efficient, fully automated capability is still a capability — assuming they each meet the other criteria for being a capability.
5. **Capabilities are stable.** There is a fundamental set of capabilities that is required for a particular organization to conduct business. These capabilities rarely change within an organization, although there are many capabilities that are deployed in suboptimal ways, and there are other capabilities that management may want to add to the mix. Many businesses today have the same capabilities they had upon founding. Ford, for example, still has Customer Management and Product Management capabilities, just as it did back in the early 1900s. Executives may feel that a given capability is inadequate or borderline non-existent. Such a capability, therefore, is considered weak. A strategy may be crafted to strengthen or establish such a capability. These capabilities should still be defined so they can be considered in planning activities. Section 2.2 goes into more detail on the topic of current state versus target state under the discussions on heat mapping and using the business architecture. New capabilities come along for things that are not done at all today, but this is the exception not the rule if a robust capability map has been established. If the capability map is undergoing

constant change after it is established and solidified, there are probably concepts that have been captured that are not capabilities.

6. **Capabilities are defined once for an enterprise.** A given capability is defined once and only once for a business. This rule holds true regardless of how many business units possess that capability, how many business processes deploy it, or how many IT assets implement it. For example, Claim Management would show up once on a capability map, even though multiple insurance company business units and product lines have this capability. It follows, therefore, that a child capability can belong to one and only one parent capability. Adhering to this principle may be a challenge, but it results in a much more clearly defined set of capabilities for an organization. One caution here is to truly differentiate two capabilities that may sound alike but are actually different.
7. **Capabilities decompose into more capabilities.** One attribute of a capability is that it can be decomposed into finer grain views. For example, Agreement Management may decompose into Agreement Definition, Agreement Structuring, Agreement Risk Management, Agreement Access Management, Agreement Preference Management, Agreement Term Management, Agreement Matching, and Agreement Information Management. These level 2 capabilities in turn decompose into more detail. At each level of decomposition, capabilities remain capabilities. They do not turn into processes, rules, or other views of the business. Violating this principle can render a capability map and the entire mapping exercise useless because there is no logical alignment that maps a single capability to a single occurrence of any of these other views.

Note that the decomposition principle means staying within the bounds of the business object that serves as the basis for the parent capability. For example, level 2 capabilities under Agreement Management would be dependent on the existence of the Agreement as a prerequisite for their existence. Finally, capabilities may be cross-mapped to other business architecture artifacts as explained earlier, but these related artifacts would not be included in the capability map itself.

8. **There is one capability map for a business.** The capability map is the blueprint or visual artifact that is used to show a collection of business capabilities. A business has one capability map that spans business units or even organizational boundaries where appropriate. Unfortunately, this principle is violated in practice. In one case, a financial institution had multiple capability maps — one for each business unit. There was no effective way to view the business in aggregate or perform horizontal planning because each map was a view of the organization from a singular perspective.

Having multiple capability maps also violates the sixth principle. Multiple maps result in an

inconsistent business vocabulary and marginal, if any, value outside a given business unit. This principle does not preclude the use of multiple views of a capability map, nor does it imply that there cannot be multiple derivations for a common capability map across business units or projects. However, it is essential to avoid replicating capabilities within the map. This, in turn, would introduce redundancy and volatility, where a given capability could evolve in multiple different directions through multiple views.

9. **Capabilities map to other views of the business.** While a capability map is useful, the power behind business capabilities is that they bring a collective view of the business into focus. For example, capabilities map to business units, which communicates which parts of the business share a common capability. Multiple business units having the same capability may be good or bad depending on the strategy and how the capabilities are implemented. Capabilities also map to value streams, initiatives, information assets, and IT assets. Establishing these relationships, in practice, creates a highly transparent view of the enterprise. For example, a business may be challenged because Product Planning is splintered across different teams. The thing to keep in mind during capability mapping is that these relationships are not incorporated into the actual capability map but are a product of follow-up cross-mapping activities.
10. **An automated capability is still a business capability — not an IT capability.** This principle refers to a common trap that organizations fall into when IT leads the capability mapping discussion. IT, on occasion, introduces the concept of an “IT capability”, which means that it is a business capability that has been automated. Such a capability is simply an automated business capability — not an IT capability. Creating this additional view can be counterproductive because it only confuses the use of capability. In addition, IT as a business unit does have certain capabilities related to provisioning IT infrastructure, software assets, and information management, but these capabilities are merely part of the business-wide capability map. The capability map incorporates all business capabilities for all business units, including IT, into a single map focused solely on *what* the organization has the ability to do and does not focus on the systems themselves or how they work.
11. **If the mapping team cannot define a capability, it is probably not a capability.** The eleventh principle is that if articulating a capability proves impossible, it is likely a combination of a business process, a focal point for a particular role or business unit, or a combination of other capabilities. An example is the concept of “review quality”. Businesses often identify quality assurance as a capability topic because teams and individuals are assigned to this role. Yet when trying to articulate how to define this capability, the information used, the category it fits in, and the outcome, business architecture teams are often stymied, rendering it a non-capability. Review quality is quickly recognizable as a process because of its verb-noun

construct. If, however, the team wishes to define “quality review” as a business object and decompose the management of this business object into lower-level capabilities, then the team would at least be on track to actually defining a capability.

12. **Capabilities are named and defined by the individuals and business units who have and exercise those capabilities.** Ignoring this principle has sent capability mapping teams down countless dead-end discussions, often resulting in a map that the business refuses to use and cannot begin to understand. Teams also find it difficult to fully comply with this capability because it forces direct and substantive business participation that is outside of what many consider to be the role of the rank-and-file practitioner. A growing wealth of practice-based experience, however, has demonstrated that the business will not support, use, or benefit from a capability map that was not crafted by those in the business that have the capabilities being defined. The other downside of not having subject matter expertise in mapping sessions is that teams can argue endlessly over terms like “account” without ever reaching resolution.

These principles are useful for ensuring that capability mapping efforts are balanced and applying best practices, which in turn, enhances the value of the end result and usability of business capabilities in a variety of planning and transformation initiatives.

How to Do Capability Mapping

Before going into the capability definition and building process, it is important to understand what the end product will look like. The capability map is the commonly used business blueprint for depicting a set of capabilities for a business. The practice of business architecture uses the term “business” as opposed to “enterprise” because a business may extend beyond the bounds of an enterprise. Business boundaries align to the concept of a business ecosystem, as introduced in *BIZBOK® Guide* part 1. Consider an insurance/financial institution that offers health, life, and disability insurance to customers but actually outsources all life- and disability-related capabilities. Or, consider the company that has outsourced Human Resource Management. In these examples, capabilities are vested in external companies.

In other scenarios, certain businesses rely entirely on third parties for certain capabilities and stakeholder value delivery. In these cases, just defining the map within the bounds of the legal entity for the enterprise severely constrains it. Therefore, a capability map should be viewed as business wide and not just enterprise wide.

A business capability map presents a logically grouped set of capabilities that are independent of organizational structures, business processes, IT assets, or product offerings. The map itself is a complete view of the business and relies on two basic concepts: leveling and stratification. It was

previously discussed how capabilities can be decomposed from levels 1-n; decomposition is the basis for leveling. Stratification organizes capabilities into one of three categories based on the impact of a given capability on the business. Stratification and leveling discussions follow.

Summary of Approaches

There is no single correct way to approach capability mapping; a number of organizations have achieved capability mapping objectives through different routes. The mapping approach described in this section works for a variety of approaches that include taking an enterprise focus, narrowing the focus, or considering a capability map from the perspective of a conglomerate.

1. **Top-down, enterprise approach:** The top-down approach to capability mapping strives to create a single map for the business. This effort would include all capabilities that enable the organization to viably fulfill its mission. Capabilities from this perspective would include all aspects of the business essential to maintaining a viable operational and competitive (from a commercial perspective) enterprise. All business units and outsourced capabilities are rolled into a single map, and the map is established based on the collective views and input from each of these business units. This map would ultimately encompass a complete and fully rationalized view of the business.

The main advantage of the top-down, enterprise capability map is that it provides a common vocabulary across the business and can therefore be used to support the analysis and planning of a wide range of initiatives that cross business unit and product line boundaries. The challenge is that it takes more senior-level business commitment and sponsorship to ensure that the map provides complete, well-aligned views of the business. Employing the top-down approach is considered a best practice in business architecture.

2. **Bottom-up business-unit-centric approach:** It is not unusual for a business unit to create its own capability map that is bounded by the capabilities of that business unit. For example, a large-scale financial institution had six major business units and various sub-units, many of which had their own capability maps. If the capability map is to be used within the confines of that business unit, only enabling root cause analysis, issue resolution, and transformation planning within the confines of that business unit is perfectly fine.

When challenges or business objectives arise that require a view of the business that crosses business unit boundaries, the business-unit-centric map becomes significantly less useful. When each business unit capability map is created in isolation, there is little visible commonality across maps. As a result, when portfolio alignment or common customer initiatives arise, the maps require cross-business unit consolidation, which can be difficult if the maps were built using different business unit specific vocabulary.

Business unit specific maps can and should serve to establish the seeds for a business-wide capability map. Collaborating early across business units can simplify cross business unit alignment of capabilities later. In addition, level 1 and 2 mappings should be established as enterprise views to the degree possible. The upside of the business-unit-centric approach is that a capability map can be developed more quickly. The downside is that such a map would be restricted to projects that have no need to engage with parts of the business operating outside of that business unit.

3. **Derivative capability mapping approach:** The derivative capability mapping approach is similar to the business unit approach only it begins from a top-down view and derives detailed maps from a single, high-level perspective. The concept involves creating a common, umbrella capability map for the business that defines capabilities down to at least a level 2 view and ideally a level 3 view. Various business units can leverage these higher-level views to create a more detailed decomposition of capabilities for a particular business unit. These business unit maps establish business unit views that align with the higher-level map.

The value of this approach is that, at least at a high level, all business units are using the same language. At lower levels, each business unit fills in the details. The downside of this approach comes into play when a given analysis effort or initiative arises that requires detailed capability mapping across business units that have variations on lower-level capabilities. These business unit views would then require reconciliation, but this reconciliation would be easier than it would be in the case of the bottom-up approach as discussed in point number 2.

4. **Mapping capabilities within conglomerates:** One last point worth mentioning is the use of capability mapping in a true conglomerate. A company that offers aircraft engines, household appliances, and financial services would very likely establish one capability map for each of its individual divisions within the conglomerate. Even in this case, however, it is likely that Finance Management, Investment Management, and other selected business capabilities are shared across the holding company. Assuming this is the case, a shared level 1 capability map across the conglomerate can be useful as a baseline, at least for strategic and supporting tiers.

The steps that follow can be applied to any of the above approaches. Capability mapping teams are encouraged to consider the upsides and downsides of various enterprise, business unit, and project mapping approaches as they move forward and align their work accordingly to avoid some of the downside challenges.

Capability Leveling

The capability map is the main way in which management and other business professionals view

capabilities of the business. To communicate more detail about a capability, it is decomposed into multiple levels. This decomposition approach, which can go deeper where appropriate, is a standard way of depicting a capability. The original work on business capability created a three-level structure and named each level as follows.

- Foundation Capability – Level 1
- Capability Group – Level 2
- Business Capability – Level 3

While this naming scheme is of historical interest, the original work on business capability did not provide level names for capability levels 4-n. Capability decomposition is often taken beyond level 3 in practice. As a result, *most capability efforts, in practice, have abandoned the above naming convention in favor of using decomposition level numbers*. There is no rule limiting decomposition levels, but capabilities rarely go beyond level 6 in practice.

Executives and planning teams are commonly interested in higher-level capabilities while deployment teams have a greater interest in the lower-level views. Lower-level capabilities achieve a level of granularity that is useful for mapping to automated implementations of business logic, such as services-oriented architecture (SOA) services or microservices, application systems, or other automations that may include desktop technologies.

When decomposing a capability, first the level 1 capability should be based on one and only one object. There should be a total of at least three levels of decomposition where applicable, as previously shown in figure 2.2.1. Figure 2.2.3 depicts a level 1 capability called Customer Management, decomposed beyond level 3 in one instance. In this example, the level 2 capability, Customer Preference Management, has had a level 3 capability, Customer Buying Pattern Determination, decomposed to level 4. This level 1 capability is not shown in its entirety, where other level 2-3 capabilities would be mapped to levels 4 or beyond.

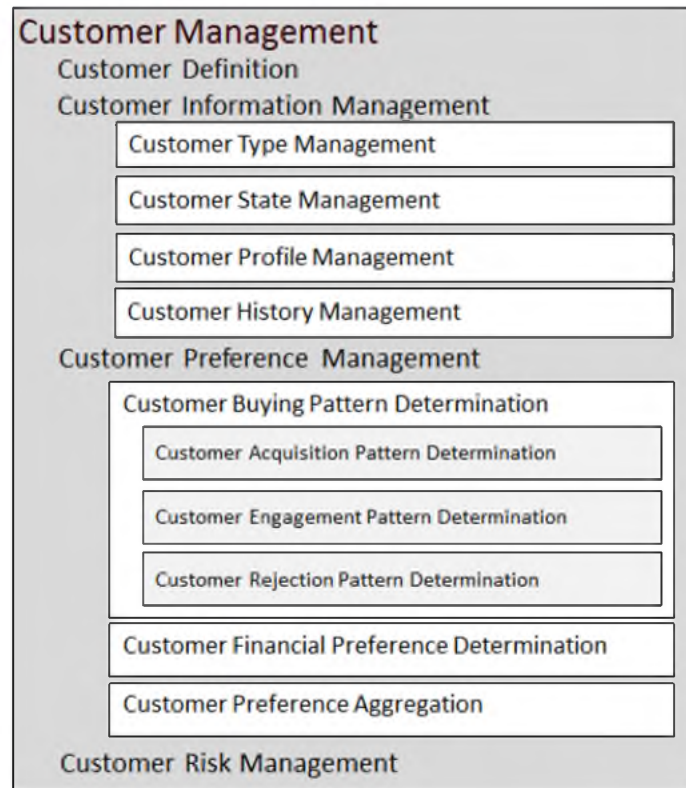


Figure 2.2.3: Capability Decomposition to Levels 3 and 4

Figure 2.2.3 demonstrates how each capability level remains a capability insofar as it is specified as a noun, not a verb. In addition, lower-level capabilities continue to describe what the business does and not how it is done. For example, level 4 capabilities under Customer Buying Pattern Determination simply provide more detail that comprises that capability. Business architecture teams should use common sense when investing in capability decomposition work, decomposing to the level that is needed based on business priorities and related strategy.

Oftentimes, a team will limit capability decomposition to capabilities of most importance and immediate interest. There may not be a need, for example, to decompose Legal Proceeding Management or Human Resource capabilities beyond levels 2 or 3. The effort spent in decomposition is balanced by business strategies and demands, as well as the importance a given capability has in terms of strategic value or customer impact. This last set of factors is driven in part by capability map stratification, where supporting or strategic capability mapping is deferred to a lower priority.

Capability Map Stratification

Stratification of the capability map organizes sets of capabilities into three categories for planning

and analysis purposes. This concept allows business architecture practitioners to communicate the essence and structure of the map more quickly and allows the business to focus on certain categories that have unique strategic or customer-facing impacts. Capability map stratification considers capabilities from three perspectives:

- Strategic or Direction Setting
- Core, Customer-facing
- Supporting

Figure 2.2.4 depicts an example of a sample level 1 capability map showing this stratification. When a level 1 capability is assigned to a given stratification tier, all lower-level capabilities within that level 1 capability fall into that same tier. So, a mapping team simply needs to assign level 1 capabilities to a given tier and their stratification work is done.

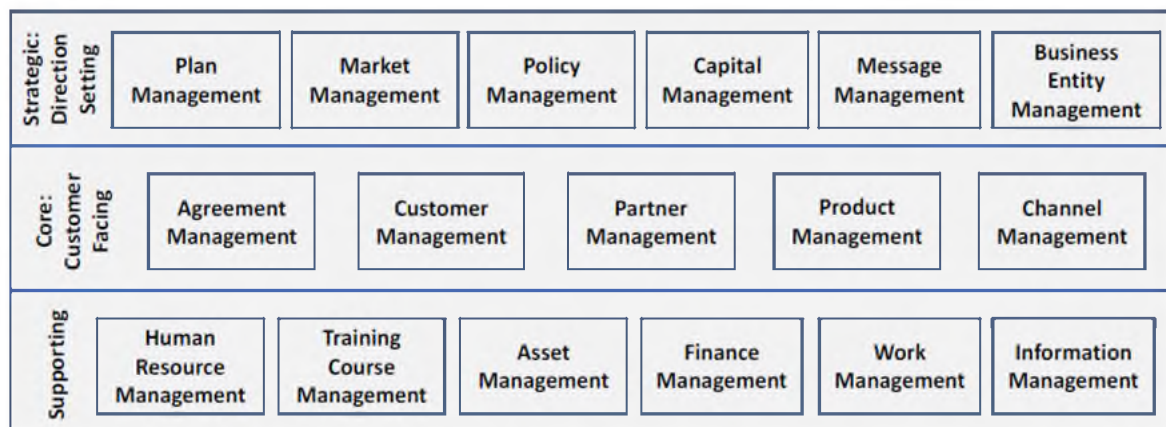


Figure 2.2.4: Example of Stratified, Level 1 Capability Map

The stratification structure within the capability map example in figure 2.2.4 is a common way for the business to align capabilities, with each layer representing a set of capabilities as they relate to the viability of the business and the bottom line. The “strategic” layer includes capabilities that often reflect executive focal points. Market Management, for example, falls into this category.

The “core” or more commonly named “customer-facing” tier shown in figure 2.2.4 goes to the heart of what an enterprise does to ensure viability and thrive in the marketplace. This tier often includes Customer Management, Agreement Management, Product Management, and Partner Management capabilities. Work Management includes managing all work entering and moving across the business ecosystem, including external stakeholder engagement. Note that some businesses position Work Management in the core tier while others position it in the supporting

tier. Customer-facing capabilities are core to a given business because they represent the face of the business to the customer.

A lack of focus on customer-facing capabilities can often explain why many institutions have a fragmented, redundant, and inconsistent set of business practices and supporting technologies for managing customers, accounts, and products. Large, multiline insurance and/or financial providers, for example, manage customers in independent silos, using independent business processes and application environments. This framework is also true of countless large companies in other industries. Executives can only ignore fragmentation, redundancy, and inconsistency until it impacts the bottom line in ways that harm customers. At that point, action must be taken, and capability analysis is the starting point for such scenarios.

The “supporting” layer of capabilities represents certain abilities that an organization must have to function as a business. Human Resource Management and Finance Management are prime examples. Certain supporting capabilities are common targets for outsourcing. For example, the information technology aspects of Asset Management are often outsourced in part for certain industries.

The importance of stratification is multifold. Customer-facing capabilities are oftentimes where most operational and long-term investments are being made. Consider all of the money and effort that goes into managing agreements, customers, agents, products, distribution networks, and similar customer-facing capabilities. Supporting capabilities are required, but not necessarily concepts that a customer sees. Supporting capabilities are generally non-differentiating capabilities, and that is why they are often outsourced.

Strategic capabilities may also be weak or inadequate but have never been presented to the executive team in such black-and-white terms. Consider, for example, if a company has no viable, differentiating vision or strategic plan to achieve that vision. This scenario is not as unusual as one may think. Business Plan Management, as shown in figure 2.2.4, would be considered an ineffective capability (i.e., heat mapped red) that management should address. Finally, stratification provides a break in the capability map that allows planning and execution teams to organize their thinking in more structured ways, often focusing on customer-facing capabilities as a group from a planning and investment perspective.

Note that the sample capability map in figure 2.2.4 is generic but leans toward mappings commonly found within a services organization, versus those found in a manufacturing enterprise, healthcare company, utilities, or government. Common capabilities across industries are often found in the strategic and supporting tiers of the map while the customer-facing tier tends to vary by industry. Even with this variation, there are several commonalities within this capability map to capability maps for other industry sectors. For example, Customer

Management, Agreement Management, and Product Management capabilities are found in many organizations regardless of industry. Even if the business uses different names for these terms, such as patient or constituent versus customer, the concepts of tracking and understanding the customer, ensuring complete and concise management of legal agreements with the customer, and being able to conceive, design, build, and package a product remain constant.

One last point: How a given company in one industry implements and leverages a set of capabilities within the customer-facing tier will differentiate that company from others in the industry. If, for example, a bank does a stellar job at Agreement Management and Customer Management, it is likely that it will outperform other competing banks. The capability map brings the importance of these customer-facing capabilities into focus and enables a business to think more clearly on how to best leverage priorities and investments related to these capabilities.

Organizing the Capability Mapping Team

Team setup is very important to ensure a successful capability mapping effort. While there is an assumption that the business architecture team will play a role in this effort, business leadership and participation is essential. The following roles are essential to an effective business capability mapping team:

- **Business Sponsor:** Efforts that lack executive sponsorship stall and fail rather quickly. The sponsor must be in a senior leadership role within the business (not IT). Note that it is very difficult to build a capability map without senior business sponsorship because capability naming, definition development, validation, socialization, and utilization all hit roadblocks when senior business leadership is not behind the effort.
- **Business Lead:** The capability mapping effort should be led by a business lead or, at a minimum, a practitioner of business architecture with deep business knowledge. If this individual, for whatever reason, is not a business subject matter expert (SME), then the business co-lead must take an equal role in this effort. The important factor is for someone from the business to be the face of the business architecture effort.
- **Business Co-Lead:** There should always be a business co-leader who can facilitate working sessions, refine the capability mapping, and help socialize the map. This person must be from a business unit that represents a mainstream aspect of the business.
- **Core Subject Matter Experts:** The team will need to have a core set of representatives with knowledge of all major aspects of the business. A multiline insurance and

financial company, for example, would have representatives from each major insurance line and financial line. The focus for these individuals is to map out as much of the customer-facing and selected strategic capabilities as possible. Supporting areas and certain strategic areas would be mapped out in subsequent working sessions.

- **Mentor:** The mentor should be well-versed in capability mapping and business architecture in general. While the mentor does not lead working sessions, the individual would participate in these sessions and work behind the scenes to ensure that the team leverages and benefits from best practices.

Team building is a subset of business architecture governance (see *BIZBOK® Guide* section 3.2) but is discussed here because of the essential role of business stakeholders in the capability mapping effort. The business lead and co-lead, as well as the inner circle of SMEs, typically have in-depth business knowledge, are well-connected to other SMEs, and have the collective bandwidth to contribute. These individuals also know how to find other business experts with an even deeper level of specific subject matter expertise.

Identifying and Articulating Capabilities

Identifying capabilities for a business is an exercise in deep introspective analysis. The introspective nature of this effort stems from the fact that common terms that “everyone understands” are defined in writing — perhaps for the first time. Consider the terms customer, product, solution, stakeholder, account, policy, agent, and partner. If a business uses some or all of these in everyday dialogue, does everyone mean the same thing? This is rarely the case, and it causes confusion from the planning levels well into the implementation of solutions. Consider, for example, the difficulty enterprises have had trying to align multiple implementations and related redundancies for various aspects of customer, account, and product management.

When identifying and articulating capabilities, be sure to apply the previously introduced capability mapping principles. Those principles are general guidelines to ensure that capabilities are really capabilities. The following subsections outline the capability identification process. The discussion includes leveraging industry reference models and the use of templates. Leveraging industry reference models and templates is a useful way to accelerate the capability mapping process. A reference model is a sample, completed or partially completed business model or map for a given industry. A template is a framework for building a capability map.

Leveraging Industry Reference Models

When defining a set of business capabilities, it is possible to leverage reference models from vendors, trade organizations, or publications. Reference models are essentially prepackaged

blueprints for a given vertical industry or industry subsector. While reference models can be beneficial, they also introduce certain risks. Many contain false capability candidates. One example seen in certain reference models is a “sales” capability. Sales is a name of a business unit or a role that leverages multiple value streams that are enabled by a wide range of Message, Customer, Agreement, Product, and Information Management capabilities.

Any industry reference model must be modified and customized to a given business. Every organization is unique in terms of what it does and the language it uses. As a result, there is no definitive list of terms that apply to every organization or even similar organizations in the same industry. Respectfully, when identifying a capability, it must represent appropriate business objects and be tested against principles and guidelines for validity.

BIZBOK® Guide part 8 provides industry reference models for selected vertical industry sectors. As work within the Business Architecture Guild® progresses on reference models, part 8 will expand to incorporate new blueprints, more detailed mappings, and additional industry sectors. No reference model should be used verbatim and mapping teams should always assume that modifications will be necessary for organizational acceptance as well as ensuring that the map represents their business’s ecosystem and vocabulary. This rule is true for the reference models emerging within the *BIZBOK® Guide* as well as those found elsewhere.

If there is no predefined reference model for a particular industry and the team is struggling with getting started, it may want to start with the organization chart. Organization charts define business unit names that could trigger an initial understanding for what the business does. Organization charts should be used with caution. Just because a business unit has a specific title or performs a given task does not mean that it translates into a capability. The sales organization is a good example of a business unit that is not a capability. In addition, if a business unit does not perform a task, it does not mean it is not a capability. For example, just because accounting does not track individual account payments, it does not mean that this is not a capability if it exists elsewhere. At best, use of the organization chart serves as a precursor to working sessions that engage in business object identification with SMEs but should not serve as a basis for a capability map.

Leveraging Capability Mapping Templates

Teams require a template-based approach to capture, record, and manage capabilities as analysis unfolds. The end result is a multi-page map, created using either a business architecture tool, in-house repository, or, the most common starting point tool, a spreadsheet (e.g., Excel). The building process is streamlined through spreadsheet use, where content is structured in such a way as to be easily updated and readily input into various business architecture tools as the content matures. Figure 2.2.5 depicts a standard spreadsheet template.

Capability Map						
Tier	Level	Capability	Definition	Outcome	Heat Map Rating	Impact Rating

Figure 2.2.5: Capability Mapping Template

In figure 2.2.5, the first column equates to the strategic, core or customer-facing, and supporting tiers in the capability map, represented with a “1” for strategic, “2” for core, and “3” for supporting. Capability level is represented in column two, with capability name and definition represented in columns three and four. Capability outcomes, metric ratings, and other useful information may be appended to the right of the first four columns. Many businesses find it useful to build the baseline capability map in a spreadsheet based on this template and import it into tools that offer more sophisticated visualization and relationship management at a later point in time.

While metric-related analysis can occur at a later point in time, the template enables teams to keep notes on various heat map (effectiveness) ratings and impact ratings. Adding business unit to the template further allows mapping teams to track where capability instances occur across the business ecosystem. Some mapping teams prefer to visualize capabilities in other formats, such as the view in figure 2.2.6. There is no standard visualization format, including the embedded box structure shown in figure 2.2.4. Any given team or organization may seek to define a format that satisfies their unique needs.

- 1. Product Management
 - 2. Product Definition
 - 2. Product Design
 - 2. Product Risk Management
 - 2. Product Information Management

Figure 2.2.6: Sample Capability Views

This visual structure shown in figure 2.2.6, while easy to update, lacks the rigor, flexibility, and exportability of a spreadsheet. The formal nature of a spreadsheet is preferred by mature or maturing mapping teams because the template facilitates a structured mapping approach and expanded analysis of related domains. A spreadsheet, therefore, is the recommended default mapping tool, if no other formal tooling is in place.

Capability Mapping Guidelines

Validating business capabilities involves walking through each capability and related definition with relevant stakeholders. Because capabilities represent an aggregate of what the organization does regardless of the teams that have this capability, every team involved in a given capability should have a chance to validate relevant capabilities. Validation is done throughout the mapping process. The following validation rules can be used as a baseline for guiding teams through the capability identification and delineation process.

1. **Focus on business objects.** Business objects are tangible things commonly recognized by the business. Examples include agreement, customer, account, insurance policy, claim, asset, agent, plan, message, research, and human resource. Objects provide a capability focal point where any capability dependent on a given object for its existence is defined as a child under the parent capability based on that object. For example, an instance of an insurance claim is wholly dependent on the existence of an insurance policy. To ensure that scope is contained, a level 1 capability should represent one and only one object.

Examples of capabilities based on business objects include Message Management, Market Management, and Business Plan Management. These capabilities, which are also highlighted in figure 2.2.4, have historically been represented as marketing and planning capabilities, oriented more toward a business unit versus a business object. The focus on concrete business objects, specifically message, market, and business plan, establishes a more robust foundation for a capability and eliminates business unit perspectives that tend to draw in a large number of other objects and create redundancy across the map. A marketing business unit would, of course, have capabilities in addition to Message Management, such as Research Management, Campaign Management, and Event Management, all of which are object based.

One practice to avoid is “typing” capabilities, at any level. For example, a mapping team may seek to create level 2 capabilities under Customer Management called Retail Customer Management, Wholesale Customer Management, and so on. This practice has at least 2 detrimental effects. First, the level 3 child capabilities below each of these level 2 capabilities will essentially be identical across each level 2. This means that if there are 3 customer types called out, each level 2 will replicate 1-2 dozen child capabilities, creating confusion and complexity for purposes of analysis, improvement, and automation. A second issue is that, as hard as one tries, there will be a business scenario that requires an unspecified type, which means the parent capability no longer works for all scenarios. Types are detected and set by the “Type Management” capability associated with a level 1. See the Best Practices discussion later in this section for details. Specific types are identified in the information map, where they may be easily adjusted. As a result, the removal or addition of any type in practice has

no impact on the capability map and only minor impact on the information concept, which in this example is Customer.

Avoid spurious business objects, which emerge when teams fall into one of two traps. The first trap involves the omission of certain business objects and alternatively creating false objects to fill the gap. For example, an organization that works across federal, state, provincial, or other geographic boundaries, each of which have their own unique regulations and statutes, may have omitted the geographic space and geographic border objects that represent those geographies. Omitting these objects can lead to the creation of false objects, such as a “Letter of Transit” or a “Border Declaration”, to accommodate border crossing permissions. Spurious objects in this example may be eliminated by using Geographic Space Management, Geographic Border Management, which is a child capability under Geographic Space Management, Agreement Management, and Policy Management, where a policy represents regulations and statutes.

The second trap is thinking that capabilities that provide granularity of a parent capability create new business objects. For example, an Agreement Management capability may have level 2 and 3 capabilities for risk, access, preference, profile, type, and state management capabilities, but these capabilities merely articulate more granular actions associated with the parent object, which in turn provide insights into that parent object. For example, the concept of risk lacks context when not applied to a real-world object, such as an agreement, customer, facility, location, product, or other tangible focal point. As a result, it lacks viability as a child object because it merely applies a level of understanding about the parent object; that being the level of risk associated with that parent object and whether or not that level of risk is at an acceptable threshold.

2. **Determine if a capability is a capability because it describes what the business does.** Faxing and emailing are not capabilities because they describe how a capability is implemented. Message Management, on the other hand, is a capability because it describes what is being done, which is managing message creation, evolution, and dissemination regardless of form. Similarly, mailing an invoice is not a capability, although Message Management coupled with Payment Management are capabilities that can be used to communicate an obligation to receive or remit a monetary amount.
3. **Consider a capability in terms of its outcome.** A capability produces or “achieves” an outcome. Quality review is not a capability because it has no clearly defined outcome. A Product Design capability, however, does have an outcome — a new or modified “product design” for a product. Be sure to define both the “product” and the “design” portions of the capability in the definition. An outcome for a level 1 capability would be more generalized than an outcome for a lower-level capability. For example, Customer Management would

have a more broadly defined outcome than would Customer Risk Rating, which would produce a rating of risk for a customer. Also note that a capability may require or “need” an outcome from a second capability. For example, the product design outcome produced by the Product Design capability may be a needed input by a Product Configuration capability.

4. **Verify that a capability is not a process or value stream.** Topics that require a stakeholder, such as authorizing, validating, or otherwise engaging in a sequence of activities, are not capabilities because they describe how something is being done. A value stream depicts how value is achieved for a given stakeholder, moving left to right until stakeholder satisfaction is achieved. A capability must be a self-contained concept that is not procedural in nature and is built around a defined business object.
5. **Ensure that capabilities are unique in terms of intent.** If two capabilities seem alike, question their intent. For example, if a Customer Management capability appears to be the same as a Partner Management capability, consider that customers are inherently different from partners (the fact that the same company may be both a Partner and a Customer notwithstanding) and demand a different set of management capabilities. Conversely, managing customer information could easily double for managing prospect information if the business can align its terminology and thinking around this concept.

There are scenarios, however, where the concept of a customer lacked clarity and organizations have settled on a generic name, such as stakeholder, associated with a range of third parties holding agreements with the business. For example, one utility settled on the term Counterparty Management to refer to the management of any and all parties to a legal agreement. The use of this term eliminated the concept of a customer as a distinct entity and further eliminated the redundancy associated with defining many capabilities for materially similar stakeholders.

6. **Determine that capabilities are unique based on the information they require and use.** Capabilities rely on and impact business information and, therefore, can be segregated based on that information. For example, Customer Management materially impacts customer information. Does a lower-level capability materially change underlying business information associated with that capability? If so, the capability falls under that higher-level capability. In this example, Customer Analytics belongs under Customer Management. This guideline can clear up a lot of gray areas when identifying business capabilities.
7. **Validate capabilities by roles and resources.** Mapping teams often omit a capability they think is addressed elsewhere. Certain capabilities are unique to certain roles and skills, however, which allows mapping teams to differentiate between two capabilities that sound similar but, in reality, are two unique capabilities. A question to ask is this: If two people switched jobs, would they still perform as well doing two similar capabilities? For example, if

the corporate risk manager switches jobs with an underwriter, will each person still be able to fulfill their new role with adequate effectiveness? This allows a mapping team to differentiate between a strategic capability, such as Country Risk Rating, and a customer-facing capability, such as Risk and Eligibility Analysis. This is a framing concept and not an absolute because some people have multiple skills. This guideline must accommodate that reality.

8. **Eliminate redundancies.** Teams must always look to identify and eliminate redundancies. Even the best business architecture teams let redundancy slip in. For example, one team created an entirely new Pipeline Management capability for international requests rather than reusing a common Pipeline Management capability. The duplication of this capability created redundancy because the same stakeholders could file domestic and international requests concurrently. The rule is to consolidate as tightly as possible and reuse capabilities across business units, product lines, and international boundaries. The how and where factors within business architecture are addressed organizationally and through value streams and IT deployments.
9. **Ignore the 80/20 rule.** It does not matter if an SME states that “we rarely if ever have to do that”. There is no 80/20 rule with capabilities. If there is a capability, define it, even if it is rarely done. Leaving out such a capability will leave a hole in the picture of the business.
10. **Do not overgeneralize the business.** In the process of developing a capability map, some teams see the opportunity to categorize and roll up concepts further. For example, some teams ask, “Why can’t we roll up all people and business units like customers, associates, or partners into a single party?” This is common, for example, when people think about normalized database design instead of business representation. Others may say, “What is the difference? Why can’t we just roll up all the information into an Information Management capability?”

A team must resist the urge to overgeneralize the patterns and categories it discovers. The various pieces of the business need to be documented at the right level of detail so that everyone can see and share a common mental model of what the business actually does. The use of a capability map for analysis becomes much less meaningful and useful when it is over abstracted or overgeneralized. As a rule, it takes time to settle into the right level of generalization based on capability reviews and use in practice.

11. **If management plans to do something, identify it as a capability.** A desire to have a new capability that does not exist raises the topic of current versus target state. The capability map is the rare architectural view that allows creation of a single view of the current state and the target state of the business. Target state capabilities, if there are any, can be

identified using a color-coding scheme. Color-coding concepts are outlined later in the section 2.2 heat mapping discussion.

Drafting the capability map evolves in phases. This next discussion covers establishing the level 1 capability map and decomposing the level 1 map into lower levels. It also discusses validating, socializing, packaging, and publishing the capability map. Capability mapping principles and guidelines apply at every stage of the mapping and drafting process.

Drafting a Level 1 Capability Map

1. **Establish a candidate list of capabilities.** A good way to get started on a capability map involves working with a cross-representation of business professionals to build a candidate list of business objects and concepts. This team then refines the list by removing false candidates, consolidating redundancies, and organizing dependent objects and concepts under parent capabilities. False candidates are found when a team accounts for all abilities needed to cover a given tier of a capability map and the remaining capability candidates are found to be extraneous or spurious.

For example, when all abilities to manage an agreement, related stakeholders, and assets are fully accounted for, false candidates such as Sales Management are determined to be spurious and, therefore, can be eliminated. Industry reference models may inform the candidate list of capabilities as well.

Strategic: Direction- Setting	Plan Management, Message Management, Market Management, Business Entity Management, Policy Management
Core: Customer- Facing	Agreement Management, Customer Management, Product Management, Partner Management, Channel Management, Order Management
Supporting	Human Resource Management, Finance Management, Legal Proceeding Management, Training Course Management, Asset Management, Information Management, Work Management

Figure 2.2.7: Sample Starter List of Capabilities by Stratification Tier

While capabilities vary across businesses, borrowing from a starter set of candidate capabilities is a useful way to augment a list of business objects and concepts. The capabilities identified in figure 2.2.7 are common across many industries and government. Note that the tiered placement of a given capability is often industry or even company dependent. For

example, Asset Management is customer-facing for a railroad or a power company but is typically a supporting capability for a financial services company. The name and use of a given capability, therefore, will be augmented with unique industry or organization-specific concepts. The list in figure 2.2.7 is broken into the standard stratification tiers. Use this list with the appropriate discretion as all businesses have their own business capability vocabulary that must be agreed upon across business units.

2. **Refine the starter list.** The first cut will require new names, additions, deletions, and re-leveling. Drafting a working version of a level 1 capability map creates a baseline for next steps. Refinement involves customization. For example, a licensing agency thought long and hard about what it is they manage and what they actually do and decided that they determine if an applicant (i.e., licensee) is to be granted rights to a license. One capability became Rights Granting. They determined that their agency managed the licensee and the license. In this way, a licensee can have multiple licenses, and each license can then be associated with the licensee as appropriate. This example is the type of introspection that drives modification and refinement of a starter set of capabilities.

Another example of refinement involves the rationalization of terms. This area of work is where businesses tend to struggle because everyone wants to use their own terms to define the same thing. For example, after introspective analysis by cross-functional business units, the concepts of partner, agent, and vendor tend to converge into a single business object. The reason behind this is that, once clearly and completely defined, a partner, agent, or vendor is simply a third party with which there is a bidirectional exchange of value, based on a formal agreement. While not usually the starting point for many capability mapping efforts, a solid mapping effort tends to yield this important rationalization that can dramatically simplify business complexities.

3. **Validate the starter list against the organization chart and industry perspectives.** The organization chart provides a useful sounding board to augment and adjust the draft capability map. This is an important reality checkpoint that ensures that obvious business concepts are not completely omitted from the capability map. In some cases, mapping teams start with the organization chart because there are no industry reference models that exist yet for their industry.

A second level of validation involves cross-checking the starter list against industry terms and concepts. This level of validation provides a reality check. For example, the railroad industry and telecommunications industry have standardized sets of terms for communicating with each other. Other industries also share common terms. If these terms are documented with trade groups or industry associations, then they should be used as a cross-check against a

company's in-house vocabulary.

4. **Draft level 1 capability map.** Figure 2.2.4 depicted a sample level 1 capability map, which is the result of this last step. While the initial capability map draft is often completed in a word processing document or spreadsheet, a level 1 map is easy to place into the single page visual view for discussion purposes. The topic of capability socialization is deferred until later; but, at this point, it is useful for the team to perform some “light” socialization of the level 1 map with select management from major business areas.

The above practice leads to another level of decomposition as a fallout of the level 1 drafting process. The initial list of business objects will invariably produce a set of valid business objects that are not level 1 capabilities but can serve as the basis for valid level 2 capabilities. These capabilities should be slotted into the capability map and defined accordingly, which provides a jumpstart for teams on the decomposition efforts.

5. **Segregate level 1 capabilities.** Level 1 capability segregation is a critical step in ensuring that non-interdependent objects can be established without constraints and dependencies on a second object and in avoiding conflation of important business perspectives. For example, an agreement is not dependent on the existence of a customer; there are many types of agreements not linked to customers. Similarly, a customer is not dependent on any given agreement or any agreement at all in cases, for example, where a customer is prospective and no pending agreement exists.

Many other examples exist across industry sectors. For example, a transportation operation may not be bound by a facility, a route or conveyor would not be bound by a transported item, and a healthcare condition exists in the absence of, and therefore is not bound by, a healthcare case. In all cases, each of the aforementioned business objects would serve as the basis for a standalone, level 1 capability. In summary, burying a level 1 capability based on an independent business object under another level 1 capability confuses and conflates one's understanding of a business when capabilities are rather meant to expose and clarify basic fundamentals of what a business does.

Decomposing the Capability Map

1. **Prioritize the capability decomposition approach.** Mapping can be prioritized by executives seeking a given purpose, or a team may pursue a more generic approach. In the absence of a specific immediate mandate, a best practice is to take each level 1 capability down to an initial view of level 2. This step ensures that each socialization stage will provide views of the level 1-2 perspective of the map and establishes stability prior to decomposing a given capability beyond level 2. For example, one team reworked the Agreement Management capability

level 2 views several times prior to reaching stability. This scenario is common when multiple business units are involved.

The parallel concept for setting prioritization of the map is to build it out based on stratification levels. One common approach involves delaying work on supporting capabilities until these capabilities are required and focusing on customer-facing capabilities as the core of the business. Strategic capabilities may be decomposed at the directive of a given management initiative or as subsequent or interdependent work evolves. For example, one team found that it could articulate Policy Management capabilities in conjunction with Agreement Management and Finance Management due to subject matter expertise overlap. Another reason to focus on customer-facing capabilities is that most major transformation initiatives involve core portions of the business.

2. **Draft the level 2 capability map.** Using the level 1 capability map as a baseline, decompose selected level 1 capabilities by working with business line professionals for each category. This effort entails holding working sessions for each level 1 capability. For example, if Claims Management is targeted for decomposition, work with business managers from all claims areas to ensure a common view of claims across the business. Level 3 decomposition may be pursued concurrently with level 2 decomposition, but it requires validation by business professionals with detailed subject matter knowledge. If level 2-3 decomposition can be accomplished concurrently with the same teams, the process can be completed more efficiently.
3. **Decompose capabilities into lower-level capabilities based on core business views.** Going to capability levels 3-n requires deeper knowledge of certain aspects of the business and a degree of stability for levels 1-2. For example, if there is disagreement on the validity and definition of a Deal Structuring capability as a level 2 (below Agreement Management), it is difficult to agree on and define lower-level capabilities of Eligibility Analysis, Risk Rating, and other capabilities at level 3 and beyond. Moving into lower-level capabilities is a matter of having the subject matter expertise at hand and following the principles and guidelines we outlined earlier in this section.

In addition, mapping teams should establish definitions for level 1-2 capabilities prior to identifying lower-level capabilities. If definitions are left until later, confusion will ensue as lower-level capabilities are established and aligned under level 1-2 capabilities.

4. **Frame capabilities in terms of their parent capabilities.** Framing capabilities by their parent capability ensures redundancies are not created and capabilities are not left unmapped. Lower-level capabilities have more granular or specific, yet related, outcomes to their parent. Note that all child capabilities should fully frame or represent their parent, and, in no case,

should there be an only-child capability as that would simply replicate the parent. Framing is an important concept in decomposition. The best guide for decomposition framing is to ensure that all lower-level capabilities are bound by the scope of the parent capability object.

For example, if a capability called Risk Rating is defined under a parent capability called Solution Management, then this Risk Rating capability is focused on delivering or furthering a solution. This child capability should therefore be qualified as Solution Risk Rating. Qualifying child capability names is essential to avoid creating redundancy and to ensure that the child is linked to the parent capability's business object.

A useful technique when defining level 2 capabilities is to ensure that the level 2 capabilities cover the actions described in their level 1 parent. For example, if a level 1 capability states that the capability is the "ability to define, validate, and assess the performance of..." then one would expect to see level 2 capabilities that cover definition, validation, and performance determination. This technique is a dual check on the parent definition and child capability definitions.

5. **Refine through iteration.** Iteration is an essential aspect of capability mapping. The work will be challenging, and occasionally revisiting topics that were concluded will be necessary. This effort is part of the process of getting a solid capability map that can be readily defended and socialized. The iterative nature also serves to confirm that when it comes to capability mapping, the journey is as rewarding as the destination.

Building Capability Definitions

Creating capability definitions is an essential part of building out the map. Confusion with level 3-n mapping efforts can escalate when level 1 and 2 capabilities are not well-defined. Each capability definition should follow some basic guidelines, which include:

1. Define each capability using a single sentence that defines what it is but not why, when, or how it occurs.
2. Define the action term first, followed by the object definition or object name per guideline #5 that follows.
3. Do not reuse the terms used within the capability name as any part of the definition.
4. Define parent capabilities before decomposing child capabilities.
5. Once an object is defined in a parent capability, that object may be used in child capability definitions.
6. Do not use another capability's object name to directly define another capability.
7. Define all capabilities prior to full rollout of the map.

8. Refine and test definitions through socialization and validation cycles.

Definition rule #3 is essential to ensuring that definitions are unique. Rule #5 prevents definitions from becoming overly verbose by allowing child capabilities to use the parent's object name in the definitions of lower-level capabilities. For example, once a level 1 Agreement Management capability is defined, where the definition clearly defines agreement without using the word "agreement", a child capability such as Agreement Terms Management would be allowed to use the word "agreement" in the definition. Rule #6 prevents redundancy by ensuring that the object definition in one capability does not overlap with another capability.

Sample definitions always help clarify the definition building aspect of capability mapping. Below are three sample definitions for typical capabilities.

- **Human Resource Management:** Ability to assess, mentor, compensate, terminate, and otherwise coordinate individuals who have, plan to have, or have had a formal or informal association with the organization, which may include compensation and other benefits, on a temporary, permanent, or volunteer basis, and who are in a position to contribute to or further the organization's mission.
- **Customer Management:** Ability to control, predict, process, organize, present, and analyze all information, documents, preferences, experiences, and history related to a legal entity that has, plans to have, or has had an agreement in place with the organization, or is a recipient or beneficiary of the organization's products or services.
- **Agreement Management:** Ability to establish, organize, analyze, administer, and report on all aspects of a set of legally binding rights and obligations between two or more legal entities.

These capability names and definitions are merely examples and should not be blindly adopted. In the customer example, the definition includes current, past, and future customers. This definition eliminates confusion over prospect versus customer. In some cases, however, a customer is considered a customer simply because they receive products or services, even though they will never have an agreement. An example of where a legal entity would be considered a customer in the absence of an agreement would involve the recipient of a shipment from a shipping company or a third-party insurance claimant. In both cases, the legal entity benefits from the organization's services, but has no agreement in place. Regardless of the definition applied, it must represent a view that is valid across the business ecosystem.

Capability definition building is an iterative effort but extremely important to all individuals who will use the capability map. Consider that the builders of the capability map will typically not be around to explain what a capability means. As a result, all definitions must be accurate and self-

explanatory. A capability map without a complete set of solid, vetted business definitions is just a bunch of words organized in a hierarchy.

Validating and Socializing the Capability Map

The validation and socialization phase of capability mapping applies to all capability levels and is typically performed iteratively as the process unfolds. These activities have been separated for clarity and emphasis.

1. **Validate the capability map:** Validation of the capability map is accomplished through a series of facilitated working sessions, which are the centerpiece of the capability mapping effort. Even the most knowledgeable SME cannot build a map alone. Many teams have found significant value in the dialogue exchange required during the map-building exercise. The work that goes into these efforts brings a cross-functional degree of insight to the business through introspective analysis of what the business does. These sessions can be very eye-opening. One business person said that for the first time in 20 years on the job, there were finance people talking the same language as the insurance people. Business professionals participating in these validation exercises will more readily embrace the capability map and support its use in future business initiatives.

Sessions should be facilitated by a business leader on the capability team and focus on a capability or set of related capabilities relevant to a specific business topic — such as Agreement Management, Claims Management, or Product Management. The work should engage representatives from each business unit with that capability. The most successful sessions tend to run three to four hours, followed by a period of cooling off and introspection. It often takes three to four sessions to get through one or two core capabilities. Flip charts work best because everyone can watch the work evolve.

Extended validation sessions further vet the capability map by focusing on small groups of specialized SMEs who run through various scenarios to test a subset of capabilities. The typical session involves these experts describing how the business works in various situations. For example, a mapping team at an automotive company had validated Agreement Management and Order Management with a cross section of business units. The team found it had to apply critical adjustments after running through various scenarios with a group of fleet management specialists. In the absence of such a session, the capability map would have been lacking in key areas.

2. **Socialize the capability map.** Socializing is a general term for vetting, validating, communicating, and building support for the capabilities within a capability map. This step is very important and begins with level 1. Each participant at every step of the way should have

the opportunity to informally review and provide feedback on the capability map as it evolves. This step, however, involves a formal review and finalization of the work done to this point. At a minimum, the original executive team that worked on the initial capability map should be reassembled to review and signoff on the final capability map.

Packaging and Publishing the Capability Map

This phase involves creating a formal document that can be reviewed, refined, and used. Publishing should be viewed as a later stage validation and socialization aspect of capability map development.

1. **Defining the packaging approach.** There are several options available for presenting the capability map and no fixed limitations in terms of the views. One guideline is to avoid too many pages of material because it can overwhelm people. Here are some successful approaches for packaging capability maps.
 - Create a single page level 1 map for executive level discussions
 - Create a single page level 1-2 map for executive and planning level discussions
 - Create a single page level 1-3 map for each of the three stratification tiers of the capability map (three pages total)
 - Create a single page level 1-n map for each level 1 or level 2 capability that has been decomposed beyond level 3
2. **Delivering a pictorial capability map.** Visualizing the business architecture through the capability map is one of the fastest ways to communicate what a business does using the common vocabulary of the business. The map is the final product or blueprint that represents this category. Normally the creation of the actual map is done after stability is reached at each level. Figure 2.2.4 depicted a sample level 1 map and figure 2.2.8 shows a level 1-2 map example. There are no rules as to the number of levels per page or number of pages per map although it is important to strive for readability. The only restrictions are an adherence to the basic principles of a capability and using the term capability map solely for a blueprint that contains just capabilities. These principles do not preclude the creation of other blueprints that incorporate capabilities and map to organizational, value stream, information, or initiatives — as long as these are properly represented as being alternative blueprints and not capability maps.
3. **Publishing the capability map.** Publishing the capability map can take multiple forms based on a particular organization's requirements and the content contained within the overall map. Publish the capability map in a location where it can be accessed by anyone who chooses to view it and where the most current version will be available as the map evolves, with the standard internal privacy and security considerations. For example, make the

capability map available on a widely accessible intranet site and promote its existence as a common vocabulary for the business. Encourage comments and feedback and refine as required.

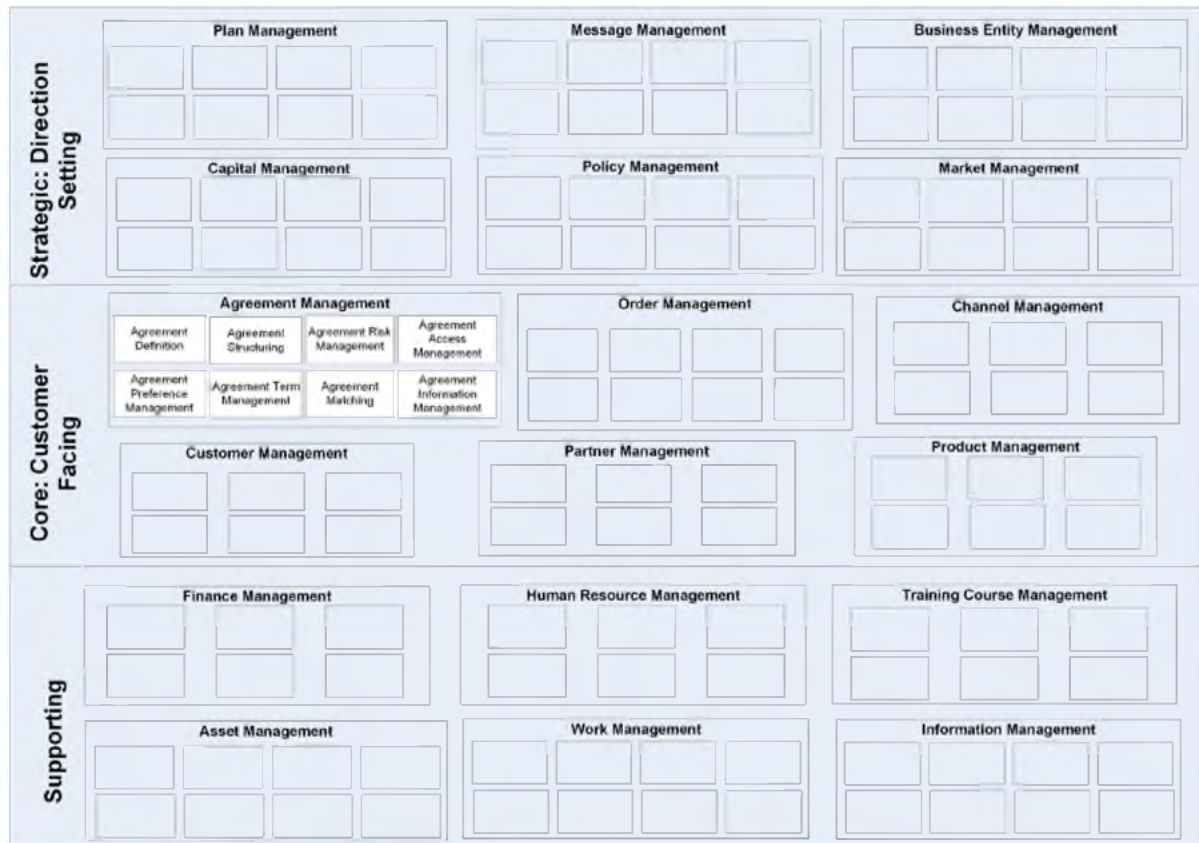


Figure 2.2.8: Partially Populated Capability Map – Levels 1-2

Figure 2.2.8 depicts a capability map that has been expanded to two levels for an enterprise. Agreement Management is decomposed to eight level 2 capabilities. The remaining level 1 capabilities contain placeholder slots that can be populated with additional level 2 capabilities. While the map is semi-specific to commercial organizations it could be considered a basic reference model, readily customized to accommodate government, manufacturing, telecommunications, transportation, healthcare, or a number of other industries.

Sample Capability Decomposition Walkthrough

Walking through a sample capability map decomposition exercise provides a good foundation for pursuing these efforts in a real-world atmosphere. The following discussion uses examples from a service type organization, but the concepts transfer across other industries and government institutions with various additions and modifications. A manufacturing, entertainment, or

telecommunications company, for example, might have a customer-facing capability called Asset Management, while other businesses would categorize it as a supporting capability. Or a power company may have a Power Management level 1, core capability, while a government agency may have a level 1, core capability called License Management. These variations are almost always focused at the core tier of the capability versus supporting or strategic capabilities which largely are common across industries. The discussion that follows focuses on map decomposition.

Decomposing a Level 1 Capability Map

An example of level 1-2 decomposition provides insight into how to apply the previously discussed principles and guidelines. In figure 2.2.8, each level 1 and corresponding level 2 capabilities have been stratified into Strategic, Core/Customer-Facing, and Supporting categories. As previously discussed, stratification is highly encouraged because executives use stratification levels to focus situation analysis, planning, issue resolution, investments, customer value delivery, and outsourcing discussions. In addition, the stratification approach creates a friendlier visualization for individuals viewing the map.

Some organizations have opted to represent capability levels 1-3 on a single page. However, unless the business is fairly simple or people like reading fine print, putting levels 1-3 for an entire enterprise on a single page can make the contents difficult to read or decipher. One common approach is to use the 2-level mapping shown in figure 2.2.8 on a single page and then decompose levels 1-n into separate pages as required.

Figure 2.2.9 shows a level 1 capability, Agreement Management, decomposed into six level 2 capabilities. Each of these capabilities plays a unique role in establishing, maintaining, analyzing, and addressing work associated with an agreement. An agreement in this case is “the legally binding contract that has been established between the company and an external stakeholder”. This capability works for any contract with any third party, including customers, vendors, suppliers, and partners. While agreement terms and type may vary from one agreement to another, capabilities required to establish and structure an agreement; match an agreement to customers, partners, payments, products, and other agreements; manage renewals and related state changes; track information; and ensure compliance are essentially the same.

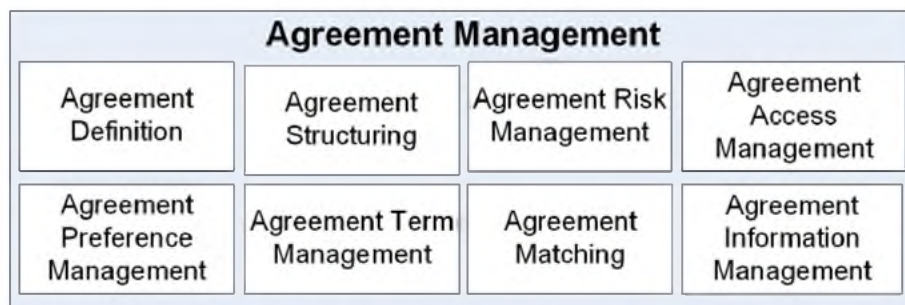


Figure 2.2.9: Agreement Management Capability Decomposed into Six Level 2 Capabilities

Level 2 capability decomposition, as shown in figure 2.2.9, must be reasonably and generally agreed upon by the mapping team prior to moving to the next deeper level of decomposition. However, level 2 capabilities may often evolve as lower-level capabilities emerge. Level 2 capabilities typically provide upper-level management enough insight into what is included under that capability to give them a comfort level that these concepts reasonably represent the business and serve as a beginning of planning and investment analysis.

Decomposing level 2 capabilities, particularly where it involves significant core or customer-facing capabilities such as Agreement Management, requires long, focused capability mapping sessions. Decomposing an Agreement Management capability with various business teams typically takes a number of weeks, albeit with sessions often totaling no more than eight hours per week per SME. The senior individuals, who are usually not executives but rather the “go to” business unit individuals who are often the focal point of special projects, are typically the individuals engaged in capability mapping efforts. It is difficult to get extended access to SMEs, so the value of each discussion must be maximized through effective offline decomposition, term and definition structuring, and related SME input.

Decomposing Capabilities Levels 2-n

Figure 2.2.10 depicts a level 2 capability called Agreement Structuring, a child of Agreement Management, as an example of capability decomposition below level 2. This capability encompasses all capabilities required to shift an agreement from an undefined, unsigned state through its lifecycle where terms are locked in and the agreement is activated. These capabilities are often incorporated into the portion of a value stream that many organizations consider the essence of the agreement evolutionary lifecycle — from the point where the agreement is defined, through its activation and termination.

Based on a given business model, a company would deploy variations on Agreement Structuring that may, for example, more fully articulate the agreement lifecycle or expose the concept of an offer as a parallel, level 2 capability.

Agreement Structuring Capability – Decomposition Example

As shown in figure 2.2.10, Agreement Structuring contains six level 3 capabilities: Agreement Eligibility Determination, Agreement Definition, Agreement Terms Management, Agreement Price Determination, Agreement Risk Determination, and Agreement Finalization.

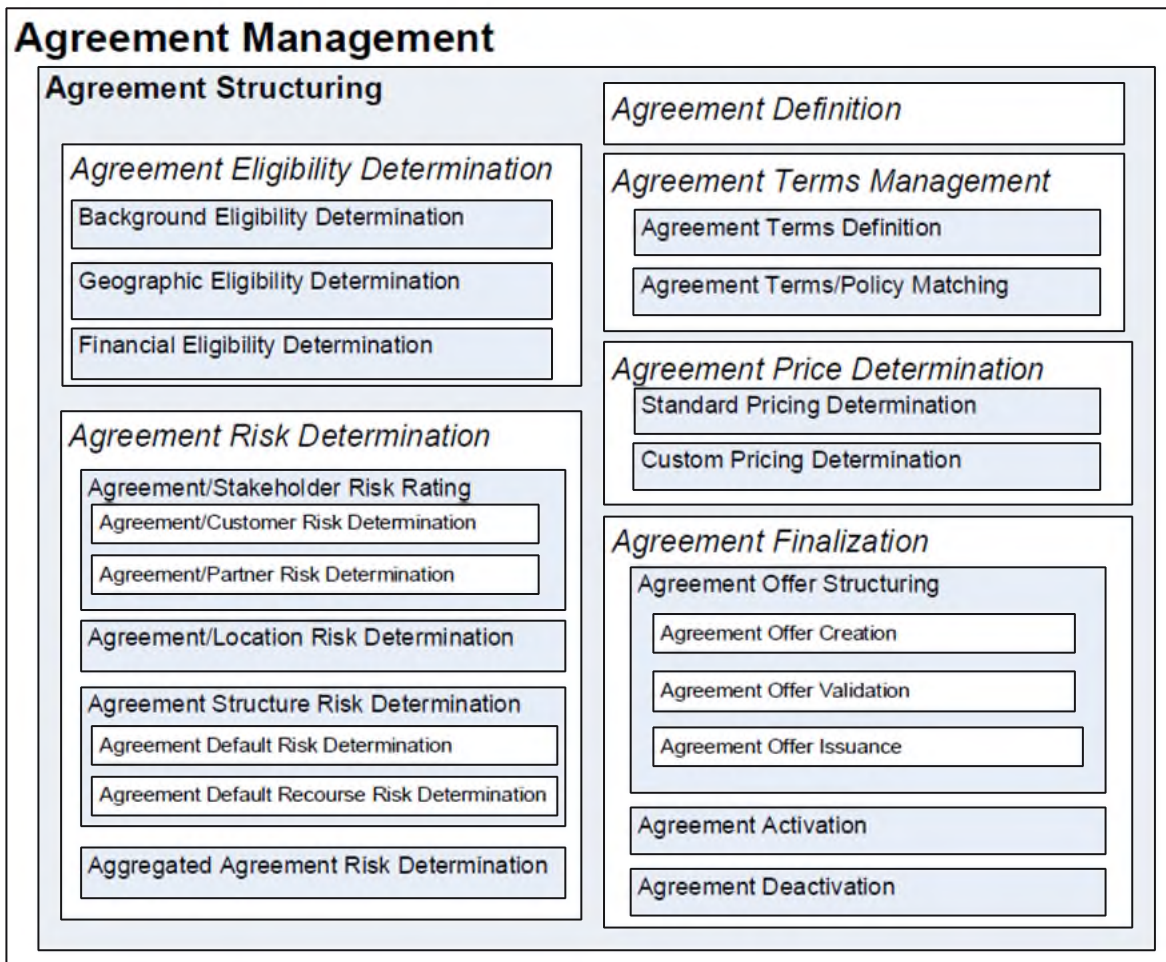


Figure 2.2.10: Sample Level 2 Capability Decomposition for Agreement Structuring

Consider one of the level 3 capabilities decomposed under Agreement Structuring. Agreement Eligibility Determination ensures that the requesting applicant is qualified for the next level of scrutiny and attention. This capability decomposes to level 4 to address background, geographic, and financial eligibility factors. A second level 3 capability, Agreement Risk Determination, assesses various types and degrees of vulnerabilities and threats associated with various aspects of the agreement. This capability is common in underwriting loans, determining if a person or company qualifies for insurance, and allowing someone to rent a car as well as in numerous other business models, too. Agreement Risk Determination decomposes to levels 4-5 to achieve the

required level of granularity needed to rate certain risks.

Finally, Agreement Offer Finalization activates the agreement, moving it from “pending” to “executed”. Specifically, a level 4 capability, Agreement Activation, activates the agreement. Figure 2.2.10 highlights the importance of lower-level capabilities, where a level 4 capability is required to ensure that any agreement within a business is activated.

Note that there are no customer-related or product-related capabilities under Agreement Management. Customer-related capabilities are managed under a separate level 1 capability called Customer Management, previously shown in figure 2.2.3. This separation of object concerns reinforces the premise that capability scope is bounded and constrained by the level 1 business object. However, there are many scenarios where a business must, for example, associate an agreement with a customer, partner, product, or other business object. The approach used to establish these associations involves matching capabilities.

Agreement Matching Capability – Decomposition Example

A matching capability binds related business objects to other business objects. Figure 2.2.11 depicts Agreement Matching, a level 2 capability under Agreement Management. In this example, the Agreement/Product Matching capability ensures that the right product or products are linked to an agreement. Similarly, Agreement/Customer Matching associates an agreement with a customer. When a stakeholder pulls information for a given agreement, there will be absolute transparency as to the customer and products that are party to that agreement.

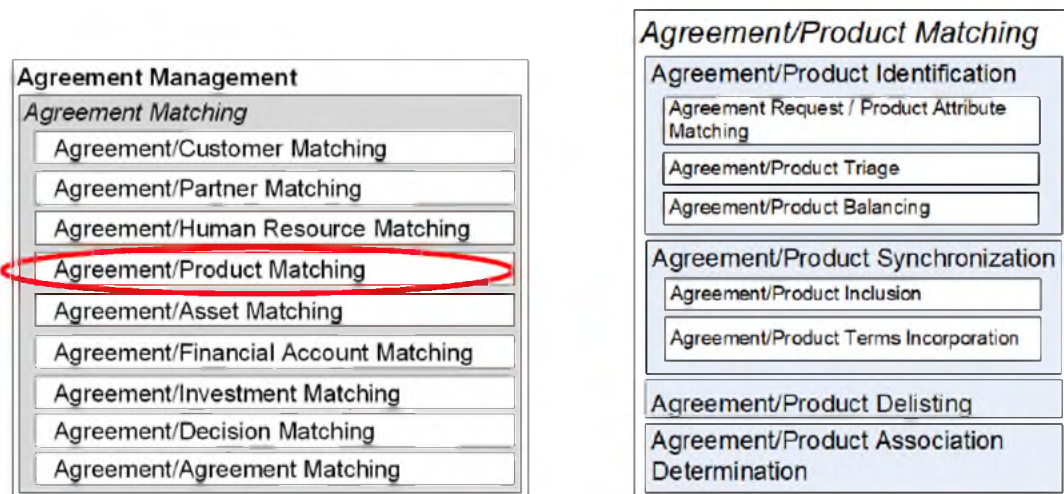


Figure 2.2.11: Sample Agreement Matching and Agreement/Product Matching Decomposition

In some cases, a business requires further details underlying a given matching capability. The second example to the right in figure 2.2.11 represents an Agreement/Product Matching

capability decomposition to levels 4-5. This decomposition provides detailed insights into what underlies a given matching capability. A business selectively decomposes matching capabilities based on various usage scenario demands. The best practices covered later in this section provide more guidance on the use of matching capabilities.

A typical Agreement Management capability would often include a hundred or more child capabilities when decomposed to levels 4, 5, or 6. The breadth of coverage and depth of decomposition directly relate to business model complexity and diversity of use across a wide range of business scenarios.

Work Management Capability – Decomposition Example

Another example of capability decomposition involving a level 1 aggregating capability called Work Management is shown in figure 2.2.12. This commonly used capability is an aggregated set of capabilities associated with work items, work queues, events, decisions, and submissions. Work Management aggregates these objects and corresponding capabilities because in practice they are intertwined and perform as a collective.

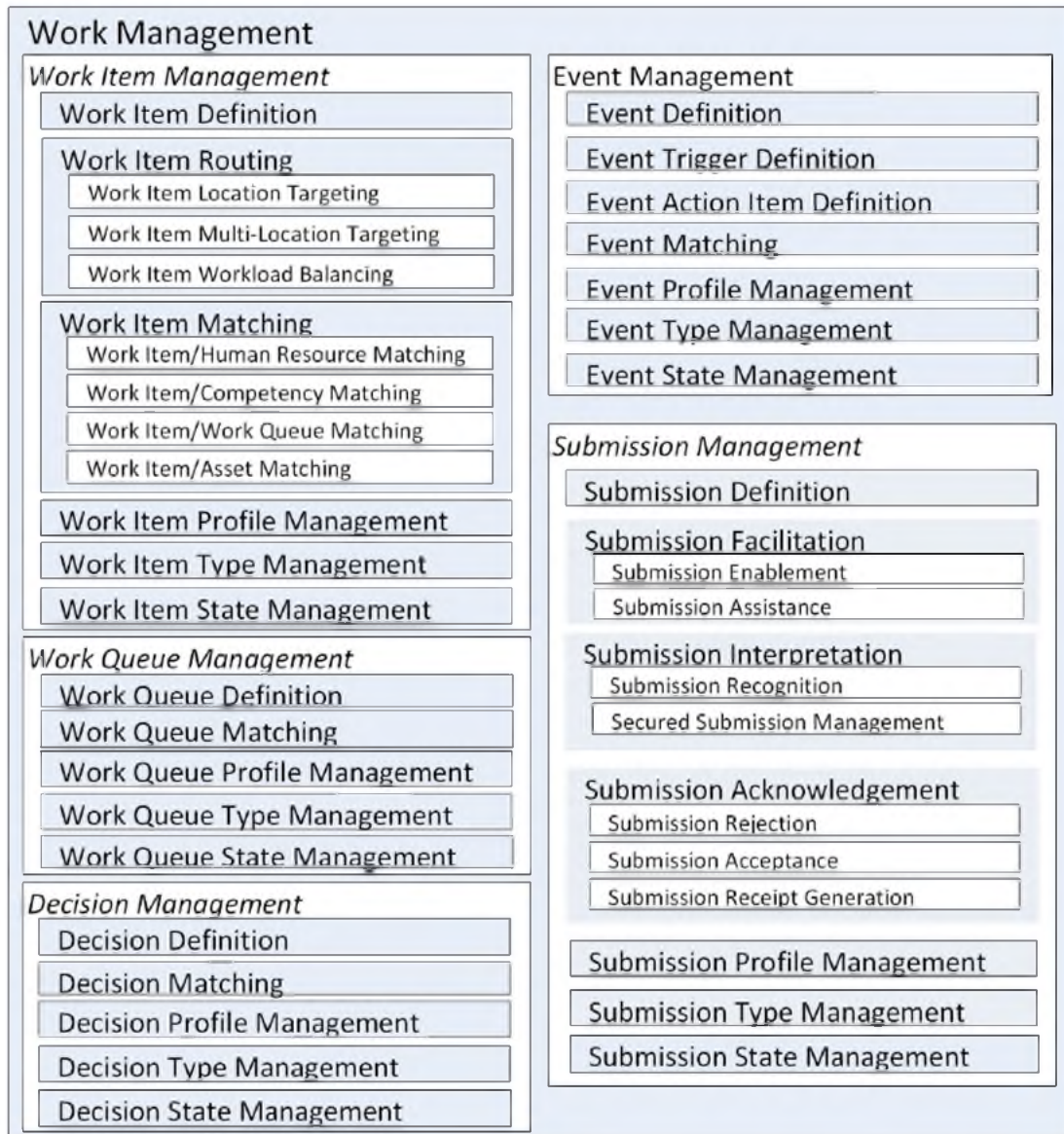


Figure 2.2.12: Sample Capability Decomposition

Work Management, which decomposes to levels 2, 3, and 4, is somewhat unique in terms of capability definition practices. While work is the overall parent object, there are a number of lower-level capabilities that define related business objects that each have their own definition, matching, profile, type, state, and related (not shown) capabilities that allow them to work independently but match to their counterparts and other objects as required. Mapping teams have a tendency to overlook work-related capabilities in initial mapping efforts and quickly realize that their capability map has major scenario usage gaps.

In practice, Work Management incorporates all work movement across a value stream, regardless of the intent of the value stream³. For example, Submission Management provides capabilities needed to handle all third-party submissions, regardless of the type of submission or the way in which they were submitted. Work Management also enables work to be defined, moved across the business when and where it is required, and prioritized effectively.

To further examine decomposition concepts, consider the capabilities defined under Submission Management, where a submission is essentially a container. Submission Facilitation incorporates capabilities that allow a stakeholder to submit a request, and Submission Interpretation includes capabilities required to interpret a submission. Submission Acknowledgement formalizes the handling and state transition of a submission once received. This example highlights the point that a set of child capabilities should collectively represent the parent capability and not simply exception scenarios. Only showing exception scenarios leaves gaps in the capability map. Decomposition efforts at any level should keep this concept in mind.

Work Item Routing ensures that work items, or tasks, linked to related information, are delivered to the right stakeholders in the appropriate work queues. Routing of work is based on events, object states, and time constraints. An inadequate routing capability at one company resulted in significant customer attrition, and addressing weaknesses in this area reversed that trend.

Work Queue Management manages work item or task assignments, filtering, and prioritization. Time Management, which is not shown, can be thought of as a series of clocks that are responsible for managing start and stop points as well as lapsed time. For example, request/response window expiration, time required to respond to a notice of loan default, or expiration of a license all trigger a series of events that can change the state of a file or even trigger a value stream (i.e., trigger by proxy), such as a loan default. When all Work Management capabilities are optimized to peak levels, a business is likely functioning at a greater degree of efficiency and effectiveness, delivering higher levels of customer satisfaction.

Capability Mapping Best Practices

Certain best practices have emerged related to capability naming conventions, decomposition, matching approaches, and grammatical structure. These best practices are summarized herein to help mapping teams expedite their efforts to establish a capability map.

Capability Naming and Decomposition Practices

Consistently applied decomposition and naming conventions allow mapping teams to expedite capability mapping efforts while streamlining the learning curve for those individuals using the capability map. These conventions generally apply to key capabilities such as customer, agreement, partner, asset, and product but may be applied to a wider range of capabilities as

required. Naming and leveling conventions are summarized in the following pattern.

- Level 1: ____ Management (e.g., Agreement Management)
- Level 2: ____ Definition (e.g., Agreement Definition)
- Level 2: ____ Preference Management (e.g., Agreement Preference Management)
- Level 3: ____ Preference Definition (e.g., Agreement Preference Definition)
- Level 3: ____ Preference Interpretation (e.g., Agreement Preference Interpretation)
- Level 3: ____ Preference Compliance Determination (e.g., Agreement Preference Compliance Determination)
- Level 2: ____ Risk Management (e.g., Agreement Risk Management)
- Level 2: ____ Access Management (e.g., Agreement Access Management)
- Level 2: ____ Matching (e.g., Agreement Matching)
- Level 2: ____ Information Management (e.g., Agreement Information Management)
- Level 3: ____ Profile Management (e.g., Agreement Profile Management)
- Level 3: ____ Type Management (e.g., Agreement Type Management)
- Level 3: ____ State Management (e.g., Agreement State Management)
- Level 3: ____ History Management (e.g., Agreement History Management)
- Level 3: ____ Analytics Management (e.g., Agreement Analytics Management)

Additional level 2 capabilities vary depending on the object. For example:

- For Product Management: Product Conceptualization, Product Design, Product Validation, Product Lifecycle Management
- For Asset Management: Asset Design, Asset Deployment, Asset Lifecycle Management

Not all pattern examples apply in all situations; organizations should, therefore, ensure that each capability is defined accordingly and applies to their business model. For example, preference may not apply to an asset or product. In addition, risk is typically associated with specific business objects but may be aggregated under a level 1 capability called Business Entity Management, a commonly used capability for organizational governance. The level 2 risk aggregation capability would be called Business Entity Risk Management. All examples shown herein are not intended to constrain the language used to describe a business, but to be merely exemplary.

Capability Matching Practices

As previously shown in figure 2.2.11, matching capabilities associate a given business object defined under one level 1 capability with a business object defined in another level 1 capability.

This best practice accommodates the need to associate real-world objects such as agreements, products, assets, partners, customers, and similar business concepts. For example, every agreement will have one or more counterparties to that agreement, whether it is a customer, partner, or another stakeholder-oriented business object. In order to establish and recognize these relationships, businesses define matching capabilities. The general rule is that objects defined within a given level 1 capability need to be matched to other objects defined within other level 1 capabilities. Matching may cross capability mapping levels. For example, one could match a level 1 defined customer to a level 1 defined agreement (e.g., Agreement/Customer Matching) or match a level 2 defined agreement term to a level 1 defined policy (e.g., Agreement Term/Policy Matching).

The premise for matching across level 1 capabilities is that there is no self-evident association in place, for example, between an agreement and a customer because these objects can exist independently of each other in the real world. However, level 2/3 agreement terms or agreement preference objects are fully dependent on an instance of an agreement. Therefore, there is little need to match real-world objects that exist within a level 1 to other objects defined within that same level 1, with one exception. The exception is the case where the object scope boundary dictated by a level 1 capability is pushed to a lower-level capability. This scenario occurs when a generalized level 1 capability is used to group a set of level 2 capabilities because of their tight relationships to each other.

There are two common examples of this situation in practice that bundle capabilities under a single level 1 capability to reduce the number of level 1 capabilities in a capability map — Work Management and Human Resource Management capabilities. Figure 2.2.12 highlights this scope boundary pushing situation under a Work Management capability. In this example, several capabilities based on business objects with no self-evident relationships are pushed to level 2. Consider that a submission, work item, event, time, or decision may exist independently of each other. Capabilities defined at level 2/3 based on these business objects must be matched to each other as they have no naturally occurring, self-evident relationship.

In all cases, mapping teams should concurrently articulate an information map that reflects these relationships in practice to bring greater clarity to these real-world associations. Practitioners may refer to the common reference model in *BIZBOK® Guide* section 8.6 for the latest evolution of Work Management and Human Resource Management.

Practitioners can apply the following best practices for defining matching capabilities. The blank name in each example may be replaced by a given business object as shown.

Level 2: ____ Matching (e.g., Agreement Matching)

Level 3: ____/____ Matching (e.g., Agreement/Customer Matching)

Level 3: ____/____ Matching (e.g., Agreement/Partner Matching)

Level 3: ____/____ Matching (e.g., Agreement/Product Matching)

Level 3: ____/____ Matching (e.g., Agreement/Asset Matching)

Level 3: ____/____ Matching (e.g., Agreement/Decision Matching)

Level 3: ____/____ Matching (e.g., Agreement/Agreement Matching)

In addition to the previously defined structure, mapping teams should consider a few additional best practices to ensure that the matching capability pattern is applied consistently, effectively, and only when required.

- The “controlling” object (e.g., agreement) serves as the logical focal point for the match. The controlling object initiates and is listed first in a given level 3 matching capability.
- The controlling object is typically the more volatile object. For example, where a single customer may have many agreements over time, the agreement is the controlling object, so the match is made via an Agreement/Customer Matching capability. Also, where a location is a constant while assets come and go, location is associated with an asset via an Asset/Location Matching capability.
- The controlling object often defaults to what a value stream would consider to be a “binding” object, as discussed in *BIZBOK® Guide* section 2.4. Agreement is a binding object because it serves as a central focal point for associating customer, product, financial account, asset, partner, decisions, and other objects. Other examples of binding objects include an insurance claim, order, or legal proceeding.
- Matching capabilities should not be duplicated within a capability map when another controlling object has established the association. For example, if Agreement Matching has a capability for Agreement/Product Matching, there is no need for Product Matching to have a capability for Product/Agreement Matching.
- Parent/child object matching is not required because objects defined in child capabilities are already associated with the parent through decomposition. For example, when Agreement Term Management is defined as a level 2 capability under Agreement Management, there is no need to match agreement term to agreement.
- Object matching within a level 1 is dictated by the previously covered exception scenario where traditional level 1 boundary scoping is pushed to a level 2 capability or lower; an example is an Agreement Term Management capability under Agreement Management would have its own set of matching capabilities to the agreement term.

- Three-way matches may be applied as well where such an association is required by a given business scenario.

Grammatical Practices

From a best practice perspective, there are certain grammatical conventions to provide consistency for builders and consumers of the capability map, including:

- Capability names are shown with the first letter of each word in the name capitalized
- For lists within a capability definition, use the oxford comma
- Do not use the “and/or” combination in a definition
- For capability definitions, keep them to one sentence and end them with a period
- Use the “/” to represent a matching capability, object-to-object relationship

Heat Mapping and Attributing the Capability Map

Once the basic capability map has been created, the goal is to leverage the information for planning purposes. This effort can be done using a heat map. Executives use heat maps and other views of capabilities as input to strategic business analysis and planning because a color scheme can be used to easily signify weaknesses in current capabilities or even the lack of a given capability. The capability heat map can serve as a current state / future state view of the business through the use of color-coding non-existent capabilities in a unique shade. Other attributes such as criticality and impact can be associated with capabilities on a case-by-case basis.

Heat Mapping the Capability Map

Heat mapping is an extension to the basic capability mapping effort because it involves another level of analysis. One guideline is to avoid heat mapping until a stable capability map has been vetted and published. Figure 2.2.13 provides an example of a heat map. For example, this figure shows that certain level 3 capabilities have been coded performing effectively (green) or in significantly problematic (red). Those capabilities that have been assessed would be assigned a color as follows, while those capabilities with no color designation have not been evaluated from a performance perspective. The typical heat mapping rating breakdown is as follows.

- Red = Significantly Problematic
- Orange = Problematic, Not Severe
- Yellow = Suboptimal
- Green = Working Well
- Purple (or other color) = Does Not Exist but Should
- No Color = Not Evaluated

In the figure 2.2.13 example, Partner Information Management was fragmented in such a way that it was costing the organization millions of dollars a year in overpayments, missed consolidation opportunities, and excess management and effort. Consolidating this capability into a single business unit addressed the issue, but it required a broader understanding of where those capabilities currently existed. It is difficult to address problems when the issues and solutions are larger and spread across many business units, processes, and technology deployments. Capability heat mapping and organizational cross-mapping (see *BIZBOK® Guide* section 2.3 for more details) provide a basis for determining where this fragmentation occurs and a basis for defining a solution.

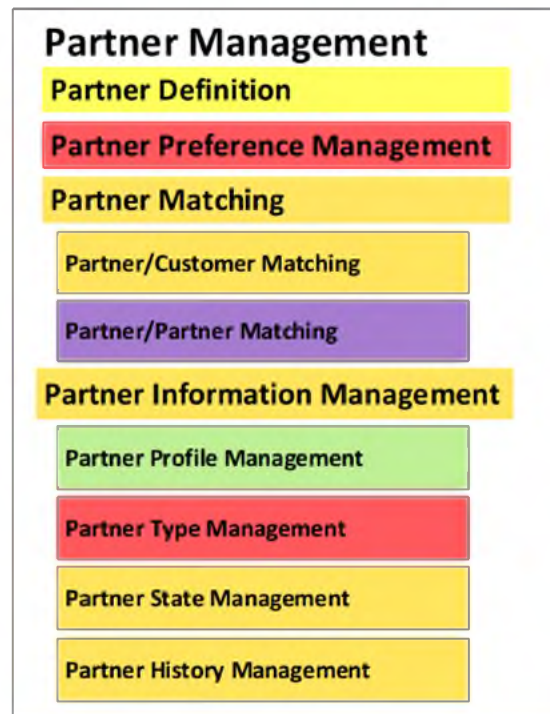


Figure 2.2.13: Sample Level 1-3 Heat Map

While defining a heat map rating for a capability in aggregate for a business is useful, as this reflects in certain cases the issues related to holistic management issues, there are times when practitioners can apply heat map ratings to a specific instance of a capability as it relates to a value stream stage or business unit. This section previously introduced the capability instance to accommodate this requirement. For example, Agreement Structuring may be red for a Mortgage Division, but it may be green for a Commercial Banking Division.

These instances could be reflected in organization maps where an instance is mapped to a business unit. In another situation, the same capability may work well in the Establish Agreement value stream but not in the Modify Agreement value stream. In this example, the capability

instance would have a different heat map rating based on the particular value stream stage it enables. Practitioners should assess the usage of this concept as required to reflect instances of capabilities where useful to a given business unit or to the business as a whole.

The heat mapping approach is summarized as follows.

1. Assign heat mapping attributes from the lowest level capability up.
2. If lower-level capabilities are predominantly a single color, apply that color to the next level capability up.
3. If there is no clear rollup view due to a mix of colors, use additional attributes to weight a given capability or a different one based on impact or proliferation (see Other Attributes section below).
4. Continue this process, rolling up capability colors to the highest level of the map.
5. Validate these findings broadly with the key players most knowledgeable about those capabilities.
6. Refine heat map analysis on a regular basis.
7. Use the heat map as one (not the only) input to transformation and related planning and funding activities.

Figure 2.2.14 is a conceptual view of what a larger map may look like using the heat mapping technique. This example involves capabilities that are green, yellow, red, and not evaluated (no color assigned).



Figure 2.2.14: Capability Heat Map Concept

The concept of current versus future state capability mapping was previously discussed. The heat map can serve this purpose through the same color-coding scheme. It is recommended that the color purple is used for identifying a capability that does not exist today but that has been

identified by executives as a future state requirement. In this way, capabilities that do not exist can live along side their current state relatives. Organizations should try to stick with a consistent color-coding convention and clearly define any extensions to the color scheme that may have been applied.

One final item that was touched upon earlier involves aggregating versus disaggregating heat map ratings in relation to capability instances. While business units may prefer seeing a capability uniquely heat mapped to their business unit, it could be misleading. Consider the case where three business units all rate their Work Item Routing capability instance as green because work is effectively routed within their business unit. Yet work is lost or delayed as it moves from business unit to business unit.

Rating the aggregated capability as green because each instance is green would be misleading because work does not route effectively across business units, getting lost or delayed in many cases. Rating the capability from an aggregate perspective versus a disaggregated instance perspective would result in setting the heat map rating to red or orange, not green. This scenario should be kept in mind when heat mapping capabilities that must work across business units are to be considered effective.

Further Attributing the Capability Map

Other attributes may be assigned to a capability. Some organizations like to assign a criticality attribute. A capability may be red (poor) but of low criticality to the business. In this case, both attributes would be viewed collectively to assess whether any action on that capability is warranted. A common approach is shown as follows.

- 5 = Negligible impact, rarely occurs, almost no internal visibility, no external visibility
- 4 = Limited impact, occurs infrequently, limited internal visibility, no external visibility
- 3 = Moderate impact, occurs occasionally, moderate internal visibility, limited external visibility
- 2 = Noticeable impact, occurs frequently, extensive internal visibility, noticeable external visibility
- 1 = Significant impact, occurs very frequently, pervasive internal visibility, definite external visibility

Another attribute sometimes considered is the degree of proliferation across the business. For example, a capability that is used across dozens of teams or business units, or used dozens or even hundreds of times across a set of value streams, management may want to address it even though criticality of any single implementation is low or medium. Other attributes may certainly

be assigned based on need. The *BIZBOK® Guide* section 3.7 provides more detailed capability attributing as a basis for business performance analysis.

Capability/Organization Mapping

Business unit-to-capability mapping is important because it identifies the groups of business communities that have an interest in a given capability. This cross-mapping perspective is where transformation discussions should begin because business/IT transformation requires an understanding of the breadth and depth of the stakeholder community and each stakeholder's concerns. Any transformation approach will more than likely impact multiple stakeholders. Figure 2.2.15 depicts business unit / business capability mapping in a basic blueprint. This business architecture blueprint shows how three business units (i.e., property and casualty, life and disability, and health) each have claim and customer related capabilities.

Business Unit/Capability Mapping		
Business Unit	Capability (Level 1)	Capability (Level 2)
Health	Claim Management	Claim Definition
		Claim Adjudication
		Claim/Payment Matching
	Customer Management	Customer Information Management
Life & Disability	Claim Management	Claim Definition
		Claim Adjudication
		Claim/Payment Matching
	Customer Management	Customer Information Management
Property & Casualty	Claim Management	Claim Definition
		Claim Adjudication
		Claim/Payment Matching
	Customer Management	Customer Information Management

Figure 2.2.15: Business Unit-to-Business Capability Mapping

Figure 2.2.15 provides an example of how capability instances may be represented for an insurance company. In this example, there are three instances of Claim Management and Customer Management capabilities across three different business units; Health, Life & Disability, and Property & Casualty. Exposing multiple capability instances provides insights into investment targets from an individual business unit and from an aggregate planning perspective. For example, each insurance business unit listed in figure 2.2.15 may want to invest in the Claim Management capability instance relevant to its business area. A cross-business unit, strategic planning team may, on the other hand, want to invest in the collective set of Customer Management capability instances in order to standardize how customers are engaged and how customer information is managed.

Capability-to-business (i.e., organization) unit mapping is normally the starting point for a transformation discussion. The reason for starting with capability and business unit is that it is an essential step to identifying horizontally shared capabilities (e.g., Customer Management) and pinpointing the business areas to focus on first. While this high-level map may look like something that every manager should have emblazoned in their consciousness, this is not always the case.

One reason is that different business units often have misaligned definitions for terms as basic as product, customer, or account. In addition, moving to an analysis of exactly which business units have certain capabilities can get quite complex. Once this information is captured in the business architecture, however, the research has already been completed. Capability-to-business unit mappings are particularly stable. Even reorganizations have a marginal impact on the mappings. Additional capability/organization mapping blueprints are included in section 2.3 of the *BIZBOK® Guide* on organizational mapping.

Capability/Value Stream Mapping

Capability-to-business unit mapping is important, but there is another business architecture domain that is required to enable effective business planning — the value stream. A value stream is an end-to-end collection of activities that creates a result for a customer. A value stream begins with a stakeholder triggering the first stage and ends when the value proposition is delivered to that stakeholder and the final exit criteria is satisfied.

Value streams decompose into a series of stages that move from left to right, with arrows or chevrons linking stage-to-stage. Value streams and value stream stages are expressed in verb-noun format such as “Activate Financial Account”. Capabilities enable value stream stages. Therefore, capabilities can be mapped to each stage of a value stream as shown in figure 2.2.16. The value stream in this example is called Establish Financial Agreement and contains four stages.

Value Stream: Establish Financial Account			
Initiate Financial Account Request	Determine Financial Account Eligibility	Activate Financial Account	Finalize Financial Account Setup
Submission Management	Submission Management	Submission Management	Submission Management
Agreement Definition	Agreement Access Management	Agreement Access Management	Agreement Access Management
Agreement Access Management	Agreement Risk Determination	Agreement Structuring	Agreement Preference Management
Agreement Matching	Agreement Matching	Agreement Risk Management	Agreement Matching
Agreement Information Management	Agreement Information Management	Agreement Matching	Agreement Information Management
Customer Definition	Customer Risk Determination	Agreement Information Management	Customer Authentication and Authorization
Customer Authentication and Authorization	Customer Authentication and Authorization	Customer Authentication and Authorization	Customer Preference Management
Customer Matching	Customer Information Management	Customer Information Management	Customer Matching
Customer Information Management	Financial Account Access Management	Financial Account Access Management	Customer Information Management
Financial Account Definition	Financial Account Information Management	Financial Account Activation	Financial Account Access Management

Value Stream: Establish Financial Account			
Initiate Financial Account Request	Determine Financial Account Eligibility	Activate Financial Account	Finalize Financial Account Setup
Financial Account Access Management	Financial Account Risk Determination	Financial Account Matching	Financial Account Validation
Financial Account Information Management	Policy Definition	Financial Account Information Management	Financial Account Matching
Policy Definition	Policy Interpretation	Policy Definition	Financial Account Information Management
Policy Interpretation	Message Management	Policy Interpretation	Policy Definition
Message Management	Time Management	Message Management	Policy Interpretation
Time Management	Work Management	Time Management	Message Management
Work Management	Information Management	Work Management	Time Management
Information Management		Information Management	Work Management
			Information Management

Figure 2.2.16: Capability, Value Stream Mappings

Figure 2.2.16 shows how value stream stages are enabled by levels 1-3 capabilities that cover Agreement Management, Customer Management, Work Management, Finance Management, Submission Management, and other capabilities. Note that figure 2.2.16 only depicts a subset of enabling capabilities. Value stream/capability cross-mapping category plays an important role in business planning, issue analysis, and business transformation.

When an organization identifies issues with a given value stream or needs to invest in improving an organization in areas that involve that value stream, capabilities that enable that value stream become the focal point of analysis. Value streams along with more details on cross-mapping are discussed in depth in section 2.4.

Using the Capability Map for Business Planning and Transformation

The business capability plays an important role in tactical and strategic planning for business as well as for business/IT alignment. Situations requiring capability-based strategic planning and investment analysis are commonplace. For example, what if a capability is inadequate or lacking to the point where it is causing market share losses, revenue drops, customer attrition, or regulatory violations? Leveraging a capability-oriented view of the business to address these challenges provides commonality of views across business units and between business and the IT organization. This ability allows executive teams to view the situation from a holistic perspective, not as a series of piecemeal problems and solutions across various business unit silos.

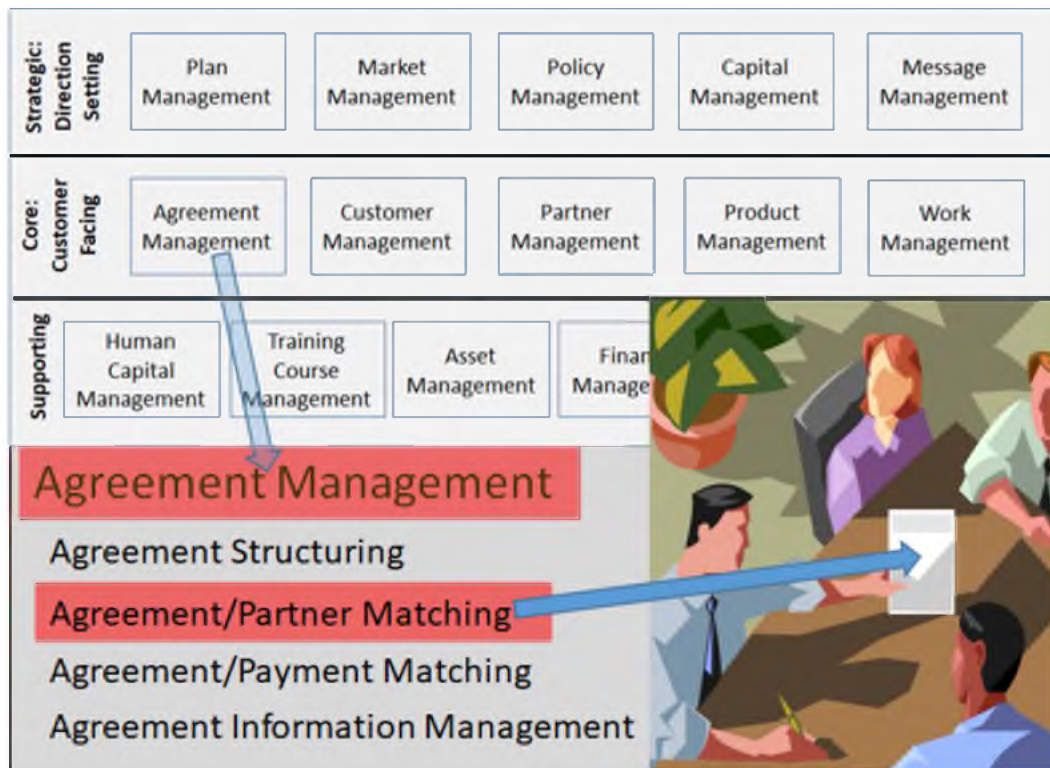


Figure 2.2.17: Capability-Based Strategic Planning

Consider a situation where vendor and vendor agreement management were fragmented across the business, resulting in very poor management of the procurement business. Organizations may manage aspects of vendors and vendor agreements in many places and in many ways. If management wants to consolidate procurement across a large complex enterprise, the first step is to identify the specific concerns, which is where the capability map plays a role as a common vocabulary for the topics to be addressed. Figure 2.2.17 illustrates the use of focusing issue analysis and resolution discussions on business capabilities rather than on a given business unit, person, or technology deployment.

Figure 2.2.17 shows Agreement Management heat mapped red (i.e., significantly problematic), which led to identifying Agreement/Partner Matching (also red) as the focus of the problem requiring management attention. In this example, vendor partners were not aligned well and had many agreements with different business units, managed by numerous teams that diminished negotiating power and discount opportunities. This issue was identified as a priority that had to be addressed. Analysts then traced problematic capabilities to the business units and enabling systems and technologies to craft a cross-business unit solution and jointly funded initiative to address the problem.

As a rule, problem analysis typically jumps to a solution before proper analysis has been performed. Pinpointing the capability-based limitations or issues is an objective vehicle for moving beyond the solution-first trap. The capability becomes an agreed upon focal point not just for issue analysis but also for issue resolution, cross-functional investment, and eventual automation.

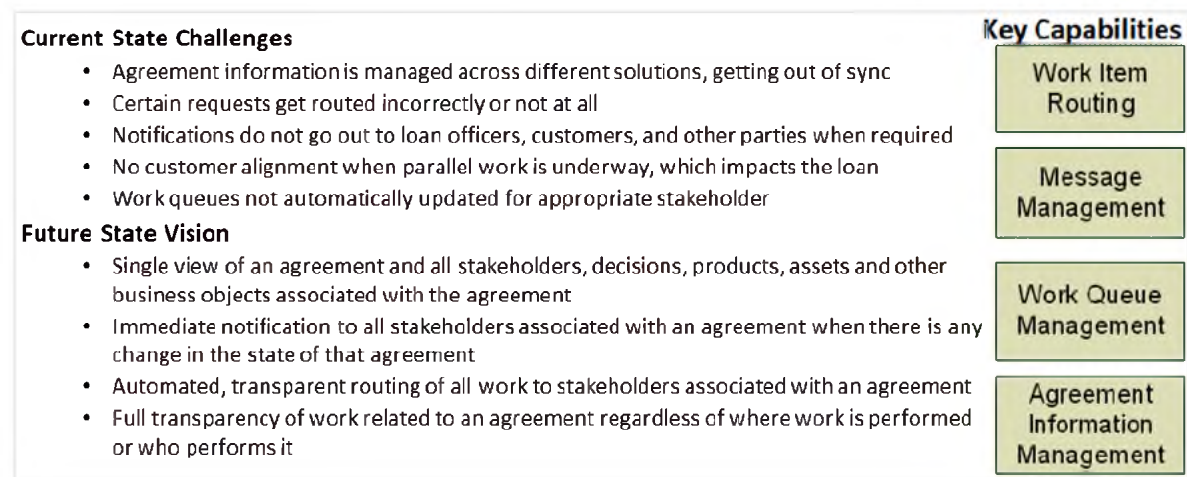


Figure 2.2.18: Capability-Based Current State Analysis vs. Vision Summary

Figure 2.2.18 provides an example of a capability-focused summary of the current state of a set of capabilities versus the future state vision for those same capabilities. Establishing this analysis sets the stage for crafting a strategy for improving these capabilities and lower-level capabilities. The capabilities in figure 2.2.18 are essential to establishing streamlined, highly transparent customer service. When these capabilities are not working effectively, the result is customer attrition, competitive losses, and the inability to grow a business across diverse product lines — along with increased delivery costs and delays.

Consider a lack of customer alignment or coordination when work is underway in parallel value streams, which produces conflicting results for, in this case, a loan undergoing restructuring and being defaulted at the same time. This issue is related to case file fragmentation and redundancy. Another issue linked to case file fragmentation and redundancy is the lack of customer visibility across product lines.

These seemingly unrelated issues stemming from weaknesses in the same capabilities point to the need for consolidating issue analysis from a capability perspective. In one case, a business unit has concerns over a lack of visibility related to parallel work streams while executives in other business units have concerns over the lack of customer visibility across product lines. Both issues stem from case file fragmentation and redundancy, even though the two parties raising concerns are unaware of the other's challenges. With capability as a planning focal point,

however, these related concerns can be highlighted and jointly cost justified and resolved from a more strategic perspective.

The capability-oriented focus in figure 2.2.18 highlights specific targets for resolving key challenges and moving a company toward a customer-centric business model. However, executives historically have not had the ability to clearly focus on what exactly needs to be improved. When coupled with value stream, organization, and information mapping views, as well as capability to application system mappings (discussed in *BIZBOK® Guide* part 6), significant clarity can be brought to bear on these types of business challenges and goals. As various capabilities are mapped to the business vision and objectives, actionable strategies become the norm in organizations and not exceptions.

Capability-Based Investment Analysis

Once issues have been identified and a vision has been established, the next step in planning a solution is to determine what is being done to date to address a particular limitation within a capability. There are normally numerous “in-flight” initiatives underway at any given enterprise, and capabilities can point the way here as well. By determining how many “in-flight” projects are currently impacting or planning to impact a set of capabilities under review, executives can assess the number of investments already being made to address a particular problem. If those projects are viewed collectively, from the impact they will or will not make on a given capability and the overlap, incompatibility, or synergy they bring, executives can determine if they should continue funding, consolidate, or even cancel certain initiatives.

Carrying the concept of capability-focused investment analysis to the next step, capability-based planning enables executives to discuss where to focus funding and how to stage an initiative to gain the most value out of their investments in the least amount of time. Right now, many major initiative investments are geared toward some grand goal, like totally revamping the entire order processing and fulfillment process. Yet these initiatives tend to be long term and can lack focus on delivering near-term value.

The important consideration here is to determine and review all major areas where work must be done in order to rectify a given business issue. This involves driving the analysis down to increasing levels of detail that allow work to begin on a resolution while more details are uncovered as part of the implementation or during a parallel phase. If there are procurement-related projects underway, they show up as impacting the Agreement Management, Partner Management, and underlying capabilities such as Agreement/Partner Matching. Work in progress can then be incorporated into the new strategy, thereby building upon work already completed and delivering value quickly.

Capability-based cost analysis is one step toward investment analysis, and it involves determining what an organization wants to achieve for one or more capabilities balanced against what it is spending today. One organization found it was spending well over \$80 million per year worldwide on a capability because of the diversity of deployment approaches and technologies involved. Management had no idea and felt that the return on this investment was unacceptable; as a result, they began to pursue a systematic effort to streamline and improve that capability.

Concepts such as capability-based costing and investment analysis drive much of the transformation roadmap development and initiative deployment. The idea is based on the premise that front-end architectures (where processes meet user interfaces and user-deployed technologies) can evolve at a pace that can be decoupled from the evolutionary pace of back-end architectures (IT applications, middleware, and data sources). Capability-based cost analysis enables business processes to be aligned, consolidated, modified, and automated under a general architecture strategy that provides rapid business ROI. As this occurs, back-end application and data architecture strategies and plans can evolve, resulting in a phased migration of these back-end architectures to the new target state.

Defining Capability within the Business Architecture Knowledgebase

Incorporating capabilities into the larger business architecture is important because business-to-business and business-to-IT cross-mappings provide the basis for much of the analysis associated with business/IT transformation. Traditionally, capabilities have been detached from other models and structures, and this was not conducive to transformation planning or deployment. There are multiple approaches espoused by various industry sources that errantly take the position that having a set of defined capabilities implies that one has a business architecture. This thinking totally ignores the remaining business architecture domains. Viewing capabilities as standalone concepts results in capabilities being disconnected from other important business architecture domains, that include essential domains like value streams and information concepts. However, capabilities do not stand alone; rather, they are interwoven with other business architecture domains to provide a holistic understanding of business ecosystems.

Underlying each capability map is a formal representation of capabilities, decomposition relationships to other capabilities, concise definitions for each capability, and cross-mappings to other business architecture and IT architecture domains. Figure 2.2.19 depicts the immediate associations between capability, related aspects of the capability domain that include instance, outcome, behavior, and the organization domain concept of business unit. Other *BIZBOK® Guide* sections identify additional relationships between capability and related business architecture domains and disciplines.

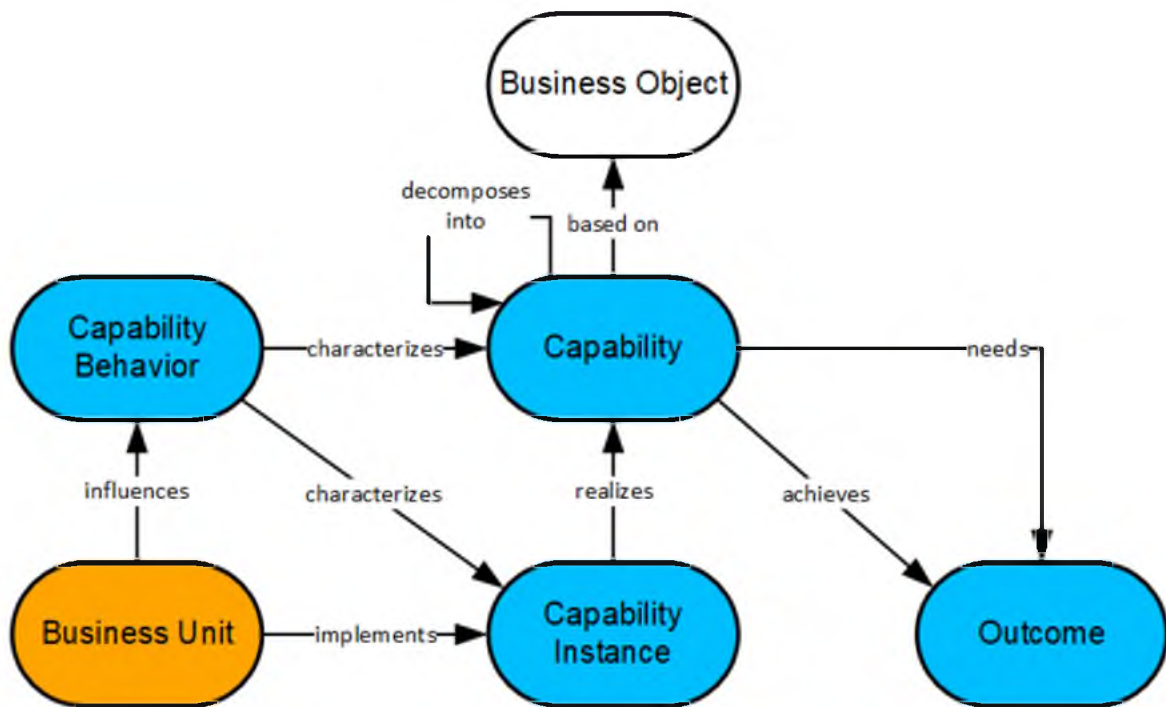


Figure 2.2.19: Capability Knowledgebase Relationships

Figure 2.2.19 summarizes capability knowledgebase relationships as follows.

1. Capability is based on a Business Object.
2. Capability decomposes into Capability.
3. Capability Achieves and Needs outcomes.
4. Capability Instance realizes a Capability.
5. Capability Behavior characterizes a Capability.
6. Capability Behavior characterizes a Capability Instance.
7. Business Unit implements a Capability Instance.
8. Business Unit influences Capability Behavior.

For additional associations, refer to other *BIZBOK® Guide* sections. For example, section 2.4 depicts relationships between capability and value stream stage.

Summary

Business capability mapping is the core of business architecture and an excellent starting point for a business architecture practice. As demonstrated in this section, capability mapping is not only an essential planning tool but also serves as important input to various transformation approaches. The scenarios discussion in part 4 will further explore these concepts in the bigger

picture of business architecture. In addition, other blueprint discussions will cross-reference the use of business capability throughout the *BIZBOK® Guide*.

As a special note to long-term *BIZBOK® Guide* users, the section has evolved significantly since it was originally released in version 1.0 in 2011. These evolutions are practice-based and are also driven by ongoing review and examination from the Guild member base. While this section will continue to evolve, it holds true to its original principles, even as those principles are refined in practice and as business architecture as a whole evolves.

¹ Ulrich Homann, “A Business-Oriented Foundation for Service Orientation”, Feb. 2006, https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/homann_article_on_capability.pdf.

² Source: IMIS, https://help.imis.com/enterprise/features/rise/business_objects/understanding_business_objects.htm#What_is_a_business_object.

³ For more information on value streams, see the *BIZBOK® Guide* section 2.4.

SECTION 2.3: ORGANIZATION MAPPING

This blueprint section introduces and provides guidance for establishing the organization map, which provides visibility into the organizational structural of the business. As with other blueprinting sections within this *BIZBOK® Guide*, we offer guidelines for organization mapping, but do not constrain mapping teams to a prescriptive approach.

Defining the Organization Map

In order to discuss the organization mapping, we must first define organization. An organization is a social unit of people, systematically structured and managed to meet a need or to pursue collective goals on a continuing basis.¹ Notice that this definition of organization is not constrained by corporate or legal boundaries. By not constraining organizational boundaries, it follows that organization mapping is similarly unconstrained – unless a given business architecture mapping team chooses to constrain the mapping of an organization to some subset domain.

For example, if a team is mapping a company that produces pharmaceutical products, certain research, production, and other capabilities are likely performed by third parties. In such a scenario, these third parties have to be recognized as part of the overall business. The fact that the organization could not effectively fulfill its mission in the absence of these third parties and related capabilities means that the business architecture must recognize and accommodate the mapping of these third parties in some fashion.

Organization mapping recognizes this requirement and extends business visibility across third-party domains. This is most often done where third parties essentially “make the business whole” by providing essential capabilities that do not otherwise exist in a given organization.

The business unit is the main concept used to establish organization maps. It is defined as follows:

“A logical element or segment of a company (such as accounting, production, marketing) representing a specific business function, and a definite place on the organizational chart, under the domain of a manager. Also called department, division, or a functional area.”²

A business unit may be an enterprise, an individual business unit such as Marketing or Accounting, a third-party entity, or a less formally recognized but important concept such as a collaborative team. A collaborative team is defined as “a named group or unit, created by two or more internal or external business units, having a defined set of shared principles and common goals”. The interpretation of what comprises a business unit is largely up to the mapping team,

as long as it reflects an organizational concept. Note that while the term “function” is used in the above definition, it should not be confused with the concept of capability. A function is defined as “a *process or operation* that is performed routinely to carry out a part of the mission of an organization”.³ The process or operational context of a function fits accordingly within the context of a definition of business unit and clearly differentiates a function from a capability.

An organization map is a business blueprint that depicts business units, organizational decomposition, and other types of organization-oriented relationships. A decomposition relationship would exist, for example, where a bank has a Consumer Lending unit that contains a Loan Department unit. Extended organization maps incorporate additional aspects of a business where appropriate. Common examples of concepts included in an extended mapping include other capabilities, location, or project initiatives. This last category of initiative is covered in the *BIZBOK® Guide* section 2.6 as a specialized blueprint category that can build on the organization map and other business architecture blueprints.

The concept of organization mapping, which creates the organization map, goes well beyond the traditional hierarchy chart by depicting internal and external relationships and collaborations from a business unit or business entity perspective. As we explore various options, variations on how to best represent organizations will come to light. While there is no single way to do this, there are useful examples and approaches we can leverage in this work.

Organization Mapping: Background and Approaches

Why does an organization need mapping? Most people know the basic structure of a company from the traditional organization hierarchy chart. But in their *Harvard Business* article “Organigraphs: Drawing How Companies Really Work”, Mintzberg and Van der Heyden told us otherwise.⁴ They suggest in this article that traditional hierarchy charts are becoming increasingly irrelevant in today’s highly networked environments. Rather they suggest a web concept, shown in figure 2.3.1, as a way of depicting how organizations work. We have adopted this concept as input to our organization mapping approach, particularly as it relates to collaborative teams that do not lend themselves to hierarchical governance or mapping.



Figure 2.3.1: Mintzberg’s Organigraph Web Concept

A second concept Mintzberg and Van der Heyden introduce is the idea of a hub, along with sets and chains. While some of the ideas, particularly the chaining concept, are expressed elsewhere within business architecture, we still need a way to blueprint organizations that goes beyond the traditional hierarchy chart. This hub concept is a common view within various types of organizational structures. Some social network structures, however, still represent relationships as many-to-many or peer-to-peer web structures. Figure 2.3.2 depicts two views of social network structures with the view on the left leveraging a hub concept to a greater degree than the structure to the right.

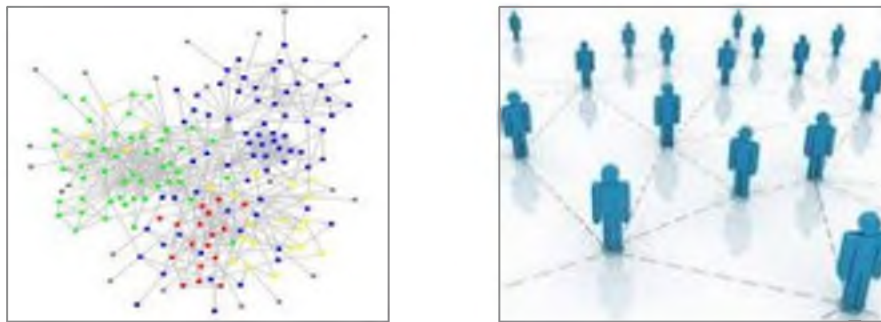


Figure 2.3.2: Social Network Concept

Why should we consider the concept of a social networking diagram in organization mapping? In such a diagram, networks of relationships are represented as collaborative teams such as a steering committee, focus group, or even a board of directors. The difference between social networking diagrams and traditional hierarchical models of a business is that hierarchical models do not facilitate an accurate depiction of horizontal relationships and traditionally focus on reporting structures versus organizational alignment.

For example, if a virtual team is created that has participation from various business units, there is no effective way to represent such a team within traditional hierarchical organizational mappings. One example of two such collaborative teams involves a business architecture team with core and virtual participants and the executive steering committee that directs the business architecture team. Traditional hierarchy charts tend to omit these indirect but important organizational views of the business.

The relationships among business units using an unrestricted web or social network structure, however, can get complicated. The inherent complexity of a social networking structure, in the absence of a hub concept, becomes unwieldy. For this reason, Mintzberg introduced the hub structure. The hub structure was as an organizing concept that was also employed by Dee Hock, founder and first CEO of Visa.

Hock has had a significant influence on the field of organizational design. During the creation of Visa, which was established as an upside-down holding company, Hock began to envision a new way to organize institutions, with Visa becoming the first and most visible result of his work.⁵ After Visa, Hock further formalized these concepts using what he termed the six lenses into organization: purpose, principle, role definition, organization model, constitution, and practices.⁶ The constitution formalizes these views into the organization.

Figure 2.3.3 is one such view of an organization that incorporates a combination of web and hub structures. While there are a number of peer-to-peer or business-unit-to-business-unit relationships, each of the major circles actually represents a hub of sorts. For example, the Claims Processing and Management hub in the upper right side of figure 2.3.3 represents a collaborative team structure among each insurance product line that has claims responsibility. This is not a traditional view of an organization but might be considered a collaborative governance structure that represents how the business actually functions or should ideally function.

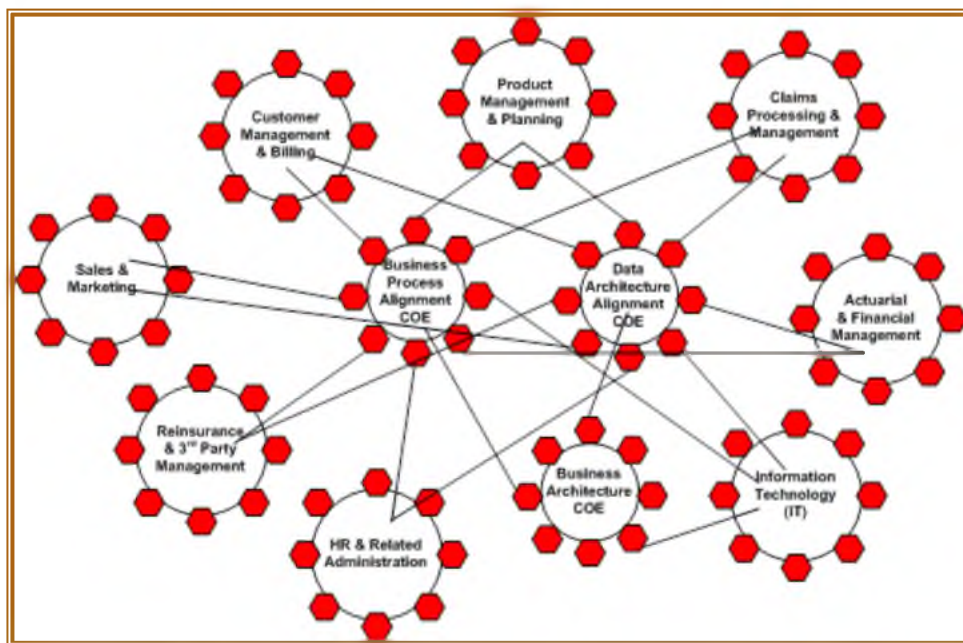


Figure 2.3.3: Web-Based Organization Graph

One project that Hock led during the 1990s applied the organization mapping concept. That project required a large number of diverse organizations, including federal and local governments, private sector industries, and non-governmental institutions, to establish a way to share geospatial data. This project was called the Geodata Initiative and was initiated by the U.S. Department of the Interior. The Geodata Initiative organization map or graph as Hock called it is shown in figure 2.3.4.

Structural views, such as the one depicted in figure 2.3.4, are relevant to business architects because most organizations rely on third parties to fully deliver products and services to customers and constituents. This is true even for the smallest enterprises, such as a one-person consultancy that relies on a business partner to contract for its services and collect on those services. Yet traditional hierarchy charts rarely depict third parties, only showing internal reporting structures. These same charts also tend to omit collaborative teams, such as standing committees and working groups. In both cases, these omissions leave major gaps in being able to visualize and understand how an organization really works.

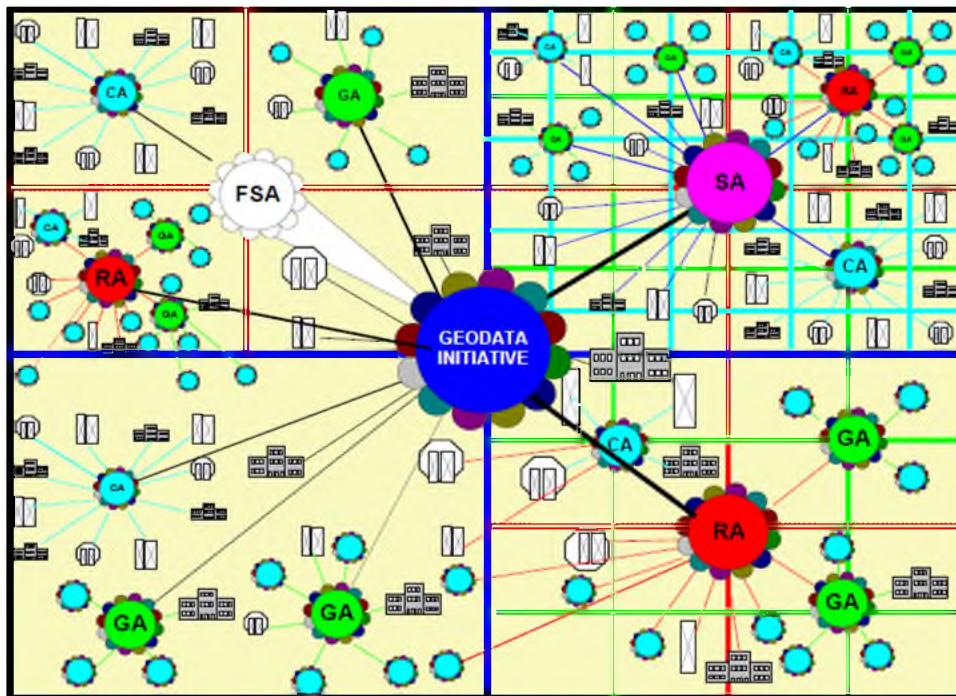


Figure 2.3.4: Geodata Initiative Organization Graph⁷

In the example in figure 2.3.4, organizations were organized organically based on organization type and/or common interests. This relationship structure enabled collaboration and governance to occur at a more localized level, just as the early Visa boards were organized along geographic lines and tiered to create a single board. The concept enabled every party to have a say while not allowing a single entity to hijack the agenda.

The basic concepts of the web structure and hub structure are therefore used to represent a business from an organization mapping perspective. Web and hub structures have little in common with their historic counterpart view – the top-down, hierarchy chart found in most organizations. If one views an organization as a complex web of smaller business units interacting in a variety of ways, then we can see the applicability of using some or a combination of the

concepts put forth by Mintzberg, Van der Heyden, Hock, and others. They felt that there are not only better ways to view organizations but also better ways to allow them to collaborate and succeed at their core missions. Organization mapping seeks to apply these concepts to help visualize a business within the context of business architecture.

Benefits of Organization Mapping

Organization mapping has a number of benefits. One way to view organization mapping is as the fourth leg of business architecture. The reason for this is because along with capability, value, and information mapping, these four disciplines provide a relatively complete baseline from which additional analysis can be performed or other building block components, such as initiatives, can be incorporated. The benefits of organization mapping are as follows.

- **Provides organizational context for issue analysis, planning, and solution deployment.** For example, who should participate in planning a project focused on improving Customer Management and Agreement Management capabilities? Where should deployment begin? Can a single business unit achieve desired outcomes alone, or is it a collaborative effort? The organization map provides context for answering these questions, particularly when connected to other aspects of the business architecture such as capabilities.
- **Improves strategic planning and investment analysis.** When the organization map is extended to include capabilities and capabilities are mapped to value streams, management gains significant visibility into the scope required to achieve a particular management objective. Organization mapping ensures that essential business units are involved in planning and funding discussions. Today, we often find that a given business unit has taken on a project to improve a given capability or value stream used by other parts of the organization. The resulting project is often difficult to deploy because it has not considered the cross-organizational impacts and is underfunded because a single business unit tried to run solo on the effort. With organization mapping, it is a simple exercise to use the organization map to see that the impacts of changing a given value stream and related capabilities requires a more holistic approach.
- **Exposes opportunities for improved collaboration and communication.** Business architecture provides insights into what an organization does via capabilities, how it delivers stakeholder value via value streams, and basic vocabulary via information concepts. Organization mapping fills in a critical piece in the puzzle by providing an organizational context for the business architecture; it allows, for example, analysts and management to readily envision which business unit has a given capability. For

- example, in an insurance company, customer onboarding may be handled uniquely across each product line, but management wants to improve the overall customer onboarding experience across business units. Capabilities essential to customer onboarding include Submission Management, Customer/Agreement Matching, Agreement Management, and Work Item Routing, each of which require a common approach because customers are shared across product lines. An organization map that incorporates business unit/capability mapping surfaces important relationships that allow management to readily absorb which business units need to work collectively to deploy common approaches to customer onboarding.
- **Fills in the “white space” in the hierarchy chart⁸.** The traditional hierarchy chart reveals little about the organization. Much of what happens in a business is not represented. Relationships among business units and third parties, for example, are rarely found on the hierarchy chart. The organization map, on the other hand, establishes the foundation for understanding how the organization works by showing the interactions and collaborations across a business. Many times, lack of organizational knowledge can result in not understanding which business units to involve, who to talk to about a given requirement, or the impacts of various decisions. The organization map brings transparency to the enterprise that does not exist today.
 - **Provides insights into reorganizations, mergers, acquisitions, and divestitures.** Organizations reorganize on a regular basis, motivated by a merger or an acquisition, market or economic conditions, or any number of other factors. In the case of a merger or an acquisition, understanding where and how to integrate multiple organizations is enhanced and streamlined when the business ecosystems of those organizations are clear and transparent. In the case of a reorganization, a structurally decomposed, capability-aligned representation of a business ecosystem’s current state, along with proposed target states, offers business leaders insights into the impacts and benefits of various realignment options. Organization maps, when cross-mapped to capabilities, highlight the impacts of divesting one or more business units, including where to decouple, retain, or share certain capabilities. The bottom line is that reorganizing any organization in the absence of an organization map, particularly one that is cross-mapped to capabilities, is essentially reorganizing in the blind.

While the benefits are important, the principles of organization mapping form the heart of the overall mapping approach.

Principles of Organization Mapping

Keeping with our general theme in the *BIZBOK® Guide* of being descriptive in favor of being overly

prescriptive, we first focus on organization mapping principles. Organization mapping can take many forms based on what the mapping team is attempting to convey and the creative approaches being applied. While there is a great deal of latitude in the approach, message, and resulting organization map, a basic set of organization mapping principles provides a descriptive guide to organization mapping.

1. **Organization maps provide visibility into the business.** The most fundamental principle of organization mapping is that of visibility. The organization map should inform management, architects, analysts, and others about the overall structure of the business. When extended to include other aspects of business architecture, analysts can gain a true perspective on the organization.
2. **Organization maps require a focal point.** An organization map requires a central focal point, which is often an enterprise or legal entity of some type. Even the map in figure 2.3.4, which comprises many enterprises, has a formal entity at its heart serving as the focal point for the map. An enterprise often represents a legal entity as a whole. It is the focal point because that enterprise represents the business being mapped. An enterprise may be defined by the mapping team as an autonomous division of a larger company or some other delineation that can be readily understood by those viewing and using the map.
3. **Organization maps contain business units.** The business unit is the basic building block of the organization. It is generally defined as a distinct, identifiable segment of a business, often associated with a specific purpose. Common examples include the Finance Department, Information Technology, and Marketing.
4. **A business unit may decompose into other business units.** Business units are often decomposed into smaller units. The larger and more diverse the enterprise, the more likely it is that business units will be decomposed into smaller, more explicit pieces. For example, a Personal Lines Insurance business unit may decompose into Auto, Fire, or other smaller business units.
5. **The organization map is constrained by the boundaries of the business ecosystem.** An organization map is only constrained by what is defined as the boundaries of a business ecosystem, as defined in *BIZBOK® Guide* section 1. Business ecosystem scoping is an essential precursor to mapping out multiple mappings, especially the organization map.
6. **An organization map can include third parties.** Principle number three states that an organization map includes the concept of an enterprise. One or more third parties

- may be represented within an organization map.
7. **The organization map can be extended to include business views that are not business units.** Organization maps can be made more informative by adding things such as capability, location, or other views of the business to the map. A mapping team has great latitude as far as adding new concepts to the map as long as the relationships increase an aspect of business visibility.
 8. **Organization maps are not constrained to a given format as long as the map conforms to principles 1-7.** While graphical views are ideal, there are other ways to convey organization decomposition and relationships to other aspects of the organization. The organization map's overall topology is left to the imagination and skill of the mapping team.
 9. **Organization maps represent collaborative teams.** Collaborative teams are semipermanent structures comprised of individuals who report to other business units or third parties. They typically do not report to a single business unit but would report to an executive or a manager. Examples include standing committees, agile teams, and executive councils. Hierarchy charts rarely show collaborative teams, yet they are important in understanding how an organization is structured and how they are empowered with decision making and other capabilities.

How to Do Organization Mapping

As we will discuss in the following subsections, there are a number of variations on organization mapping that mapping teams can pursue. This section overviews the organization mapping template and related mapping guidelines.

Organization Mapping Template

The organization mapping template, shown in figure 2.3.5, provides one means of documenting an organization through a thorough representation of business units, business unit decomposition, categories or types, descriptions, and capability cross-mappings. An organization may augment this basic mapping template with additional mapping categories or other views as discussed later in this section.

Organization Mapping Template				
Business Unit Level	Business Unit	Business Unit Type	Description	Capabilities

Figure 2.3.5: Organization Mapping Template

The topics in the organization mapping template columns shown in figure 2.3.5 are summarized as follows:

Business Unit Level: The level indicator begins at level 0 for the enterprise and increments at each next level of decomposition, breaking down an enterprise into more and more granular business units. For example, a financial institution would be listed at enterprise level 0. Each major division within that financial institution would be shown at the next level and listed at level 1. Business units within a division would be identified as level 2, with lower-level business units decomposing to level 3 and so on. An actual example would be the National Bank, level 0, that has an Asset Management division and a Loan Division, each of which would be shown as level 1. Departments within the Asset Management division, such as Wealth Management, Sales, and Credit Office, would each be designated at level 2.

Business Unit: The business unit column documents the name of the enterprise, division, department, or other structure represented on the map. The name should reflect the actual name used by the business as shown on a company hierarchy chart or on the human resources department's directory. Where the category is 'partner', the third-party organization's name is used as the business unit name. The partner category is discussed in more detail under business unit type.

Business Unit Type: Business units fall into several categories including enterprise, business unit, partner, and collaborative team.

- Enterprise, as previously discussed, is the name of the level 0 entity represented by the organization map.
- Business unit is the internal division, department, agency, or other structure represented in the mapping. It is usually the most commonly shown category and can be customized to represent divisional, departmental, or other structural terms that are commonly used within a given organization. Internal business unit type designation defaults to "business unit", but mapping teams have latitude in naming them so they are recognizable by business stakeholders. While business unit type may be customized, mapping teams should agree on a standard set of allowable business unit categories prior to building out

the organization map.

- **Partner** represents external legal entities that act in the role of a business unit and are included in the organization map if an enterprise outsources certain capabilities to an external partner. For example, assume that a bank offers a fund management product from a third party where that third party has Product Management, Agreement Management, and Customer Management capabilities related to one or more fund management products. In this example, the partner organization is listed in the organization map under the partner category and the appropriate division.
- **Collaborative team** represents a semipermanent team or group within an organization that is not part of the formal hierarchy. An example of a collaborative team is an executive committee comprised of senior leaders from the business. This team would be listed under the enterprise level. Lower-level collaborative teams may be repeated under each business unit participating in the team but may be more accurately represented in an association mapping, which is discussed later in this section.

Description: The description column is used to summarize the role of the business unit. The description should be a brief statement of responsibility. For example, a description of a bank's Asset Management division might state: "Handles the forecasting and evaluation of financial risks and the identification of needed remediation efforts to reduce impact on the organization". While it should be brief, the description should also be substantive and communicate the main role of that business unit.

Capability: This mapping column represents a list of capabilities a business unit possesses and can enact. The column mapping structure is simply a list of the capabilities possessed by that business unit. Because business unit/capability cross-mappings are inherently a many-to-many relationship, organizations may depict them using more descriptive cross-mapping diagrams such as those shown in later portions of this section. Capability relationships can grow quite complex and it is, therefore, best to represent them in a formal knowledgebase and extract them into various cross-mapping diagrams. For basic mapping purposes, the organization mapping template provides ample opportunity to list the relevant capabilities as a first-pass analysis.

Figure 2.3.6 depicts a selected cross-section of an organization map for a financial services company. The capability column was left out of this example for reasons of simplification. This example applies customized, although not out of the norm, business unit type terminology that includes the terms Division, Area, and Department. While type settings may be customized, organizations should establish a defined, subset of standard types that may be universally applied to the mapping on an ecosystem-wide basis.

Organization Map			
Business Unit Level	Business Unit	Business Unit Type	Definition
0	Financial Services Enterprise	Enterprise	Delivers comprehensive financial services to consumers and businesses.
1	Bank Segments	Division	Encompasses the various areas in which customers can interact with a Financial Services Organization.
2	Retail/Personal Banking	Area	Handles the administering of products and services to individual consumers.
3	Sales and Operations	Department	Handles client relationship management and the processing of a product lifecycle from initiation of an application through funding.
3	Credit Office	Department	Handles the decisioning of credit product offerings to an organization's client.
3	Product Office	Department	Handles the development and enhancement of the channel's product offerings.
3	Portfolio Management	Department	Supports the objectives regarding investment mix and policy, including balancing risk against performance.
3	Support Services	Department	Handles the back-office support of a channel including call centers, mail centers, systems support, and process support.
2	Commercial/Wholesale Banking	Area	Handles the administering of products and services to commercial clients, businesses, and business owners.
3	Sales and Operations	Department	Handles client relationship management and the processing of a product lifecycle from initiation of an application through funding.
3	Credit Office	Department	Handles the decisioning of credit product offerings to an organization's client.
3	Product Office	Department	Handles the development and enhancement of the channel's product offerings.
3	Portfolio Management	Department	Supports the objectives regarding investment mix and policy, including balancing risk against performance.
3	Support Services	Department	Handles the back-office support of a channel including call centers, mail centers, systems support, and process support.
2	Capital Markets	Area	Supports the raising of capital regarding shares, bonds, and other long-term investments.
3	Derivative Markets Services	Department	Supports the financial market for financial instruments which are derived from other forms of assets.
3	Foreign Exchange Services	Department	Supports the exchange of one currency for another where currencies are traded around the clock.
3	Fixed Income Services	Department	Supports the investment under which the issuer is obliged to make payments of a fixed amount on a fixed schedule.
3	Financial Institution Services	Department	Supports the economic services provided by the organization.
2	Enterprise Portfolio Management	Business unit	Supports the objectives regarding investment mix and policy, including balancing risk against performance at an enterprise level.
1	Asset Management	Division	Handles the forecasting and evaluation of financial risks and the identification of needed remediation efforts to reduce impact to the organization.
2	Asset and Liability Management	Area	Handles managing the use of assets and cash flows to meet company obligations, which reduces the organization's risk of loss due to not paying a liability on time.
2	Wealth Management	Area	Handles the administering of products and services to individual consumers pertaining to financial and investment advice, retirement planning, and legal and estate planning.
3	Sales and Operations	Department	Handles client relationship management and the processing of a product lifecycle from initiation of an application through funding.
3	Credit Office	Department	Handles the decisioning of credit product offerings to an organization's client.
3	Product Office	Department	Handles the development and enhancement of the channel's product offerings.
3	Portfolio Management	Department	Supports the objectives regarding investment mix and policy, including balancing risk against performance.
3	Support Services	Department	Handles the back-office support of a channel including call centers, mail centers, systems support, and process support.

Figure 2.3.6: Sample Financial Services Organization Map

Figure 2.3.6 depicts a subset of business units for one financial institution that highlights two divisions: Bank Segments (i.e., Corporate Functions) and Asset Management. A full mapping of

this organization would identify additional divisions, where each division decomposes into multiple areas and each area decomposes into multiple departments. For example, the Asset Management division decomposes into Asset and Liability Management, Wealth Management, and several other business units. The level indicators represent the incremental levels of decomposition, starting with enterprise level 0.

The example in figure 2.3.6 reflects a company's overall structure as it exists, meaning that the crafting and decomposition of the business is a matter reflecting organizational realities. It is possible to use the organization map as an organizational design tool because it highlights where redundancies or misalignment may exist. For example, does the company in figure 2.3.6 really need two or more sales operations departments? Redundancy issues surface to an even greater degree when business units are cross-mapped to capabilities. The discussion on using the organization map at the end of section 2.3 highlights capability's role in organization mapping along with other scenarios from a usage perspective.

Organization Mapping Guidelines

1. **Determine scope up-front.** The scope of the organization map is the scope of the enterprise being represented by the business ecosystem, where ecosystem is defined in the *BIZBOK® Guide* part 1. Scaling down the organization map hides aspects of the organization the map is intended to expose, decreasing its usefulness. While it is always possible to expand a mapping to include other views, it is good to understand the scope and objectives for the mapping exercise. If the goal is to map out the supply chain, for example, then partners should be represented in the organization map.
2. **Leverage existing documentation.** Leverage all available hierarchy charts or other types of documentation to build the organization map. A second reliable source of an organization's overall structure is the directory maintained by the human resources department. Directories often list business units for each employee. Obtain these and other sources of documentation to establish the first-pass view of the organization map.
3. **Identify an enterprise focal point.** Having a single focal point for the map is an important practice because it helps anchor the map. If, for example, you work for XYZ Bank, and you plan to map out the bank's organization, then XYZ Bank is the centerpiece of your map. If you plan to incorporate third parties into the map because they handle certain capabilities for your enterprise, then your enterprise must anchor the map. If, on the other hand, you plan to build a new collaborative organization such as the one shown in figure 2.3.4, establish this new organization as the focal point.
4. **Map and decompose internal business units across the enterprise.** Use established business unit names that are readily recognized by the business. The business must be

able to view the organization map and recognize the business units and other aspects of the map. It is, therefore, important to use names for each business unit that are in common use. The sequence of mapping may be incremental, starting top-down and decomposing the organization to the degree required by the teams using the mapping results. The sequence thereafter would typically be defined as follows:

- Define the enterprise level
 - Agree to standard business unit types to be applied at levels 1-n that are readily recognizable and may be consistently applied across the business system
 - Add and define the top-level business units across the enterprise, typically a division or departmental view that is defined as level 1
 - Based on planned usage scenarios, selectively decompose each top-level view (level 1) to the next level (level 2)
 - Based on planned usage scenarios, selectively decompose level 2 mappings to level 3 and lower as required
5. **Expand the organization map to include collaborative team structures where applicable.** Organization mapping teams are not strictly confined to using only those business units that would be recognized in the formal hierarchy chart. For example, a map may represent a collaborative team that has been established to fulfill a specific purpose between two or more business units. Collaborative teams may be shown under the owning business unit. If more than one business unit participates on an equal basis, the collaborative team would be moved up one level in the hierarchy. For example, if the Asset Management division in figure 2.3.6 had a collaborative team in which two or more business units participated, that collaborative team would be listed under Asset Management. Collaborative teams may be further documented using diagrammatic relationship mappings as discussed in guideline #6.
6. **Define organization mapping relationships.** The following relationships are commonly used but are not the only options that might be shown in an organization map. Each of these relationship concepts is explained in more depth in the sections that follow, along with examples of how they are used.
- Business Unit *decomposes into* Business Unit
 - Business Unit *has a* Capability
 - Business Unit *collaborates through* a Collaborative Team
 - Collaborative Team *has a* Capability
 - Partner/Third Party *has a* Capability

7. **Add additional relationships to other concepts where appropriate.** Some executives like to see information links to concepts such as location. Given that there is often a manageable set of locations for a given enterprise, this is better represented as a new concept that can be added to the map with a new relationship as follows:

- Business Unit *exists at* Location

In a standard knowledgebase, location may also just be added as a business unit attribute.

8. **Avoid mixing and matching too many relationship types in an instance of an organization map.** There are many types of relationships and concepts that can be placed into an organization map as shown in points #6 and #7. Any given map is not restricted from using decomposition, collaboration, or any number of other types of relationships among business units. Principles do not restrict mapping in this regard so as not to constrain creativity. Too many types of relationships, however, can confuse the intended audience and decrease clarity. A given mapping diagram should, therefore, be fit for purpose.
9. **Attribute each business unit with useful information.** Certain information may be associated with a given business unit. The knowledgebase discussion near the end of section 2.3 addresses how to manage corresponding metadata. The following are samples of attributes used to describe a business unit, business partner, and collaborative team:
 - Business Unit: Purpose, Manager
 - Business Partner: Purpose, Contact
 - Collaborative Team: Purpose
10. **Validate the organization map.** Management must validate the map and it should reflect the organization as it is today. If executives request a view of the future state, the mapping team can embark on this effort with explicit guidance from executives empowered to make these decisions.
11. **Maintain the organization map.** Organization is one of the more volatile aspects of business architecture, changing often and without a clear driver in some cases. Update the organization map to reflect changes in structure, reporting lines and relationships, and functionality. For the purposes of business architecture, however, there is no need to update the organization map to reflect changes in personnel within that structure. At most, a manager could be incorporated into the business architecture as an *attribute* of a given business unit.
12. **Beware of multiple maps.** BIZBOK® Guide principles stress the importance of having a common vocabulary across a business architecture. Having multiple organizational

mapping views is fine if they simply present differing perspectives of the same baseline map. But if the organization has multiple maps that contain conflicting information, planning teams, analysts, and other professionals become confused or use inaccurate information to make decisions.

13. **Be creative.** The sample organization maps that follow are examples only and do not represent prescriptive mapping perspectives. Organization mapping allows for creativity, bound only by the principles previously discussed to ensure that an organization map is actually an organization map. Diagrams applying organization mapping content should be creative and fit for the appropriate audience or usage scenario.

Designing Enhanced Organization Maps

The following examples reflect just one approach to describing an organization map. Mapping teams are encouraged to apply creativity in this area because better maps help streamline communication and collaboration.

Business-Unit-to-Business-Unit Mapping

A basic organization diagram can be based on business unit decomposition across the enterprise. Figure 2.3.7 depicts an example of one such map for the ABC Insurance company. This company is the focal point enterprise on the map. The enterprise decomposes into business units. This is the simplest example of an organization map, but it conveys a good deal of basic yet high-level information about the company. We can tell from figure 2.3.7, for example, that the company has three major insurance lines: Property & Casualty, Life & Disability, and Health.

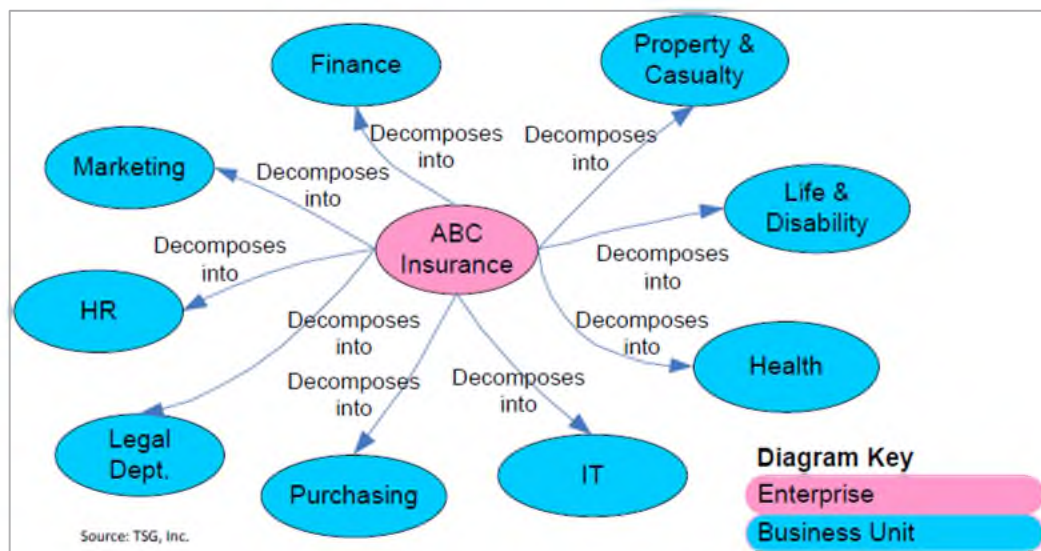


Figure 2.3.7: Basic Organization Map

There are two basic concepts shown in figure 2.3.7: Enterprise and Business Unit. There is one relationship shown: Decomposes into. The following guidelines summarize the building of the basic organization map:

1. Establish an enterprise as the focal point or center of the organization map.
2. Obtain all hierarchical views of the organization and use these as a baseline for identifying the first- and possibly second-level business unit decomposition. For example:
 - Property & Casualty Unit
 - P&C Claims
 - P&C Administration & Enrollment
 - Health Unit
 - Health Claims
 - Health Administration & Enrollment
3. Add appropriate attributes to each business unit, including a purpose.
4. Refine and streamline representations within the organization map as required.

The basic organization map is fairly easy to work with and build. This baseline may be enough for an organization but is often the foundation for another level of analysis and mapping.

Business-Unit-to-Location Cross-Mapping

A simple extension of the basic organization map is the business unit-to-location map. An example is shown in figure 2.3.8.

Location	Chicago	Philadelphia	Toronto	Mexico City	Seattle
Business Unit					
Sales	X	X	X	X	X
Health	X				
Property & Casualty		X			
Life & Disability			X		

Figure 2.3.8: Organization Map Depicting Business-Unit-to-Location Cross-Mapping

This simple example demonstrates how fundamental information about which business units operate at certain locations can be provided through organization mapping.

Organization Mapping and Third-Party Extensions

Extending the basic map to include third-party organizations is also fairly straightforward. Figure 2.3.9 depicts a basic organization map with a third-party extension.

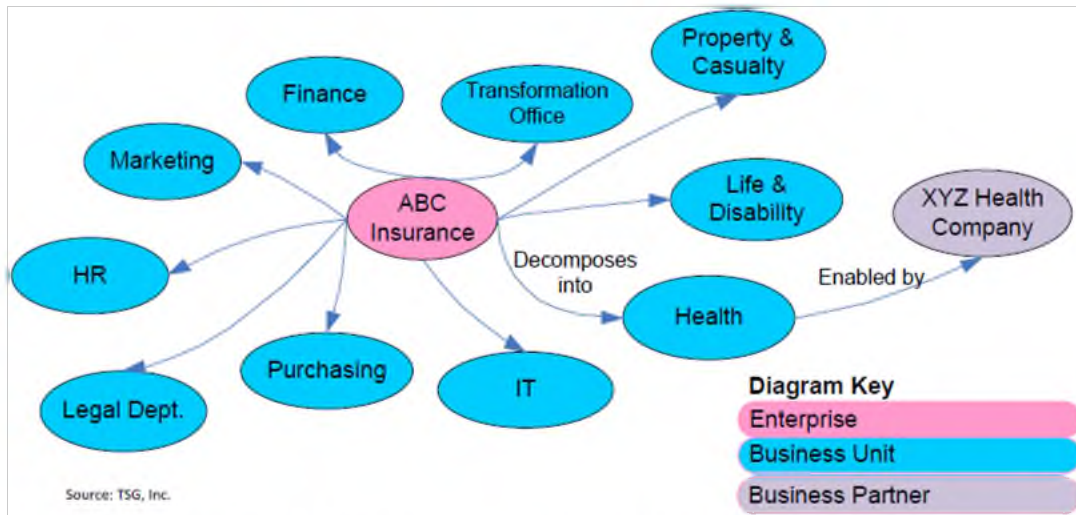


Figure 2.3.9: Organization Map Depicting a Third-Party Partner

The steps to depict third-party relationship extensions to the basic map are as follows:

1. Begin with the basic organization map as previously defined and discussed.
2. Identify the types of third parties. As a rule, the organization map would want to reflect a relationship and entity that is architecturally relevant to organization mapping and not a highly volatile relationship such as a stationery supplier. If a third party actually enables an important business capability, then it is a good candidate to be added to the map.
3. Add appropriate attributes to each business partner, including a purpose.
4. Establish representations for third parties on the map and color-code them accordingly.
5. Add the appropriate relationship. In figure 2.3.9, this relationship is called “Enabled by”.
6. Refine and streamline representations within the organization map as required.

Third-party extensions to the basic organization map may be enough for an organization, but it does not provide insights into capabilities aligned to various business units or third parties. These concepts can be added to this baseline and are discussed in the next sections.

Business-Unit-to-Capability Cross-Mapping

When one considers organization mapping, the questions that quickly come to mind are: What links a given business unit to another? What does one business unit have in common with other business units? For example, if an organization has a strategy to consolidate how a business unit

handles customer claims for a variety of product lines and each product line currently handles its own claims, are there opportunities to consolidate how this work is performed or automated?

One approach to address this challenge is to use capability-to-business-unit cross-mapping, which provides another view of the business ecosystem by extending the capability perspectives in such a way that it is now apparent which capabilities are shared or are unique to certain business units. Cross-mapping business units to capabilities establishes the capability instance, which is discussed in section 2.2.

Figure 2.3.10 depicts a tabular cross-mapping of business unit to capability levels one and two, highlighting three sets of capability instances.

Business Unit / Capability Mapping		
Business Unit	Capability (Level 1)	Capability (Level 2)
Health Claim	Claim Management	Claim Definition
		Claim Adjudication
		Claim/Payment Matching
	Customer Management	Customer Information Management
Life & Disability Claim	Claim Management	Claim Definition
		Claim Adjudication
		Claim/Payment Matching
	Customer Management	Customer Information Management
Auto & Fire Claim	Claim Management	Claim Definition
		Claim Adjudication
		Claim/Payment Matching
	Customer Management	Customer Information Management

Figure 2.3.10: Sample Business-Unit-to-Capability Cross-Mapping

In figure 2.3.10, we can quickly see that a number of common claim capabilities are shared across fairly diverse product lines and business units. Executives may determine that Claim Adjudication is too unique to try and consolidate or standardize, but Claim/Payment Matching, which associates a claim with a payment object, may be an opportunity to provide customers with a standard process and delivery approach.

This black-and-white view of what each business unit does can also be used as a basis for investment analysis. If one business unit is planning to spend \$15 million to automate or re-automate a system that enables a number of underlying claim capabilities, a quick review of the

map in figure 2.3.10 would move those approving this funding to ask some basic questions. Is the strategy coordinated with the other two business units that share these capabilities? Are there opportunities to collaborate around shared capabilities and consolidate the investment planning? What are the costs and benefits from a corporate perspective versus a product line or business unit perspective?

In the absence of a simple picture of the overlap across a business, these questions may never even arise; opportunities to deliver better customer solutions and improve return on investments by improving claim capabilities may be lost.

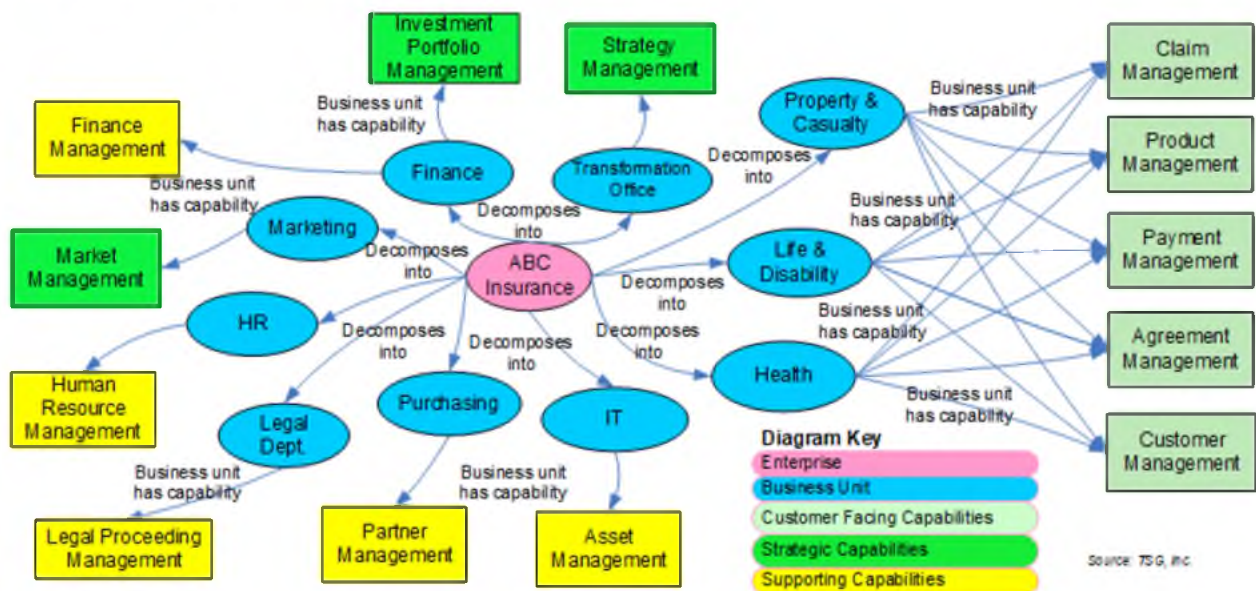


Figure 2.3.11: Sample Insurance Company Organization Map Showing Business-Unit-to-Capability Cross-Mapping

Figure 2.3.11 is an organization map that contains business units mapped to capabilities. The capabilities in this map are color-coded to reflect their strategic, customer-facing, or supporting nature. One can quickly see that the Property & Casualty, Life & Disability, and Health Insurance business units each share Claim Management, Product Management, Payment Management, Agreement Management, and Customer Management capabilities. Figure 2.3.11 also shows a number of strategic and supporting capabilities mapped to various supporting business units.

The steps to depict capability extensions to the organization map and expose capability instances are as follows.

1. Begin with the basic organization map as previously defined and discussed.

2. Identify the level 1 capabilities to depict from the capability map (see the *BIZBOK® Guide* section 2.2 for more information on the capability map).
3. Map business units to the capabilities those business units possess based on discussions with senior management and related research.
4. Color code capabilities to differentiate among strategic, customer-facing, and supporting capabilities.
5. Refine and streamline representations within the organization map as required.

While this figure is a graphical representation of the same concepts shown in figure 2.3.10, a graphical view is more readily digested by management. Executives can use this or similar graphical views to perform planning and investment analysis.

In most cases, each major business unit is mapped to a level 1 capability but this is not a requirement. Payment Management, for example, is typically defined as a level 2 capability in industry reference models under Finance Management. Adding level 2 capabilities to the graphic can increase complexity and decrease readability so one would typically create a subset view of business units and capabilities if that was the goal.

Organization Mapping with Collaborative Teams, Capabilities, and Third Parties

We demonstrated how to incorporate business partners (i.e., third parties) and capabilities into the organization. Now we combine these concepts into a more detailed organization map that introduces a new concept: the collaborative team. Collaborative teams, standing or ad-hoc committees, and similar structures are common in many enterprises, but they are rarely represented in a way that offers real transparency. These teams are often where the real work is done, at least from a planning and transformational perspective.

Hierarchical structures attempt to represent such relationships via matrix-based dotted lines. While this may work for a single individual who is aligned to a second business unit, there is no way to represent the vast number of complex collaborative teams that comprise what can be considered a “shadow governance” structure.

Figure 2.3.12 introduces the collaborative team as a unique type of business unit that is used, in this case, to align work with a strategic business partner. This organization map was adopted from an actual case study. In figure 2.3.12 we can quickly see that the focal point enterprise, ABC Insurance, has limited customer-facing capabilities, which are alternatively handled by certain business partners.

The figure 2.3.12 organization map depicts a business that has gone beyond the standard agent route for selling products in favor of regionally aligned business partners that sell a broader portfolio of products and services. Executives viewing this virtual enterprise may have been challenged with managing multiple regional business partners, each of which share common customer-facing capabilities.

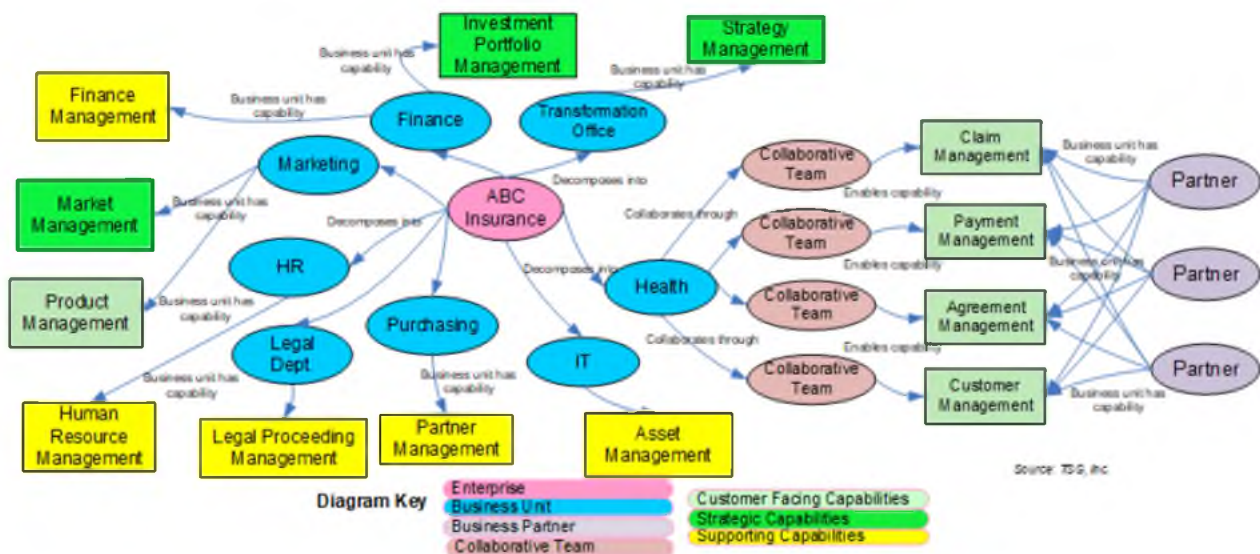


Figure 2.3.12: Insurance Company Organization Map Depicting Partner Relationships via Collaborative Teams, Cross-Mapped to Capabilities

The insurance company in figure 2.3.12 has outsourced customer-facing capabilities and must ensure that these capabilities are being managed consistently and equivalently to ensure customer satisfaction. Each partner handles Claim, Payment, Agreement, and Customer Management capabilities, which are in turn coordinated through a collaborative team structure established by ABC Insurance. Each team has a focal point around a given capability. In the real-life example from which this was drawn, there were other collaborative teams including a joint executive steering committee. Each collaborative team addressed issues related to a given capability.

A horizontal team (not shown) addressed issues related to customer-triggered, end-to-end value streams. The value stream team could address issues that were broader than a given level 1 capability. The structure shed an entirely new light on how these companies could collaboratively govern the virtual business environment they had established.

A summary of the steps involved in building this organization map is as follows:

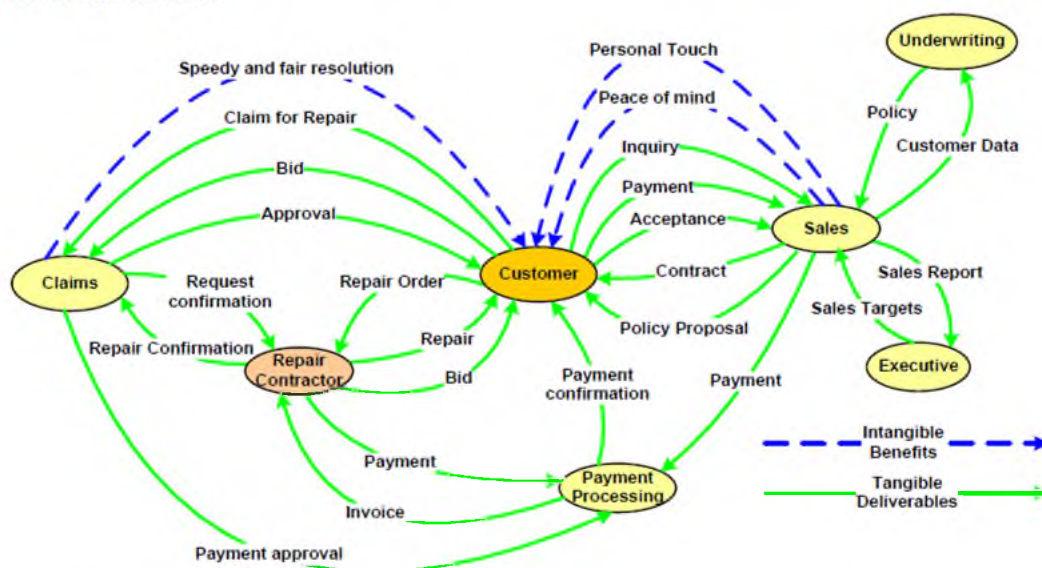
1. Begin with the basic organization map as previously defined and discussed.

2. Add non-customer-facing capabilities and relationships to internal business units.
3. Add collaborative teams as appropriate to each of the business units that have outsourced customer-facing capabilities with an “enable by” relationship.
4. Add and connect customer-facing capabilities to each collaborative team – one per team.
5. Add and map business units to the customer-facing capabilities they each handle.
6. Refine and streamline representations within the organization map as required.

We reiterate here that the maps in the prior examples are just that – examples. The approach to creating and representing these maps was specific to each one, but the overall concept and steps can be generalized as appropriate to fit a given situation. As we saw in the last example in figure 2.3.12, organization maps can be even more informative and serve a wider variety of needs when there are third parties involved with responsibility for certain capabilities.

Organization Mapping Showing Value Flows

Once the basic organization map has been established, a validation step involves showing the value-creating linkages between business units. Value Network Analysis (VNA) can be used to define the key value deliverables between business units. Using a simplified insurance company example in figure 2.3.13, the value-creating interactions are shown as both formal deliverables and as intangible benefits and interactions. In the instance of “Repair Contractor”, color coding is used to show which organizational roles are external to the company. Other uses of VNA are shown in section 2.4.



Source: Verna Allee

Figure 2.3.13: Sample Insurance Company Value Network Depicting Value Item Exchanges Across an Organization

The VNA augments previous organizational mapping perspectives by adding the concept of value exchange as the link between two business units or businesses. This perspective lends itself to an analysis of dependencies of a given business unit on another and is useful input to issue resolution and initiative planning where these dependencies come into play.

Using the Organization Map for Business Planning and Transformation

Section 2.3 has identified ways to use a number of different organization mapping examples. In addition to these prior examples, the following topics highlight other uses for the organization map related to a broader set of planning and business transformation topics.

- Providing a snapshot view of how the overall business works and interacts, including relationships with third parties
- Establishing a coordinated plan across business units to streamline and improve customer value
- Shifting from a product-centric to a customer-centric organization
- Ensuring that shared capabilities are considered in transformation planning
- Creating more streamlined investment strategies across business units that share common capabilities
- Governing relationships across multiple business partners that have common capabilities essential to the success of the business

As these views of the organization are established and tied into other business architecture views, senior management, analysts, and planning teams will find new and unique ways to leverage them and will likely request additional information and views as it relates to the business.

Defining Organization within the Business Architecture Knowledgebase

Organization definition in the business architecture knowledgebase is an important domain mapping because it provides business ecosystem transparency and context for capability disbursement. Specifically, capturing organization mappings in the knowledgebase is a critical element of being able to scale business architecture across larger, diverse business ecosystems. Organization mapping concepts generally incorporated into the knowledgebase are shown in figure 2.3.14.

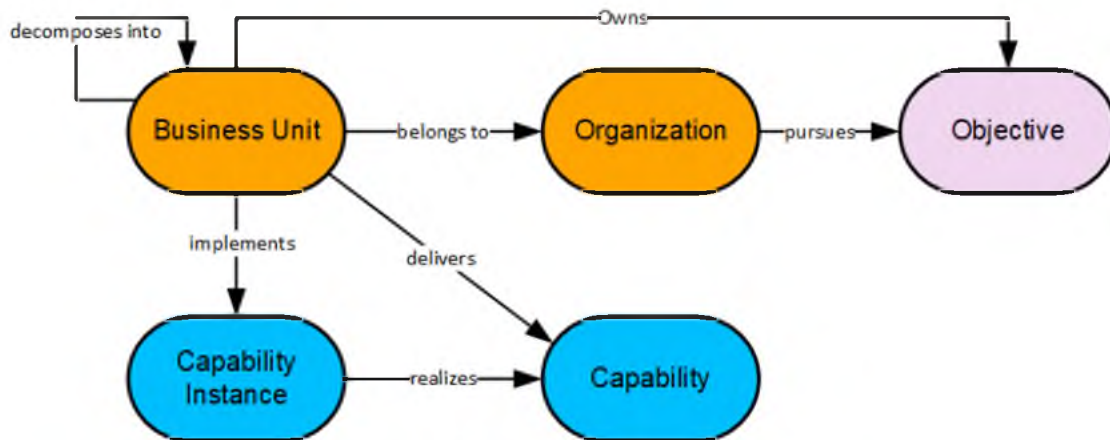


Figure 2.3.14: Organization Knowledgebase

Knowledgebase mapping of organization adheres to the standard mapping principles where a business unit may be an internal business unit or represent a partner that delivers certain capabilities. The relationships shown in figure 2.3.14 are summarized as follows.

1. Organization represents the business ecosystem as a whole.
2. Organization pursues business objectives, which provides a strategic role in context of strategy setting.
3. Business unit belongs to an organization, which includes internal business units, external business units in the form of partners, and collaborative teams.
4. Business unit decomposes into business unit, representing, for example, a division decomposed into departments.
5. Business unit delivers a capability.
6. Business unit implements a capability instance.
7. Capability instance realizes a capability.

Under the knowledgebase discussion in *BIZBOK® Guide* section 2.2, the relationship between business unit and capability is depicted in more granularity by way of a capability instance. For more details, refer to this discussion in section 2.2.

Summary

Organization mapping provides a crucial foundational component to the business architecture. While capability and value mapping expose the essence of the business, organization mapping informs us of the internal business units and third parties that have these capabilities and participate in the capability and value maps.

¹ “Organization”, WebFinance, Inc., 2011.

² “Business Unit”, WebFinance, Inc., 2011.

³ “Function”, WebFinance, Inc., 2011.

⁴ Henry Mintzberg and Ludo Van der Heyden, “Organigraphs: Drawing How Companies Really Work”, *Harvard Business Review*, (Sept.-Oct. 1999): 87-94. accessed 2011, <https://hbr.org/1999/09/organigraphs-drawing-how-companies-really-work>.

⁵ Dee Hock, *One From Many: Visa and the Rise of the Chaordic Organization*, (San Francisco: Berrett-Koehler Publishers, 2005).

⁶ “Chaordic Organizations”, [https://wiki.p2pfoundation.net/Chaordic Organizations - Characteristics](https://wiki.p2pfoundation.net/Chaordic_Organizations_-_Characteristics).

⁷ “Chaordic Commons”, 2001-2005, <http://www.chaordic.org>.

⁸ Geary A. Rummler and Alan P. Brache, *Improving Performance: How to Manage the White Space in the Organization Chart* (San Francisco: Jossey-Bass, 1995).

SECTION 2.4: VALUE MAPPING

This section discusses how to identify, map, and analyze the value exchanged between a business and the various stakeholders with which it interacts. Stakeholders may include, for example, customers, partners, constituents, and internal stakeholders, each of which are potential value recipients. The primary blueprint used to perform this activity is the value stream, which shows how an organization creates the value being exchanged between itself and various stakeholders. More specifically, the value stream is defined as “a visual depiction of how an organization achieves value for a given stakeholder or stakeholders within the context of a given set of business activities.”.

Stakeholder in a business architecture context is an internal or external individual or organization with a vested interest in achieving value through a particular outcome. Value streams do not exist as standalone artifacts within the business architecture. For example, value streams are cross-mapped to enabling capabilities, illustrating how an organization orchestrates capabilities in order to create stakeholder value. Cross-mapping between value stream and capabilities is a key component of business architecture.

While section 2.4 focuses on value stream mapping as the primary stakeholder value delivery focal point for capturing the relationship between value creation and value consumption, there are alternative views on value delivery. These alternative views, which include the Porter value chain, value network, and lean value stream are explored in *BIZBOK® Guide* appendix B.6.

Defining Value, Value Proposition, and Value Item

Value can be defined as “the benefit that is derived by an organization’s stakeholder while interacting with that organization”. Value is fundamental to everything that an organization does. In fact, the only reason an organization exists is that it provides value to one or more stakeholders.

Value mapping is a generic term that is used to encompass the variety of value-focused analytical techniques intended to help organizations better understand how they exchange value with their stakeholders. Value mapping assists an organization in identifying opportunities to improve the value for one or more of those stakeholders and results in the creation of formal value maps. Value mapping focuses on the identification of end-to-end value creation from the standpoint of the stakeholder seeking that value.

By focusing on value as defined by stakeholders, it becomes possible for an organization to view itself from an “outside-in” perspective. This outside-in perspective is a view of how an

organization's external stakeholders view the organization providing them value. Because most organizations are operationally focused (i.e., an "inside-out" perspective), this outside-in perspective can be a significant mind-shift. In order to truly understand and leverage value mapping, business architecture practitioners must understand the meanings of "value proposition" and "value item".

The Value Proposition

At an aggregate level, businesses frequently use the term value proposition to indicate what a customer, business partner, or internal stakeholder may desire. However, businesses do not always clearly define the concept of a value proposition. A value proposition is defined as:

An innovation, service, or feature intended to make a company, product, or service attractive to customers or related stakeholders.

Consider a scenario where a customer is seeking to take out a loan where value proposition is ultimately viewed as an executed loan agreement based on favorable terms. The value proposition is the aggregate of various items of value that are delivered in the value stream. Settling a claim, payment of an installment, acquisition of a service, victory in a trial, granting a license, registering a student for classes, and production of a product all represent value propositions achieved as the result of a given value mapping end state being achieved. In practice, a business architecture would need to incorporate value streams to articulate value proposition delivery to a stakeholder.

While moving through the series of activities that lead to a desired value proposition, the triggering stakeholder is the primary beneficiary of the value accrued. For example, when obtaining a loan, the acceptance of the initial application, receipt of an acceptable credit rating, gaining favorable terms, and the acceptance of the loan request collectively represent accrued value. These intermediate deliveries of value are called value items. In aggregate, value items accumulate to a point where the value proposition, which includes the executed loan and the agreed upon exchange of value, is achieved.

The Value Item

A key concept in understanding value definition and value accrual is that of the "value item", which is defined as:

The judgment of worth, made by an individual or organization, attached to something tangible or intangible and attained in the course of a particular interaction with one or more other parties.

Value items represent a judgment of worth within the context of an interaction defined by a value stream. A value stream may depict how a customer achieves value or satisfaction when

licensing or procuring a product or service. A second value stream may depict how that same stakeholder achieves value when making and receiving payment for a claim.

A value stream's end state value is the value proposition, which can be thought of as the proverbial "gold at the end of the rainbow" because the value proposition is what the stakeholder ultimately seeks to achieve. Consider value items as representing road markers along a journey, while the value proposition represents the journey's final destination. A value proposition represents the aggregated collection of all value items associated with a value stream but can have value beyond the sum total of the associated value items.

Figure 2.4.1 illustrates the general model for how elements of the value mapping approach relate to each other in context of value items and the value stream. The stakeholder views shown in figure 2.4.1 represent the value stream's "triggering stakeholder". A triggering stakeholder is defined as a category of stakeholder that initiates a value stream for the purpose of achieving a stated value proposition.

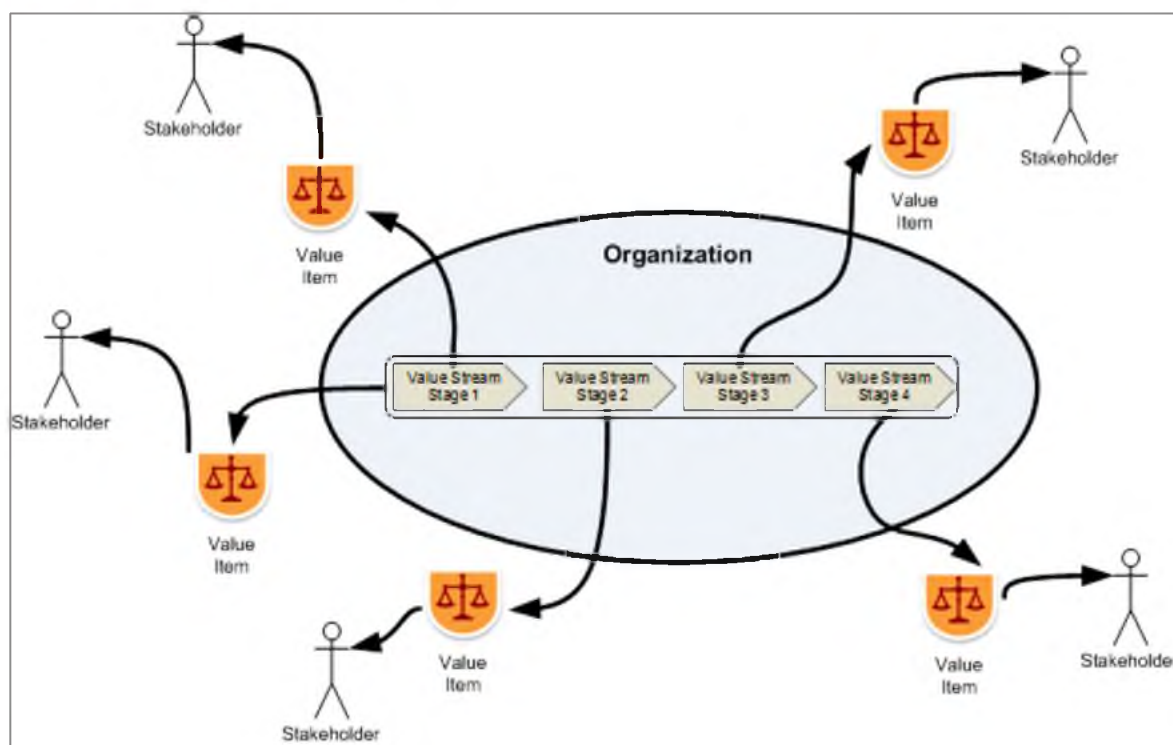


Figure 2.4.1: Stakeholder, Value Item, and Value Stream Stage Relationships

When initiating a value stream, a triggering stakeholder may act on behalf of another stakeholder in a proxy role. In a proxy role, the triggering stakeholder seeks the value proposition but is not the primary beneficiary of the value being received. The following examples depict scenarios in

which a proxy stakeholder triggers a value stream for another stakeholder that is the ultimate value recipient.

- A charitable individual finds someone requiring medical attention and calls for help. This call initiates a value stream where initial treatment, transportation, resolution, and final dispatching of the patient ensues. In this example, the patient was unable to request help so the charitable individual served as a proxy trigger to initiate the value stream.
- An event planner who initiates a Deliver Event value stream may do so on behalf of potential attendees who benefit from attending the event. The value achieved in this example is shared between the proxy triggering stakeholder and attendees because both stakeholder categories achieve value from a successfully delivered event.
- A Default Loan value stream may be triggered by a stakeholder that is in reality an automated system that triggers a late payment notification. In this example, the system serves as proxy stakeholder for the actual stakeholder in the collections department who is seeking to address non-payment of moneys owed.

Value items may be decomposed. For example, delivering the prestige associated with “recognition as a VIP customer” cannot be done directly, but rather as a composite of tangible value items that could be delivered to produce this value. When decomposing value items, the result captures the value items that cumulatively contribute to the value being decomposed. The presence of the lower-level value items need not be known to or valued by the stakeholders who value the higher-level value item.

Figure 2.4.2 shows value decomposition that illustrates how value stream stages contribute to the delivery of incremental value that ultimately produces the target value item “Qualified Customer”. Note that based on a given business model, Prospect Customer could be a value stream or it may be a value stream stage in a larger Execute Campaign value stream. In any case, effective value stream and value stream stage definitions adhere to the principles, guidelines, and practices outlined in this section.

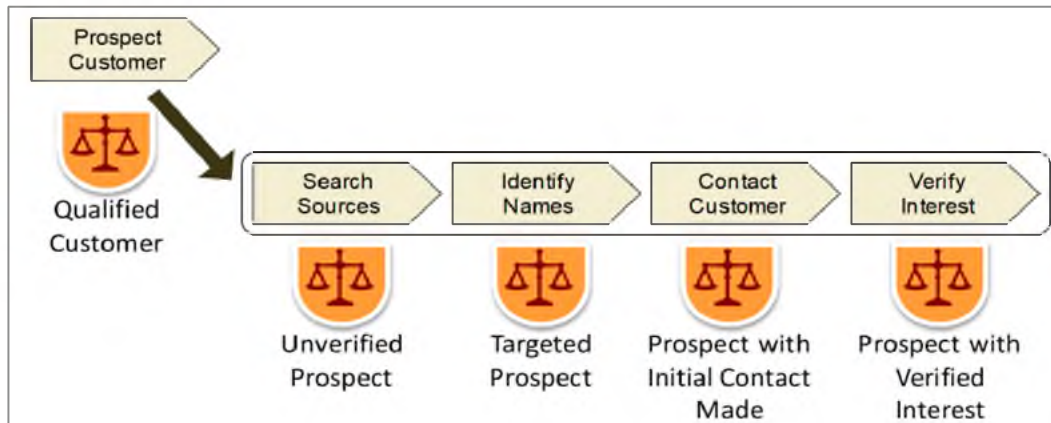


Figure 2.4.2: Decomposing Value into Contributing Elements

Value exchange describes the conveyance of value items between stakeholders. The simplest kind of value exchange is the classical economic exchange between two parties. In cases where the value is being monetized, the market acts as a force to allow value to be standardized and made explicit. However, many interactions cannot be monetized to easily establish value either because the parties involved cannot put a price on the value that they are receiving or because the value is gained via some much larger pattern of interaction. In the former category are things like contentment from a personal perspective or military protection from a government services perspective.

These non-monetized exchanges exist in most situations that involve repeated interaction among parties for an extended period of time. In these cases, value continues to be derived from a particular interaction, but it is also impacted by prior interactions between the parties. Understanding this kind of value requires the evaluation of the value of each particular value exchange in relationship to the ecosystem in which the value exchange takes place. Therefore, it is important to consider monetary and non-monetary value when examining and decomposing value.

When evaluating a value item from the standpoint of the value exchange ecosystem, it is important to consider that value may be derived from a combination of value streams. Value may be created that is a combination of value items delivered within each of the supporting value streams. This perspective views value at an aggregate level that looks across multiple value propositions and value streams.

Figure 2.4.3 illustrates how product value is the result of value related to unique features and unique servicing of the product as well as the ecosystem-based value as it relates to product brand.

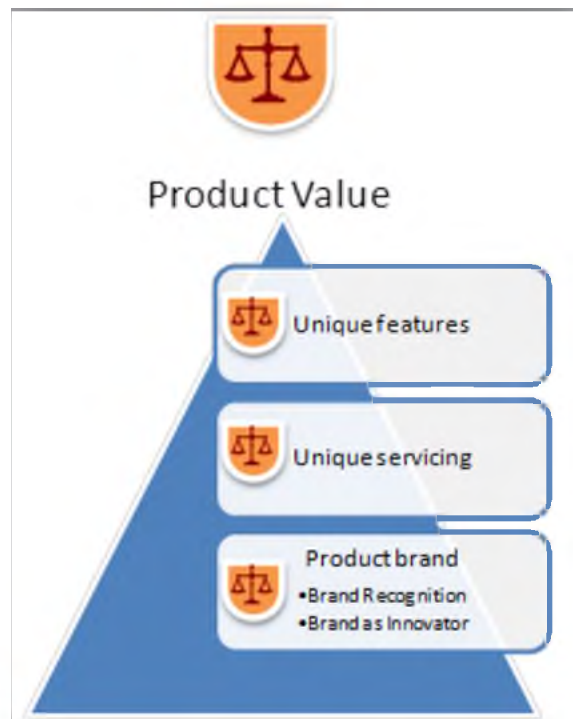


Figure 2.4.3: Product Value and Related Ecosystem Value

One example of a scenario where multiple value streams contribute value involves a company that sells made-to-order products. In this example, a customer would trigger an Acquire Product value stream, but that value stream cannot deliver the product to the customer until it is designed and built via a Deploy Product value stream. These value streams have unique value propositions and act independently, although some of the same stakeholders would likely participate in these value streams. The remainder of this section provides additional details as to how value items and value propositions are achieved through value streams.

Value Stream Origins and Intent

Today's business architecture value stream perspective arose when businesses sought a clear-cut way to represent customer value delivery that could be delineated into discernable elements of value proposition and value items. This approach to exploring and articulating value was labeled value stream analysis, which is a decidedly more end-to-end, progressive perspective of value delivery than what was applied in prior approaches. For this reason, value stream analysis has gained greater traction than previous and competing value mapping perspectives.

The origin of today's business architecture value stream can be cited back to James Martin's book *The Great Transition: Using the Seven Disciplines of Enterprise Engineering to Align People, Technology, and Strategy*. In this book, Martin stated that a value stream has one clear goal "to

*satisfy or to delight the customer”.*¹ One way to summarize the essence of the value stream is that it provides a *stakeholder triggered, end-to-end depiction of how an organization delivers requested value to that stakeholder.*

The value stream’s focus on satisfying the customer and other triggering stakeholders differs, for example, from the Porter value chain, which is premised on deriving internally oriented margin value. The value stream’s emphasis on stakeholder value delivery further differentiates it from the “lean value stream”, which orients around optimizing internal processes. Appendix B.6 provides more background on the Porter value chain, lean value stream, and value network, which centers on entity-to-entity value exchange.

Dual Value Perspective: Value Consumption / Value Creation

As highlighted in figure 2.4.4, value streams, when fully articulated on a stage-by-stage basis, provide visibility into both value consumption and value creation. Consider a customer, for example, that has a value-consuming perspective viewed through the lens of the value proposition that the customer is seeking. The value proposition represents an amalgamation of all value items produced at each stage of a value stream, while providing insights into how to decompose that value proposition into incrementally delivered value items, each of which are delivered to the triggering stakeholder on a stage-by-stage, readily consumable basis.



Figure 2.4.4: Value Stream Dual Perspective: Value Consumption and Value Creation

Value streams also represent value creation perspectives through the dual lenses associated with:

- The capabilities that enable each value stream stage, where capability outcomes are assigned to one or more value items for that stage
- The participating internal and external stakeholders that contribute to capability outcomes, which in turn result in the value items delivered by that stage

To highlight this dual perspective, figure 2.4.5 depicts two value streams; Deploy Product, which is internally triggered, and Acquire Product, which is externally triggered. The Deploy Product value stream would be triggered by an executive or product manager seeking to roll out a new product to market. The Acquire Product value stream is triggered by a customer who wants to obtain that product. In both cases, these triggering stakeholders are value consumers. The left-to-right progressive focus offers a great deal of flexibility in end-to-end value accrual, enabling a multitude of business scenarios as work moves across the value stream.

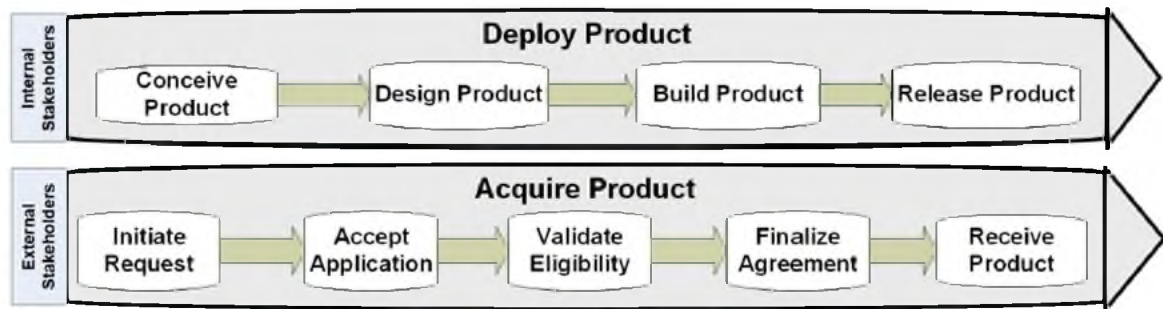


Figure 2.4.5: Two Value Stream Examples: Deploy Product and Acquire Product

Value consumption for the Deploy Product value stream would occur in increments, with the triggering product manager gaining access to product concept statements, product designs, product buildout, which based on product type could be a prototype, and the product's final release for availability. Value creation for the Deploy Product value stream would be represented by stakeholder cross-mappings and capability cross-mappings, which are discussed later in this section. Depending on the type of product being deployed, value creation would be enabled by Strategy Management, Product Management, Material Management, Asset Management, Initiative Management, Work Management, Partner Management, and other capabilities.

The Acquire Product value stream provides a good example of how value streams provide visibility into value consumption in increments and in aggregate. The customer triggering the Acquire Product value stream in figure 2.4.5 is seeking to obtain the product in question. Passing the eligibility stage, for example, offers initial value, but the value proposition remains unfulfilled. Formalizing an agreement for the product, as depicted in stage 4, offers the customer additional value, but again the value proposition remains unfulfilled. Achieving the value proposition for this value stream requires the aggregate set of value items to accrue for all stages. Value creation for Acquire Product, on the other hand, would be enabled by Customer Management, Agreement Management, Finance Management, Submission Management, Inquiry Management, and a host of other capabilities, which would vary based on the product being acquired.

It is important to point out that value propositions are not always achieved. A value stream may terminate based on any number of circumstances prior to achieving the stakeholder's goal. In the event of early termination, the value proposition being sought is not achieved, although certain value items delivered by each value stream stage may provide elements of value to that stakeholder. For example, a customer may determine that they are eligible to acquire a certain product based on achieving eligibility in stage 3 of the Acquire Product value stream, but may not have the funds required to finalize the purchase.

Benefits of Using Value Streams

Value streams provide a very specific view of how value is achieved for a stakeholder, and many significant benefits accrue from this concept, including:

- **Value streams provide the formal means by which an organization can effectively articulate and deliver a desired value proposition.** Many times, businesses struggle with connecting what marketing is promoting as a value proposition and the ability to articulate the formal means by which the stakeholders can achieve that value proposition. Value streams provides this formality, linking strategic objectives at one level to the enabling capabilities and ultimately solutions at another level.
- **Value streams provide a common baseline for envisioning how to deliver high visibility stakeholder value.** Stakeholder value discussions are often muddled because they focus on a myriad of overlapping and redundant business processes, enabling technologies, and organizational complexities. Therefore, a complete and holistic view of stakeholder value derivation and related activities allow management, planning teams, and implementation teams to rally around a common understanding of how value is achieved for a stakeholder.
- **Value streams provide clear focal points for prioritizing how to achieve stakeholder value.** Value streams identify the various activities where value is achieved. In doing so, they enable management to quickly see where to focus efforts to reduce stakeholder complaints, enable stakeholder access, and identify areas where significant opportunities may be pursued. For example, in a hospital setting, if patient admitting is the first stage in the value stream and it is a particularly problematic area, value streams can be used to enable everyone involved to view related priorities, issues, and concerns, and vision for improvement. Priorities and perceived degrees of added value can be discussed from a common perspective.
- **Value streams enable delivery of near-term, mid-term, and long-term value to stakeholders.** Value streams identify the activities, or value stream stages, that deliver

value from initial contact of new customers to the more advanced requirement of longtime customers. These value stream stages can be segregated and improved upon on a selective and strategic basis. For example, if a Manage Customer Portfolio value stream has limited or no automation around the concept of viewing a portfolio, this value stream stage can be turned into a project focused on delivering portfolio management to the entire customer base. Executives who have clear visibility into value stream views can set these strategies without concern over the technical details required to deliver the benefits of this value stream stage.

- **Value streams provide new and unique ways to envision stakeholder engagement.** In providing a complete view of all ways in which a stakeholder engages with an organization, business teams can clearly state how they want to engage with those stakeholders based on a commonly defined environment. For example, one organization stated that internal stakeholder communication was too partitioned and fragmented while external stakeholder communication was too diverse from internal views. The vision for this organization was to provide a common, end-to-end collaborative environment for each value map required to enable seamless internal/external stakeholder communication.
- **Value streams enable prioritization and managed deployment of business capabilities.** Business capabilities alone are not enough to fully empower a business to address near-term and long-term issues and challenges. Business capability deployment can be challenged if there is not a clear view of stakeholder engagement or a vision as to how stakeholder value will be achieved. Value streams provide a context for and are enabled by business capabilities. When value streams are identified and prioritized based on a business vision, they provide a guide and business justification for capability investment. For example, if a new Manage Customer Portfolio value stream is a priority, automation of capabilities such as Customer Information Management would be raised as a high priority.

Principles of the Value Stream Mapping

Defining and using value streams requires concurrence on a basic set of principles. Principles — (agreed upon truths to guide action) — guide efforts to establish and leverage value streams within the context of various business scenarios. Principles of value streams include:

1. **Value streams are stakeholder focused.** The value stream's focus on delivering stakeholder value places a premium on viewing the organization from the point of view of the stakeholder initiating or triggering the value stream, which, in turn, drives

strategies and investments that ensure continuing viability of the organization. Stakeholders initiate and participate in value exchanges through the value stream. The stakeholder perspective applies to stakeholder, both within the organization, such as a marketing executive or claims adjuster, as well as external stakeholders such as customers, agents, suppliers, and partners.

2. **Value streams are value-centric.** For example, each value stream stage creates value for one or more stakeholders as it moves from left to right. This concept is true in varying degrees of scale. While one can argue that a value stream to authorize a driver's license for an applicant is most valuable at the end state, consider that there is value in allowing the applicant to pass the vision exam. The applicant is informed that he or she has the visual ability to get a license and has additionally learned that his or her vision is not impaired. Value in this context is viewed from the perspective of the triggering stakeholder.
3. **Value streams provide a business-centric representation of how stakeholders derive value.** Value streams provide executive-level views to strategists, planning teams, and decision makers. Value streams are easy to understand and take little explaining — unlike processes, which can quickly devolve into unnecessary and unwanted degrees of complexity that become a diversion at the planning level. Value streams offer a simple, aggregated depiction of how stakeholders achieve value from the point where they engage to the point where value is delivered and all ancillary action items are addressed. At the highest level, value streams present a visualization that business executives can quickly understand.
4. **Value streams provide a holistic view of how value is achieved.** By providing a value-driven abstraction of value creating activities within a business, value streams allow executives to build common strategies across divisions and even with external partners. For example, an international insurance and financial company sought to align all business processes related to customers who were seeking to acquire a cross-section of products. The company mapped and articulated a common value stream called Acquire Product and associated multiple processes for each product line and division to that value stream. By doing so, executives could determine how to streamline and optimize common on-boarding, rating, risk analysis, and related value stream stages of the value stream to deliver value to a common set of stakeholders. This approach created a common set of customer expectations and results, regardless of the insurance product or financial instrument desired.

5. **Value streams represent an aggregation of views.** A single value stream represents an aggregation of work required to deliver value to a given stakeholder. For example, a Manage Customer Portfolio value stream at a full-service insurance and financial company represented dozens of fragmented business processes across multiple business units, product lines, and organizational boundaries. Customer losses were mounting as a result of the lack of cross-process coordination and visibility. Individual processes were streamlined on a product line basis, but scores of parallel processes never converged and resulted in uncoordinated acknowledgements, synchronization, and notifications from a customer perspective when changes were initiated. Viewing this challenge from a common value stream perspective allowed executives to quickly understand the problem and craft a common solution across product lines and business units.
6. **Value streams facilitate a decomposition of views of how value is achieved.** Decomposition is the reversal of aggregation. It ensures that there is no misalignment between the value being identified and the way in which that value is delivered. Value streams, for example, do not imply a particular implementation perspective. Work may be defined using business process modeling conventions, dynamic rules-based routing² maps, or other means. This implementation independent approach ensures that a given value stream has the flexibility to support unique product line or business unit requirements. In our previous Manage Customer Portfolio value stream example, decomposition ensured that each value stream stage, a value stream decomposition concept, is unique enough to accommodate specific customer management requirements. In this example, changing an address on a mutual fund has little impact, while changing an address on a homeowner's insurance policy can impact insurance rates.
7. **Value streams define how to leverage business capabilities to achieve stakeholder value.** Value delivery requires that a business has certain capabilities. For example, value streams are composed of value stream stages that represent activities a business performs to create value. Value stream stages, in turn, are enabled by business capabilities. Planning teams can use value streams to rapidly envision and improve the way in which a business delivers value while determining which capabilities must be improved to support these changes. This approach is important because it can be used to guide project prioritization, approach, and roadmap development. Value-stream-to-capability mapping is a key factor in tying together *how* a business achieves value and *what* a business does to support how that value is achieved.

8. **Value streams deliver and accrue value in the form of value items to achieve a value proposition.** Value streams formalize specific points where value items are accrued for stakeholders while establishing a clear path toward achieving the desired value proposition. This well-articulated perspective on value is the centerpiece for value mapping, while other more operational perspectives focus on operational efficiency.

Adhering to these principles ensures that value mapping efforts produce effective, widely applicable, and highly useful value streams for a business. This effort, in turn, enhances the value of the end result and usability of value streams across a variety of planning and transformation initiatives.

Value Stream Mapping

The first step in creating a value stream involves a discussion on how to decompose value. Value streams are a foundational business architecture domain, along with capability, information, and organization, and oftentimes the initial focus of efforts to articulate an organization's business architecture.

While understanding value requires focusing on the proper level of abstraction, it is also essential at times to decompose that understanding into lower levels in order to gain a deeper understanding of how that value is derived. Gaining this deeper understanding involves following a structured approach to decomposing the value map along multiple dimensions. This kind of decomposition follows a cohesive set of guidelines that differ depending upon what aspect of the value map the organization is interested in further analyzing.

There are two major paths to decomposing the value map: decomposing the value delivered using the value item and value proposition and decomposing what an organization does to create the value. These paths are not separate and unique perspectives, and the value stream discussion will highlight where value items accrue at various stages of what an organization does to achieve a value proposition.

Breaking Down the Value Stream

The value stream can be thought of as a linear graph representing how an organization provides stakeholder value through a series of stages. Value stream "stages" represent the series of interchanges with stakeholders as the value stream moves from initiation to conclusion. Value stream stages are distinct aspects within the business architecture.

Figure 2.4.6 depicts the Take a Trip value stream and related stages and how they would be minimally defined within the business architecture. As shown in the figure, each value stream

minimally has a name, a definition, a value proposition, and identification of one or more triggering stakeholders. Value proposition for this value stream is arrival at a final destination.

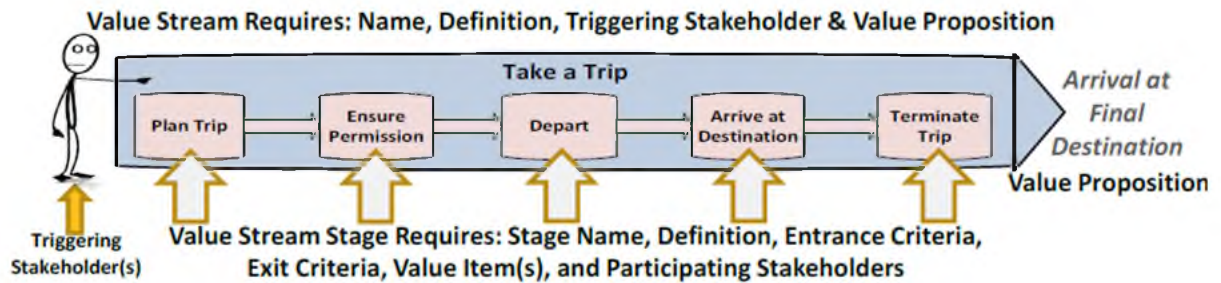


Figure 2.4.6: Essential Aspects of a Value Stream

The value stream example in figure 2.4.6 is comprised of five individual value stream stages. Each value stream stage requires a name, a definition, defined entrance and exit criteria, value item(s), and identification of participating stakeholders. A participating stakeholder is a category of stakeholder that has a defined role or responsibility within a value stream stage and, therefore, contributes to outcomes associated with the capabilities that enable that value stream stage.

For example, one entrance criteria for the Arrive at Final Destination stage would include having departed a destination. To summarize value stream definitional requirements, each value stream should contain:

- Value Stream: Name, definition, value proposition, and triggering stakeholder(s)
- Value Stream Stages: Name, definition, participating stakeholders, entrance and exit criteria, and value item(s)

The example in figure 2.4.6 provides useful insights into value stream definition and scoping. These insights are summarized as follows.

- Value streams start at the point where the triggering stakeholder engages; in the figure 2.4.6 example, it focuses on a customer planning a trip.
- Value streams only end when the value proposition is achieved, unless a value stream is terminated due to an event that prevents value proposition fulfillment.
- Value streams extend beyond what a given business can always see or control. In the figure 2.4.6 example, it means that a customer may miss a flight and require alternative options because a security agent delayed the customer at some point.
- Value stream entrance and exit criteria control and determine flow based on events that occur that are triggered in part by business object state changes.

- Value streams are self-contained. In the figure 2.4.6 example, it means that payments are taken for a ticket in due course of the value stream flow because ticket payment is required for the value stream to proceed.

Figure 2.4.6 highlights another important aspect of a value stream — stages may be reentered based on entrance and exit criteria. In the Take a Trip value stream example, a customer may experience one or more stopovers, hold a round trip ticket requiring a return to an originating destination, or even be rerouted to a destination not on the itinerary. These changes may involve being ferried or bused to an alternate airport or include a reservation-related car rental. In each case, the passenger would not enter the last stage, but return to the Prepare for Departure or Depart stage to begin the next leg of the journey. Only when the final destination is reached, does the final value stream entrance criteria allow entry to the Terminate Trip value stream stage.

The nature of a value stream to accommodate external, unanticipated, and beyond line-of-sight events to drive toward stakeholder value delivery establishes a key differentiator from a business process; value streams are value based, not flow based. Predictable process modeling is driven by planned and anticipated decision structures. Value streams simply strive to accrue value through the satisfaction of a collective set of exit criteria, linked to capability outcomes that enable event and state management across the value stream perspective.

Value Stream Stage Decomposition

Any given value stream stage within a value stream may decompose into sub-stages. Figure 2.4.7 depicts a value stream stage associated with an Execute Campaign value stream to build a customer prospect base. The value stream stage, Prospect Customer, decomposes to another level, resulting in four new sub-stages.

When viewing a value stream flow from left to right, value is accrued at each stage prior to moving on to the next stage. This premise is true at the highest level and each sub-stage. It is important to note that participating stakeholders may differ at these lower levels of decomposition and that it is an important feature of the abstraction provided by value streams.

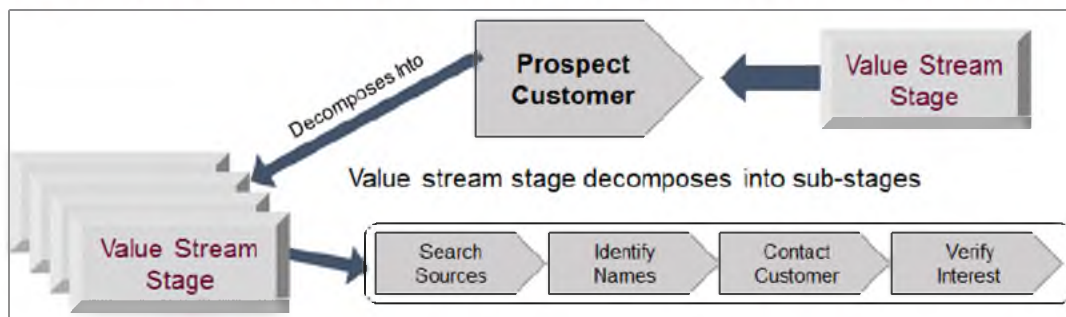


Figure 2.4.7: Value Stream Stage Decomposition

Value stream stage decomposition should be restricted to the rare scenarios where a set of clearly defined stage gates are required at a sub-stage level to clarify work transitions or as a basis for articulating unique business scenarios that differ from one business unit to another. All of the same rules hold true for defining a sub-stage as previously discussed for a value stream stage, meaning that each sub-stage requires a name, definition, entrance and exit criteria, value item, and participating stakeholder identification. Lack of clear stage gates at the sub-stage level is a good indicator that the parent value stream stage should not be decomposed.

Note that *BIZBOK® Guide* section 3.5 provides a different and more detailed perspective on value stream stage decomposition. The sub-stage perspective shown in figure 2.4.7 is not meant to replace the routing map concepts presented in section 3.5. It is also important to note that value stream stage decomposition is not overly common in practice. The best way to assess whether a stage should be a single stage or two stages is to verify that that entrance and exit criteria are unique for each stage. In addition, if there is heavy back-and-forth interaction between two adjoining stages, it is likely that they should be combined.

This exercise, when performed effectively, tends to temper stage decomposition. Another indicator that two stages should be a single stage is that they share more than 90 percent of the same capabilities, meaning they are essentially doing the same thing. One last test, assuming more detail is desired on combining or splitting a stage, is to determine if two or more stages share a common routing map (see *BIZBOK® Guide* section 3.5). In this case, the stages are likely inseparable in practice.

One final note of importance addresses a common misperception among less experienced mapping teams — value streams do not decompose into value streams. Creating sub-streams would splinter value item accrual, violate the stakeholder triggering requirement, and constrain value stream independence. Value streams are self-contained constructs with no dependencies outside the enabling capabilities that allow them to deliver stakeholder value. Enabling capabilities associated with each value stream stage produces a set of outcomes that collectively contribute to the value item(s) for that stage. Creating sub-streams would isolate enabling capabilities outside the bounds of a value stream, rendering them incapable of contributing to the value items associated with each stage of that value stream.

Value Stream Navigation

Value stream navigation is an essential concept for anyone seeking to leverage business architecture. Value stream stages are ordered in a de facto sequence as indicated by the value stream stage “precedes” relationship depicted in the model shown in figure 2.4.19. Real-time value stream navigation, however, is dynamically controlled by value stream stage entrance and exit criteria, which are dictated by business object states. As business object states transition

within and across value stream stages, the value stream delivers incremental and final stakeholder value through value items and the resulting value proposition respectively.

Business object states, represented by information concepts in practice, transition until an end state is reached, value is achieved, and the value stream concludes normally. Alternatively, state changes associated with one or more business objects may terminate a value stream prior to a value proposition being achieved. Consider, for example, a value stream that terminates because a customer never fulfills the payment obligation required to obtain an airline ticket. The value stream never finishes and the value proposition is never achieved. State-based navigation differentiates value streams from what many organizations term “high-level business process”.

In many cases, exit criteria for a preceding stage aligns with a subsequent stage’s entrance criteria. However, if the combination of object states in a subsequent stage’s entrance criteria is not achieved, control shifts to the stage that does accommodate those entrance criteria.

Object-based navigation is highlighted in the Take a Trip value stream depicted in figure 2.4.8. This value stream relies on object states as a means of iterating through Depart and Arrive stages for trips with multiple trip segments. When a “trip segment” object switches to a state of “ended”, which in practice could be achieved by a passenger reaching an interim destination, the value stream exits the Arrive stage. Because the passenger is at an interim destination, however, the trip object remains in an “active” state, blocking entry to the Terminate Trip stage. Because the trip is active and trip segment is ended, navigation reverts to the Depart stage to initiate the next trip segment. This example demonstrates how value stream navigation is not flow-based, but rather object state-based.

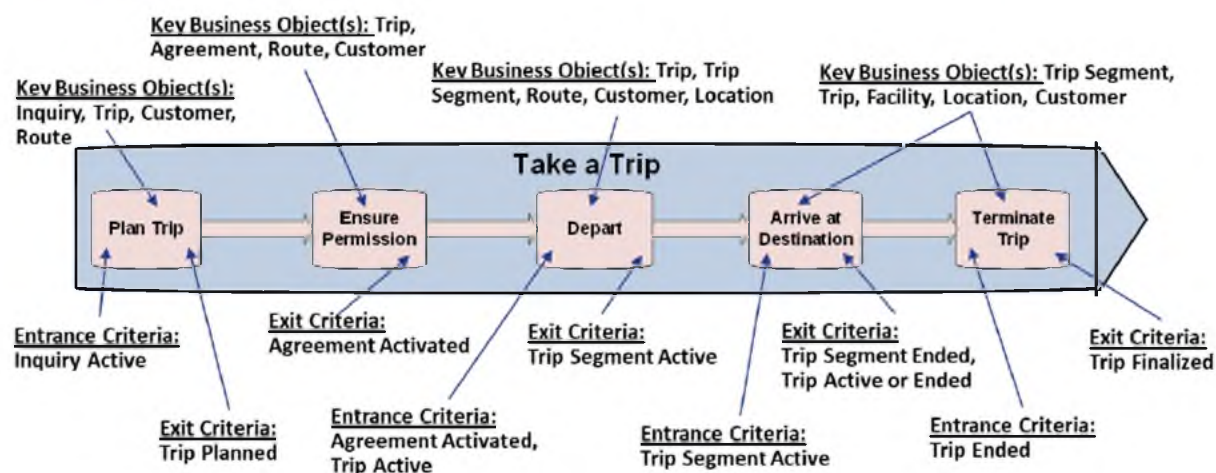


Figure 2.4.8: Business Object State Transition Impacts on Value Stream Navigation

Value streams, which are based on object state transitions, defined events, and related entrance

and exit criteria can skip stages, move backwards, or jump to a final stage. Subject matter experts, analysts, and architects may assign states based on their business model, but must ensure that all valid states are mutually exclusive and represented as a corresponding information concept in the information map. For example, a Trip information concept may be in one and only one of an initiated, planned, active, ended, or finalized state, as shown in figure 2.4.8.

The Binding Object

Certain business object states have an overarching impact on value stream navigation. For example, the state of a shipment would have an overarching impact on a Send Shipment value stream. In addition, many value streams rely on a single business object to connect or bind related business objects and a combination of states to navigate towards its value proposition. This is called a “binding object”.

Binding objects in an Acquire Asset or Acquire Product value stream would be the agreement because it binds relevant parties, products, assets, financial accounts, decisions, claims, and other business objects. Binding objects generally serve as the controlling object in matching capabilities, as discussed in *BIZBOK® Guide* section 2.2. Because value stream navigation relies on multiple, hierarchical finite object states to control stage entrance and exit criteria, the binding object along with other business objects should be established as early in a value stream as possible. The capability typically responsible for identifying or establishing a business object is the “definition” capability, as in Agreement Definition or Shipment Definition.

Shared Business Object Navigation Impacts

There are many more business objects at work and related events in play than shown in figure 2.4.8, including a plane (conveyor) and an airport (facility). A plane to which a customer has been matched being pulled from service or an airport being closed would impact the passenger, undermining the customer experience. However, the Take a Trip value stream does not initiate or drive events and object state changes for the plane or the airport; these business objects are reflected in other value streams, such as Fly a Route and Execute Operation.

Figure 2.4.9 shows the Take a Trip and Fly a Route value streams running in parallel. While the Take a Trip value stream represents a customer taking a trip, the Fly a Route value stream represents an airline moving a plane from point A to point B.

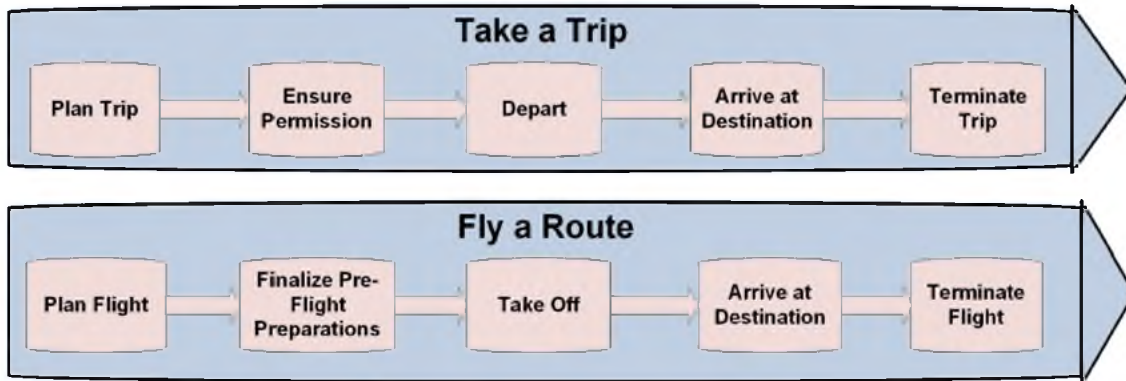


Figure 2.4.9: Dual Value Streams with Shared Business Object Dependencies

Take a Trip and Fly a Route are fully independent value streams that rely on instances of shared business objects, including the plane, airports, and routes. In these value streams, the customer is on one trip while the plane is on another trip, but when a customer is matched to a plane to get to a destination, they share a route. The Fly a Route value stream envisions a plane moving from point A to point B with or without the customer who is transitioning through the Take a Trip value stream. Similarly, the customer will get to their interim and final destinations regardless of whether an instance of a Fly a Route value stream is terminated because a plane is pulled out of service. Yet, there are impacts. A customer may be delayed if a given plane the customer is matched to is taken out of service, forcing the airline to rematch the customer to another plane.

Each of these value streams are unique, standalone perspectives with unique value propositions and different triggering stakeholders and different yet occasionally overlapping participating stakeholders. Each value stream is navigated based on business objects in play in those value streams. However, as discussed previously, cross-value stream navigational impacts are very real and important to recognize based on object state changes that affect value stream stage-to-stage transitions. In other words, a customer cannot depart if the plane to which they are matched cannot depart. Decoupling these perspectives allow organizations to streamline, rationalize, and optimize the management and automation of essential aspects of their business.

The bottom line on value stream interdependency is that value streams never trigger other value streams, do not point to other value streams, do not decompose into more value streams, and do not have any other relationship to other value streams outside of the fact that they may rely on the state of the shared business objects.

In other words, shared instances of business objects and related state transitions are the sole determinant of one or more active value streams impacting other active value streams. This reality highlights the criticality of basing capabilities on well-defined business objects as outlined in BIZBOK® Guide section 2.2.

Similar situations play out across a wide range of business scenarios where multiple, concurrently active value streams impact the state of related business objects, which, in turn, impact navigation or termination of one or more value streams. Multiple, parallel, concurrently active value stream concepts are explored further in this section under the topic of Multiple Parallel Value Stream Concept.

Value Stream Mapping Guidelines

Prior to walking through the value stream drafting process, the *BIZBOK® Guide* provides a set of guidelines for creating the value stream artifact. Initially drafting value streams involves walking stakeholders through value stream and value stream stage definition. Participating stakeholders involved in a given value stream should have a chance to provide input and validate each stream, stage, stakeholder list, and related set of definitions. The following guidelines provide an overview for moving teams through the value stream identification and delineation process.

1. **Establish value stream and value stream name.** The value stream naming process relies on two best practices: using an active verb phrase to name the value stream and naming it to reflect what is ultimately being achieved by the triggering stakeholder(s). For example, a value stream Establish Financial Account makes it clear what the stakeholder is seeking to achieve. The active verb phrasing reflects the fact that value streams are active, not passive, moving toward an end state and ultimately terminating.
2. **Establish value proposition and tie it to the value stream.** A value stream should identify the value proposition to be achieved from the perspective of the triggering stakeholder. In business architecture terms, the value stream itself would map to that value proposition. The value proposition should be reflected in the name of the value stream. For example, Grant License would have a value proposition of a stakeholder having been granted a license.
3. **Ensure that each value stream has a clearly identified triggering stakeholder or set of stakeholders.** Without the triggering stakeholder, there is no value stream. The triggering stakeholder(s) initiates the value stream by starting up an activity for which a capability is defined. Such a capability is often linked to the concept of submission facilitation or request facilitation. As a rule, triggering stakeholder identification precedes stage definition because defining what the value stream delivers, naming it, and identifying trigger stakeholders are basic steps toward determine if something is or is not a value stream. Note that if an automated system triggers a value stream, as might be the case in the example of a Default Loan value stream, it is considered to be “triggered by proxy” because a person would take this action if the system was not in place.

4. **Establish value stream stages and stage names.** Value stream stage names are a microcosm of the value stream naming convention insofar as they should be active verb phrases and reflect what is accomplished in that stage. For example, stage names such as Accept Claim and Validate Claim Request reflect what is occurring within those stages. At the end of the Validate Claim Request, one can readily assume that the request is validated. The process of splitting or combining value stream stages, as discussed previously, relies on well-delineated stage gates, avoidance of bouncing back and forth between adjacent stages, and, if and when routing maps are in place, avoidance of highly replicated routing maps in adjacent stages. The idea is that a stage has a clear exit criterion that is not undone or reset by the adjacent stage. This scenario would occur, for example, if a validated claim request is routinely invalidated during the Issue Claim Payment stage.
5. **Focus on customer or externally facing value streams as a priority.** Customer-facing or other externally facing stakeholder improvements will likely garner the most benefit for the organization and its stakeholders in the long term. Examples of customer-facing value streams include enabling a customer to establish an account, allowing customers to maintain their portfolios, addressing issues or exceptions (e.g., a claim or default), and ensuring that customers and other external stakeholders have access to what they own, license, or otherwise use.
6. **Do not confuse value streams with lower-level processes.** There are often only a couple of dozen value streams across a business when internal value streams are mapped. That same business, in turn, is likely to have hundreds or thousands of processes. One important step is to ensure that the number of value streams does not escalate or replicate across product lines and business units. For example, there should be only one value stream called Develop Product. Note that processes, routing maps, and even the need for certain enabling capabilities may differ from business unit to business unit, but the value stream is often the same. One way to adapt a value stream across business units at the high level is to establish sub-stages where unique stage gating concepts exist in one value stream over another.
7. **Use value streams to test and refine capabilities.** Capabilities enable and, therefore, map to various stages across a value stream. Performing this mapping often reveals that certain value streams demand attention or may surface required capabilities that have been missed or not fully decomposed in the capability map. This opportunity is the chance to add them to the capability map to round out the business architecture.
8. **Attribute each value stream stage.** Value stream stage attribution includes formally defining entrance and exit criteria, participating stakeholders, and value item(s) associated with that stage. This step can be time consuming and it is, therefore, often

prioritized for value streams that are linked to priority initiatives or most actively used. Participating stakeholder definition and mapping relies, to some degree, on the stakeholder mapping techniques defined in *BIZBOK® Guide* section 2.8, where stakeholder names are rationalized across all value streams.

9. **Use capabilities to test and refine value streams.** Capabilities are required to enable value streams and this enablement relationship is represented by cross-mapping capabilities to value stream stages. Cross-mapping provides an important validation for capabilities and value streams. If there is no home for an important capability, a value stream may have been missed. For example, if no value stream uses the Customer Information Management capability, then a value stream is likely missing. Finally, identifying all of the capability outcomes assigned to a value item ensures that a given value stream stage fully captures enabling capabilities. This topic is addressed in more detail under the topic of cross-mapping later in this section.

With these guidelines and the previously discussed principles as a backdrop, it is time to begin drafting the value streams.

Drafting Value Streams

While drafting guidelines differ based on team setup, organizational structure, and from value map to value map, the concepts are similar. The following steps summarize how to build a set of value streams for a business.

1. Determine the key external and internal stakeholders within the business. Stakeholders typically include customers, agents or representatives, the public for certain enterprises, business partners, internal departments and employees, and other relevant stakeholders desiring value from the business.
2. Consider a set of value streams, each of which delivers a value proposition in one or more of the following categories:
 - Acquire Product (externally-triggered)
 - Establish Financial Account (externally-triggered)
 - Onboard Partner (externally-triggered)
 - Resolve Dispute (externally-triggered)
 - Settle Financial Accounts (externally- and internally-triggered)
 - Optimize Customer / Patient / Constituent Portfolio (internally-triggered)
 - Deploy Product (internally-triggered)
 - Perform Audit (externally- and internally-triggered)
 - Optimize Asset Inventory (internally-triggered)

- Settle Claim (externally-triggered)
 - Trade Financial Instrument (externally- and internally-triggered)
 - Treat Condition (externally- and internally-triggered)
 - Send Shipment (externally-triggered)
3. Expand or adjust the list in step two above to align these concepts to the particular business terminology, stakeholders, and business model.
 4. Clearly name and define each value stream in a one-sentence description. Note that some templates use the term “description” to specify the definition, but definition is the formal term.
 5. Identify the value proposition desired by the triggering stakeholder or stakeholders of that value stream.
 6. Clearly define triggering stakeholders for each value stream.
 7. For each value stream, establish a left-to-right set of stages, one value stream at a time, across the value stream as follows:
 - Ensure that the value stream contains a list of representative stages that describe how to achieve value for a particular stakeholder from the point of initiation through the point of achieving the value proposition
 - Map out stages from start to finish, left to right
 - Ensure that each value stream stage is a unique stepping stone toward achieving a value item-specified stage gate, delineated by value item stage gates and not process-centric steps
 8. Clearly name and define each value stream stage within the value stream.
 9. Identify the value item or items being achieved as a result of each stage.
 10. Identify the criteria for entering and leaving each stage of the value stream. Criteria may be one or more state-based conditions that mark a stage gate transition. Entrance criteria may be used to enable work moving through a value stream to move backwards or jump stages in certain cases. Exit criteria ensures that work does not transition out of a stage until all criteria are met. *A well-articulated value stream has entrance and exit criteria that reference one or more valid object states as defined in the corresponding information map.*
 11. Identify participating stakeholders for each stage within the value stream.
 12. Repeat steps 7-11 for each additional stage.

13. Decompose value stream stages where essential to improve clarity and only where lower-level stage gates are required due to differences in business unit scenarios or addressing unusually complex situations. *(Note that this option is very rarely required or employed.)*
14. Validate each value stream with executive teams and subject matter experts in business units responsible for enacting or improving work encapsulated within this value stream.
15. Leverage various techniques as required to either visualize or map value streams to other views of the business architecture. This work can include applying the visual approaches presented in this section, leveraging spreadsheet technology, or engaging more elaborate viewing tools or approaches.
16. Engage the business using these value streams for planning and discussion purposes, issue analysis, problem resolution, prioritization, funding, and roadmap development.

Value Stream Mapping Template

Value stream mapping templates facilitate, formalize, and expedite value stream articulation. Figure 2.4.10 provides a means of defining certain attributes for the value stream as a whole as well as for each value stream stage. Specifically, figure 2.4.10 provides an articulation template for value stream, value stream stage, related definitions, value proposition, entrance and exit criteria, value item, and triggering stakeholder definition. This template provides a framework for envisioning how value items associated with each value stream stage accrue to achieve the value proposition identified for the value stream as a whole. Furthermore, the template provides a way to integrate value stream navigation with the stakeholder value definition under a common perspective.

The level of value stream articulation shown in figure 2.4.10 is the basic level of information required when seeking to leverage value streams in strategy realization, initiative definition, investment analysis, capability mobilization, and stakeholder value delivery. Note that certain cells in the figure 2.4.10 are blacked out. The cell blackout approach is applied when a given cell does not apply to either a value stream or value stream stage. For example, a value stream stage has an entrance and exit criteria while a value stream does not, resulting in those two cells on the value stream row being blacked out.

Value Stream	Value Stream Stage	Definition/Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder

Figure 2.4.10: Value Stream Definition Template

Figure 2.4.11 provides an example of how the template in figure 2.4.10 would be used in practice for the Establish Financial Agreement value stream. In this example, practitioners can quickly ascertain the essence of a value stream and the value proposition being delivered. Establish Financial Agreement is ordinarily a customer-triggered value stream, but a partner may trigger this value stream by proxy. For example, a financial agent or representative might initiate the setting up of an agreement for a mutual fund or other type of investment.

Value Stream	Value Stream Stage	Definition/Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Establish Financial Agreement		End-to-end perspective of activities necessary for establishing a new or updating an existing agreement.	Customer or other requester has new or updated agreement.				Customer, Partner
	Initiate Request	The act of receiving a request or responding to an offer of expressed interest in creating or updating an agreement and verifying the requester's identity.		Expressed interest to establish or update an agreement	Identified requester with validated request	Request initiated, acknowledged, and accepted.	Customer Service Advisor, Customer, Partner
	Identify Needs	The act of assessing the needs of the customer in order to recommend the agreement.		Identified requester with unidentified needs	Identified requester with identified needs and identified agreement type	Needs communicated and understood.	Customer Service Advisor, Customer, Financial Planner, Product Specialist, Partner
	Evaluate Risk	The act of both parties (the requester and the business) assessing the risk of establishing or updating the agreement and agreeing to proceed.		All information necessary to establish the agreement available	Parties agree on and accept the risks of establishing or updating an agreement	Risks to proceed are acceptable.	Customer Service Advisor, Risk Officer, Customer, Partner
	Activate Agreement	The act of activating the requester's agreement.		Parties agree on and accept the risks of establishing or updating an agreement	Agreement activated or updated	Agreement is activated and current.	Customer Service Advisor, Partner
	Perform Post-activation Activities	The act of performing any post-activation activities, such as notifications, compliance verification, or quality assurance checks.		Activated and current agreement slated for finalization	Essential agreement finalization activities completed	Agreement activation activities and notifications finalized.	Customer, Customer Service Advisor, Channel Manager, Partner

Figure 2.4.11: Value Stream Definition Example³

The Establish Financial Agreement value stream highlights the “aggregation of views” principle. This value stream can be used to set up or modify terms for a savings or checking account, credit

or debit card, trading account for financial instruments, or any number of other customer relationships involving one or another of a financial institution's products. This aggregation of views is what allows an organization to maximize stakeholder value delivery with a limited number of value streams. While the template in figure 2.4.10 and example in figure 2.4.11 enable value stream articulation, individuals engaged in more detailed value stream stage articulation should leverage an additional mapping template.

Value Stream Stage Articulation Template

The template in figure 2.4.12 enables the capture of additional value mapping details and plays an important role in subject matter expert working sessions. This template is highly useful when engaging in additional in-depth analysis relevant to transformative initiatives and related investments. For example, the figure 2.4.12 template enables business architecture practitioners to engage in detailed discussions with subject matter experts, including stakeholders who participate in a given value stream stage. These discussions focus on a detailed understanding of the state of work required to enter and exit this stage, different views on the value items derived from this stage, and the activities being performed in the context of this stage.

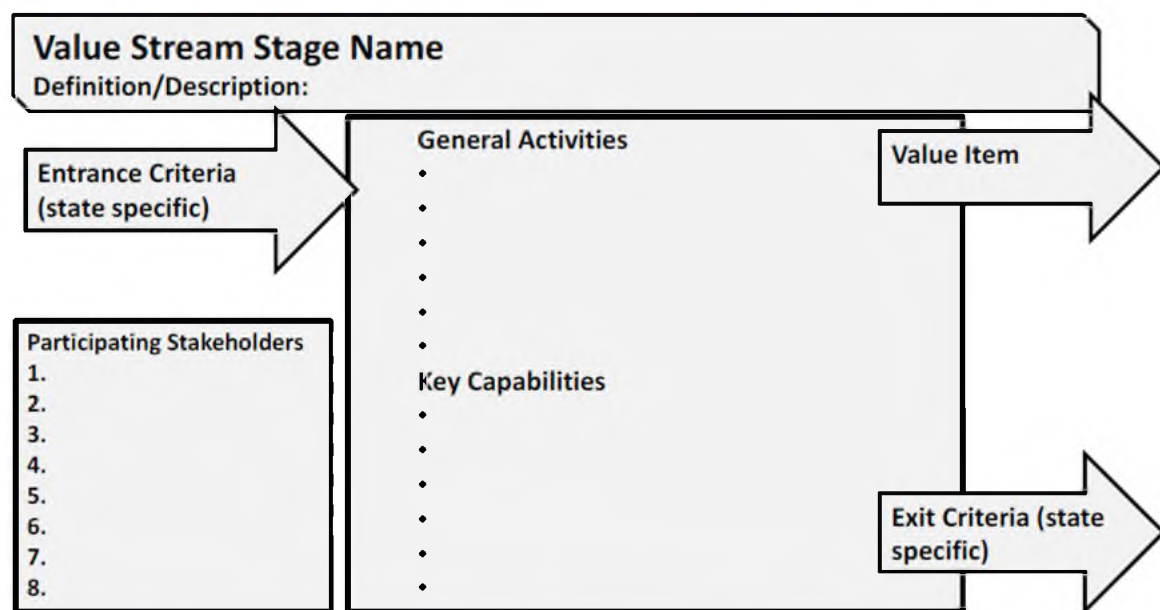


Figure 2.4.12: Value Stream Stage Articulation Template

Stage-specific stakeholder identification is a key focal point in the figure 2.4.12 template. Value stream stage-to-stakeholder cross-mapping may be done at any point during formal stakeholder mapping, as discussed in *BIZBOK® Guide* section 2.8. Leveraging the template in figure 2.4.12 allows for further documenting the stakeholders that participate in a given value stream stage.

Note that any stakeholders identified as playing an active role in a value stream stage should be involved in the template-based analysis of that stage.

One set of value stream stage attributes the template documents are the general activities performed during that stage. General activities provide insights into stakeholder and capability cross-mappings, entrance and exit criteria, and dynamic rules-based routing map creation. Routing maps are discussed in *BIZBOK® Guide* section 3.5. These activities are descriptive by nature and not a formal aspect of business architecture. While the general activities section of the template provides a space for note taking, activities lack the rigor that would allow them to be captured as a formal aspect of business architecture.

One critical aspect the figure 2.4.12 template captures are the capabilities that enable value creation within a given stage. As value stream stage analysis unfolds, practitioners will want to capture the capabilities required to enable that stage. A technique for capturing this information involves equating SME descriptions of general activities with the business objects involved and actions engaged. For example, when an underwriter states that they assess the level of risk for a customer, which is based in part on the asset they are insuring, their location, and customer history, they are telegraphing the capabilities required to enable that stage. Aggregating asset risk, location risk, and other risks is an indicator that multiple risk management capabilities are required to enable this stage. Multiple discussions with multiple SMEs may be needed to ascertain the full extent of the capabilities involved.

An investment in this type of detailed value stream articulation provides a more robust end-to-end value stream perspective and generally supports the use of the value stream in a more detailed, initiative-oriented, or transformative context. For example, if a major investment was being made and a given value stream or stage was the focal point, as much real-world information should be captured on those focal points as possible.

The task of drafting, defining, and socializing value streams is generally an effort that is of shorter duration than what is required for building the capability map. Yet initially drafted value streams are more likely to evolve over time as more clarity around various usage scenarios evolve. This rule of thumb is true when practitioners defer fully attributing certain value stream stages until they are required or time permits. Mapping value stream stages within value streams to the business capabilities that enable them, discussed later in this section, is not technically part of the value stream drafting process, but it is a required step when moving into issue analysis, planning, or transformation related activities.

Multiple Parallel Value Stream Concept

Value streams provide a framework for business issue analysis and solution planning. As such, it is important to consider the perspective of multiple parallel value streams, working against the same business object or a series of related business objects. Consider the example of a loan in the set of three value streams shown in figure 2.4.13.

The first value stream, Acquire Loan, is where the applicant moves from an initial interest to establishing a loan agreement. A Settle Accounts or Settle Payments value stream (not shown) would represent a stakeholder sending in ongoing payments on the loan. The remaining two value streams in figure 2.4.13 provide an example of how parallel value streams can be used to assess a business issue and devise a solution for resolution.

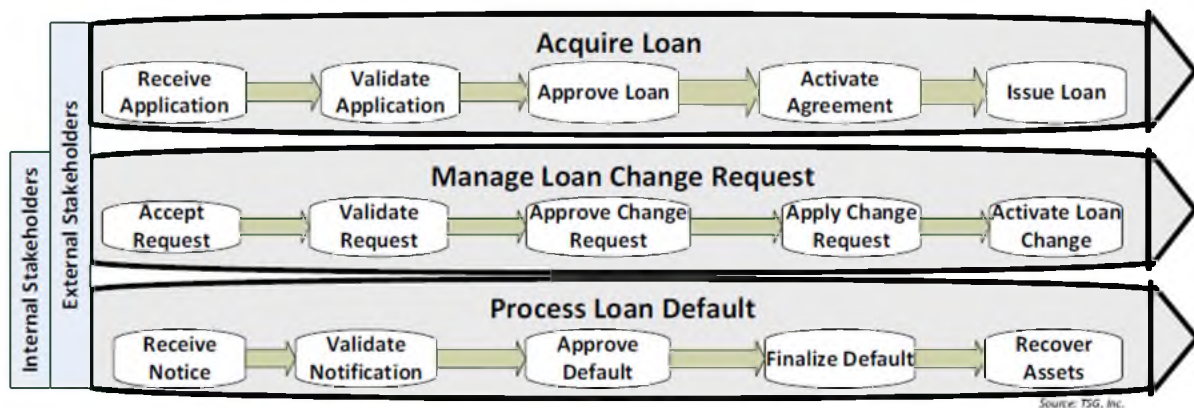


Figure 2.4.13: Visualizing Business Scenarios via Multiple, Parallel Active Value Streams

Consider an example scenario where a loan payment is overdue and notices have been sent, but the borrower does not respond for some reason. This scenario means that an internal stakeholder triggered the Process Loan Default value stream to begin because of an overdue payment. A notice is then sent to the borrower to notify that they are late with a payment and, ultimately, that loan default proceedings are underway.⁴

At this point, the borrower contacts the loan company or bank to discuss restructuring the loan and to prevent loss of the property against which the loan has been applied. The loan officers and borrowers move forward in good faith, not realizing that the Process Loan Default value stream is still moving forward. Thinking that things are under control while negotiations are underway to restructure the loan, the borrower is shocked when the asset recovery stage begins, taking the property away from the borrower, even though good faith negotiations were underway. The bank never really wanted to take hold of the borrower's property because third-party asset management is not a strong or desired capability for the bank. Everyone loses in this situation.

In this example, it is easy to envision how a bank or similar institution could lack transparency across value streams. One may argue that better communication is the answer to this problem, but when highly complex scenarios involving multiple value streams occur hundreds or thousands of times a day at some institutions, it is hard to say that better communications will correct the problem. Value streams provide a framework to view the need for and solution to full transparency of the business objects or cases moving through these value streams.

The multiple parallel value stream example further highlights that object state interdependencies are the sole determinant of cross-value stream impacts. For example, an overdue loan state causes a stakeholder to trigger the Process Loan Default value stream. However, a Manage Loan Change Request value stream triggered by the customer should ideally revert the loan object from a “defaulting” state to an “undergoing restructuring” state. In this case, the Process Loan Default value stream would pause, based on entrance and exit criteria checks, until such point that the Manage Loan Change Request value stream resets the loan state back to normal or back to defaulting.

In real-world scenarios where a business lacked the transparency expressed using the value stream, object state transition approach in the prior example, customers and banks moved into a foreclosure status in spite of the fact that neither party wanted foreclosure to move forward. This scenario provides an example of how value streams can and should be used to perform cause-and-effect analysis, articulate challenges, and design new business solutions. Business design paradigms leverage value stream analysis as a way to cut across political and business unit boundaries by providing a common business perspective to initiate discussions and agree on a collaboratively defined solution and fund it accordingly.

In general, the parallel value stream concept may be used to assess numerous business scenarios and devise and design business solutions that can address inherent business complexities across business unit, product line, and budgetary boundaries. Value stream-based situation analysis is explored in more detailed in the subsequent discussions in this section on heat mapping and value stream scenario analysis.

Value Stream Heat Mapping

Value streams, like capabilities, may also be heat mapped. Heat mapping, as explained in *BIZBOK® Guide* section 2.2, is the exercise of evaluating an aspect of business architecture, determining how well it is performing, and assigning a rating that reflects performance. Performance indicators often used in heat mapping are applied to the value stream stage within a value stream. The following criteria represent a common way of evaluating various aspects of business architecture:

- Quality and Correctness

- Efficiency and Timeliness
- Consistency and Standardization
- Availability to Stakeholder Community
- Performance against Expectations

As with the capability map, a value stream heat map is represented using a color-coding scheme. One common approach used for color-coding value stream stages uses the red/yellow/green concept that is shown below.

- Red = Poor
- Orange = Problematic, Not Severe
- Yellow = Not Working to Ideal
- Green = Working Well
- Purple (or other color) = Does not Exist but Should
- No Color = Not Evaluated

The above color scheme is common, but some businesses have employed alternative approaches. The concept of “does not exist” is a common vehicle for business architecture teams, but there is no color standard for target or desired business architecture artifacts. Adding “does not exist” to the scheme, however, is quite useful and highlights a key strength of business architecture blueprints; they can represent current and target state views within the same map. An example of a heat-mapped value stream stage is shown in figure 2.4.14.

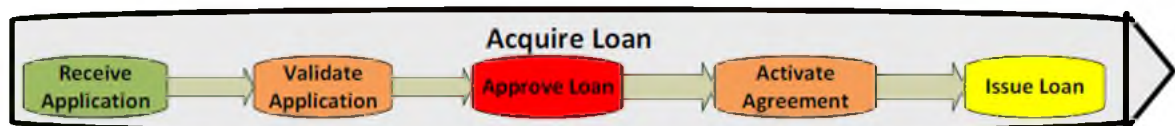


Figure 2.4.14: Sample Heat-Mapped Value Stream

Figure 2.4.14 depicts a previously introduced value stream called Acquire Loan where each value stream stage has been heat mapped. The Validate Application, Approve Loan, and Issue Second Approval stages require attention, as signified by the orange and red shading. The Validate Application and Approve Loan stages are shown as orange and red in this example because applicants are slipping through and being approved when applicants are not qualified to receive loans. The Receive Application works effectively, as signified by the green shading.

When a value stream stage appears red, there can be many causes; but, most often, the cause is the result of poor deployment of capabilities that should be enabling that stage. In other cases, it may be a lack of certain capabilities altogether. In the case of the Approve Loan stage, this business had inadequate risk rating capabilities, which did not surface the risks associated with

certain loans. The results of these types of problems can be catastrophic, as exemplified in the subprime mortgage crisis the United States experienced in the mid-to-late-2000s.

As various stages are improved, the colors can be shifted to reflect the improvements. One additional heat mapping consideration that arises is that of aggregation of views to a single stage. If a value stream is implemented across multiple business units in multiple ways, this in and of itself could be the cause for shading a value stream stage red — if those multiple implementations are result in customer issues, monetary problems, or other systemic business issues. Value stream heat mapping should be performed selectively where it enables management to rapidly ascertain where weaknesses exist in the business in delivering stakeholder value.

Value Stream/Capability Cross-Mapping

An important business architecture concept introduced at the beginning of this section involves capitalizing on the relationship between value streams and capabilities. Representing relationships among various value stream stages and the capabilities that enable those stages is one of the most important cross-mapping concepts in business architecture. The benefits of value stream/capability mapping are summarized as follows.

- Value streams, cross-mapped to capabilities, facilitate rapid strategy and initiative impact analysis by filtering and thereby reducing the number of applicable capabilities to be targeted by proposed investments
- Value stream stages requiring the same widely used capabilities help highlight where businesses can streamline and rationalize the delivery of certain capabilities
- Value streams highlight where certain capabilities may be missing, signaling gaps in a business' abilities to deliver on its business objectives

Value items have a direct relationship to capabilities and capability outcomes. The value item assigns value to outcomes of one or more capabilities that are used to enable the value creation embodied by the value stream. The value item's value is separate from any value that could be associated with a capability's outcome outside the context of the value stream. For example, a capability might produce a product with a set market value. However, within a particular value stream that product might be provided at no charge to certain potential customers in combination with another offer as an enticement to solicit further business. The value of selling the product in one value stream would be quite different than the value of using the same product as a way of establishing credibility and good will within a different value stream.

Value stream/capability cross-mapping is informed through the specification of the relationship between the outcomes of various enabling capabilities and the value item(s) specified for a given value stream stage. For example, if the value item called “executed agreement” is shown as a result of a given value stream stage, then the outcome of a given capability or capabilities would contribute to this value item. The outcome specified for the capability “Agreement Activation” would be an “activated agreement” and would represent at least one capability outcome associated with achieving the “executed agreement” value item. This analysis may be employed on an aggregate scale when determining which capabilities might be required to enable other value stream stages that have shared value items.

Value stream/capability cross-mapping also explains how work moves across a value stream, accruing value along the way. Explicit object state transitions associated with certain capabilities contribute to the work as it transitions across a value stream. These explicit state transitions ultimately result in the delivery of a value item where capability outcomes drive the resulting state changes.

Value Stream/Capability Cross-Mapping Blueprint and Uses

Figure 2.4.15 is a graphical blueprint depiction of a value stream and related stages, where each stage is associated with its enabling capabilities. In this example, the Acquire Loan value stream has five stages, each of which has a set of capabilities that enable those stages. This pictorial depiction is easier to digest for management, but more difficult to manipulate or reference by analysts or other detail-oriented workers.

The use of the tabular view shown in figures 2.4.16 and 2.4.17, versus the pictorial blueprint example shown in figure 2.4.15, is based on who is consuming the information and for what purpose. For example, the view in figure 2.4.15 would be easier for a business leader or senior manager to understand as a basis for discussion. Note that the cross-mapping examples in figures 2.4.15 and 2.4.17 represent a partial, not a complete, capability cross-mapping.

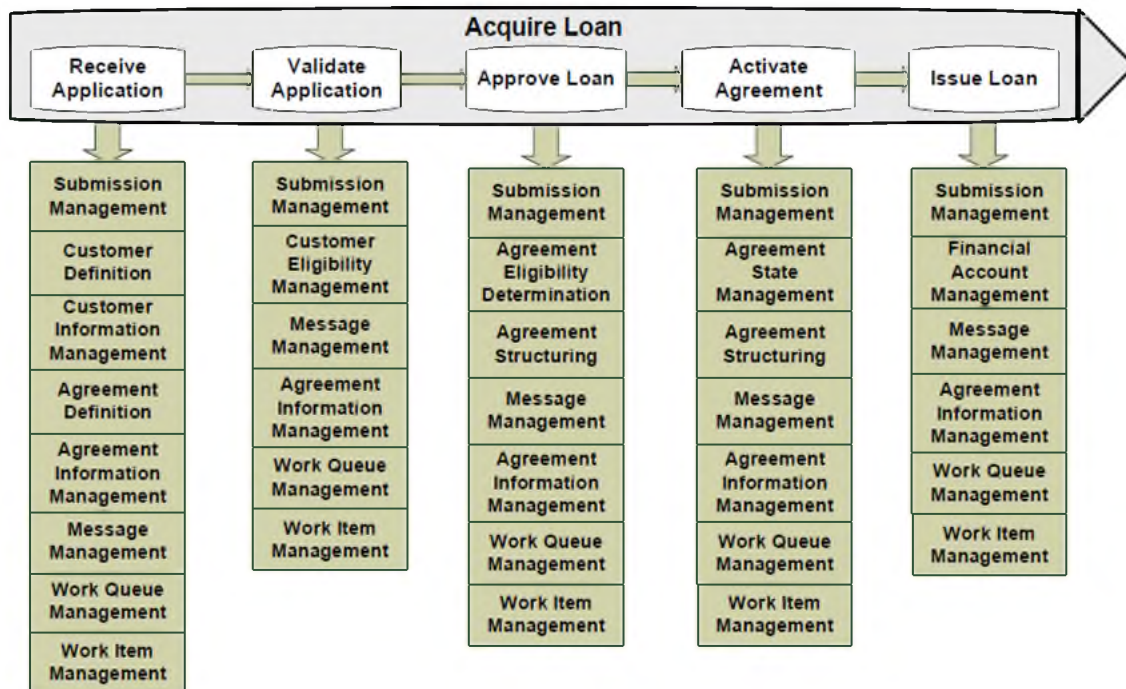


Figure 2.4.15: Value Stream/Capability Mapping Blueprint Example

Figure 2.4.15 demonstrates several central benefits of value stream/capability mapping. The most important benefit is the ability to rapidly envision how to drive stakeholder value and where to improve weaknesses in the value stream through capabilities. When mapped capabilities are heat mapped, management can see that there are weak links in the value stream that need to be improved or stakeholder value delivery will be impeded. For example, if Agreement Structuring is an ineffective capability, resulting in increased complexity and waiting times for the stakeholder, this capability could be targeted for investment and improvement.

Another benefit is capability reuse. If Agreement Structuring is improved for one stage, all stages enabled by Agreement Structuring should benefit. This, in turn, will improve the performance for all three stages in the figure 2.4.15 value stream that rely on Agreement Structuring. An example of decomposing the Agreement Structuring capability may be found in section 2.2 of the *BIZBOK® Guide* or alternatively in various industry reference models, which may be found in the Business Architecture Guild® store.

Capability reuse applies across value streams as well as within a value stream and benefits organizations holistically. For example, most or all externally triggered value streams require a Submission Management capability to enable stakeholder communication and Work Queue Management, Work Item Management, and Information Management capabilities to further work exchange and information utilization. As a result, improving these capabilities not only

benefits the Acquire Loan value stream, but all other teams relying on value streams enabled by these same capabilities.

For example, capabilities shown in the figure 2.4.15 example are not working up to expectations, meaning that the capabilities shown, as well as lower-level capabilities not shown, may need improvement or be missing entirely. Consider if a certain type of risk rating capability was absent from Agreement Structuring. The fact that Agreement Structuring is sub-optimized could stem from the fact that this risk rating capability was completely absent.

This example demonstrates the importance of using value streams in conjunction with capabilities. Just viewing this issue from a value delivery perspective shows where the weak link is, but it does not pinpoint the capability investment and improvements required. And viewing these issues solely from a capability perspective does not provide a context for the importance of a given capability as to how it impacts stakeholder value delivery. Any business undertaking that plans to assess and improve those aspects of the business, the value stream / capability cross-mapping is an essential blueprint perspective on the business.

Value Stream/Capability Cross-Mapping Template and Guidelines

A value stream/capability cross-mapping template used by business architecture practitioners is shown in figure 2.4.16. This template may be used in the absence of a given mapping tool or may be used as a starting point and input into a given tool later. The basic mapping approach outlined in the prior steps may leverage this template. Each stage within a value stream will have a list of enabling capabilities shown below the stage name within the template. It is important to note that the template in figure 2.4.16 has four stages, but a given value stream may have more stages or fewer stages and the template should be adjusted accordingly.

Value Stream: Name			
Stage #1	Stage #2	Stage #3	Stage #4
Capability	Capability	Capability	Capability
Capability	Capability	Capability	Capability
Capability	Capability	Capability	Capability
Capability	Capability	Capability	Capability
Capability	Capability	Capability	Capability

Figure 2.4.16: Value Stream/Capability Mapping Template

An example of value stream/capability cross-mapping using the template format is shown in figure 2.4.17. Note that the sample cross-mapping in figure 2.4.17 is, for example purposes only, a subset of capabilities that would typically be required to enable this Establish Financial Agreement value stream. Each capability that enables a given value stream stage is mapped to that stage in figure 2.4.17 by placing those capabilities below that stage.

Value Stream: Acquire Loan				
Receive Application	Validate Application	Approve Loan	Activate Agreement	Issue Loan
Submission Management	Submission Management	Submission Management	Submission Management	Submission Management
Inquiry Management	Inquiry Management	Message Management	Message Management	Message Management
Message Management	Message Management	Customer Authentication and Authorization	Customer Authentication and Authorization	Customer Authentication and Authorization
Customer Definition	Customer Risk Management	Customer Risk Management	Customer Preference Management	Customer Preference Management
Customer Authentication and Authorization	Customer Authentication and Authorization	Customer Information Management	Agreement Access Management	Customer Matching
Customer Matching	Customer Matching	Agreement Access Management	Agreement Preference Management	Customer Information Management
Customer Information Management	Customer Information Management	Agreement Structuring	Agreement Structuring	Agreement Access Management
Agreement Definition	Agreement Access Management	Agreement Risk Management	Agreement Activation	Agreement Preference Management
Agreement Access Management	Agreement Risk Determination	Agreement Matching	Agreement Matching	Agreement Matching
Agreement Information Management	Agreement Matching	Agreement Information Management	Agreement Information Management	Agreement Information Management
Time Management	Agreement Information Management	Financial Account Access Management	Policy Definition	Financial Account Management
Work Management	Policy Definition	Financial Account Risk Determination	Policy Interpretation	Financial Transaction Management
Information Management	Policy Interpretation	Policy Interpretation	Message Management	Payment Management
	Time Management	Time Management	Time Management	Policy Definition
	Work Management	Work Management	Work Management	Policy Interpretation
	Information Management	Information Management	Information Management	Time Management
				Work Management
				Information Management

Figure 2.4.17: Value Stream/Capability Cross-Mapping Example

There is no restriction on the number or the level of capabilities mapped to a given stage, but a simple rule of thumb ensures that the cross-referenced capabilities are readily digestible by planning teams, analysts, and other beneficiaries. Map the highest-level capability possible where each of the next-level capabilities may be required by that stage. It does not matter if a given capability is only required occasionally or even rarely. If any capability has the potential to enable a value stream stage under some scenario, then that capability should be mapped to that stage.

All child capabilities of a mapped capability are automatically cross-mapped to that stage by virtue of the parent being mapped. For example, cross-mapping Submission Management implies that all children of this capability may be used to enable that stage. This cross-mapping technique eliminates the complexity and clutter of explicitly mapping all child capabilities.

The example in figure 2.4.17 depicts certain capabilities at a summary level to simplify the figure. Agreement Structuring, for example, would normally be selectively broken into a subset of child capabilities, such as Agreement Eligibility Determination, Agreement Price Determination, and

Agreement Term Management. Similarly, Financial Account, Financial Transaction, and Payment Management capabilities in the last stage would normally be represented as a subset of level 2 or 3 capabilities.

The following value stream/capability cross-mapping guidelines help ensure that the approach is applied systematically and will be generally consistent across value streams. These include:

1. Ensure that cross-mapping work is based on a capability map that is mature at levels 1 and 2, and ideally level 3, and a stable set of value stream stage articulations.
2. Review each stage of the value stream with subject matter experts, leveraging the Value Stream Stage Articulation Template shown in figure 2.4.12.
3. Identify business objects involved in delivering value for each stage where, for example:
 - Engagement of a customer, use of an asset, impact on agreement, evolution of a product, and so on would require these business objects
4. For each value stream stage, cross-map capabilities to that stage based on the actions performed on those objects; examples of actions taken include definition, design, access, preference determination, risk determination, and others.¹
5. Map the highest-level capability possible where each of the lower-level capabilities may be required by that stage.
6. Validate that capabilities are cross-mapped to deliver capability outcomes for a given stage as required to contribute to the value item(s) produced by that stage.
7. As cross-mapping work unfolds, continuously validate value stream stage entrance and exit criteria to:
 - Ensure that adjacent stages are not in reality the same stage based on exit criteria
 - Avoid situations where the value stream must continuously navigate between adjacent stages due to overlapping or unclear entrance and exit criteria
8. Apply a consistent capability cross-mapping pattern and sequence across value streams and value stream stages to enable adoption and use of these cross-mappings for a variety of initiatives.

¹ Do not cross-map capabilities that create information outside the stage being cross-mapped, even though that information is used by a cross-mapped capability. Information use is detailed in the capability/information cross-mapping defined in BIZBOK® Guide section 2.5.

The recommended pattern that improves cross-mapping acceptance, understandability, and use is outlined in the following points. Note that many of the capability references that follow may be found in the Guild reference models if they do not strike a chord of familiarity.

- List communication-related capabilities first; including for example, Submission Management, Message Management, and Inquiry Management
- Group capabilities derived from a single parent together; for example, list all Agreement Management-related level 2 capabilities together, in sequence of their definition in the capability map
- Include a "... definition" capability for any object introduced the first time, such as Customer Definition, to establish and later identify that object in the ecosystem
- Include any "... information" capabilities for any level parent capability where type, state, profile, history, or analytics are involved for the parent object
- List the remaining capabilities in relative order of perceived importance
- Near the end of the list of cross-mapped capabilities, include Human Resource Management, Competency Management, and Job Management capabilities for stakeholders required to act within that stage
- Group utilitarian capabilities to address Decision Management, Event Management, Time Management, Work Item Management, and Work Queue Management
- List any general, level 1 Information Management capabilities at the end of the cross-mapping list

Teams should adjust the value stream/capability cross-mapping guidelines and pattern usage to their own environment. While best practices are important, internalizing those practices and building consistency for usability are also important.

Value Stream / Business Process Mapping

Value streams have certain commonality with business processes but also embody important differences. *BIZBOK® Guide* section 3.4 discusses the use of business processes in conjunction with business architecture, but it is important to introduce the concept here based on the relationship to value streams.

In general terms, practitioners can establish relationships between value streams and high-level processes. Value streams are framed on formal architectural principles based on value delivery perspectives and entrance and exit criteria associated with a combination of information concept states. Barring similar formalities associated with forming high-level processes, practitioners are free to apply formal value mapping principles when forming these processes. Alternatively, any

given high-level process may be mapped to one or more value streams, in whole or in part, via relationships, noting that value stream and business process remain unique business architecture and operating model concepts respectively.

Consider an order-to-cash process, which is not value-based but purely process-focused. This process may align to the middle of an Acquire Product value stream, where an order is taken midway through that value stream and payment taken prior to product delivery. Value streams, however, are value-based and may terminate upon delivery of the value proposition, in this case the product, to the customer without payment being taken. This scenario is commonplace for customers with a master agreement who request orders, take possession of the product, and defer payment until a later point in time. In this example, the “cash” portion of the order-to-cash process may not be fulfilled until month end, when a customer zeroes out their financial account via a Settle Financial Accounts value stream.

Value streams and related stages have a many-to-many relationship to business processes, but in many cases the entire process may not align to the value delivery perspective used by value streams. However, process analysts can gain insights from the value-based perspective provided by value streams. If, for example, the fulfillment aspect of an Acquire Product value stream is underperforming, the analyst would ideally examine the corresponding processes to address this issue. Refer to *BIZBOK® Guide* section 3.4 for more details on the value mapping to business process.

Value Stream Usage Scenarios

Value streams are used for business planning, issue analysis and resolution, aligning processes across stakeholders and business units, mapping out case management strategies, and building value-based solutions that go beyond traditional process improvement or lean exercises. In enabling various business units to build a common vision and frame of reference, a clear and concise strategy can be established for resolving a variety of complex business challenges.

For example, value streams provide a way for senior management, planning teams, and steering committees to articulate current state challenges related to a given set of value-related activities for a given stakeholder. Value streams also provide a way to communicate and agree on a common vision as it relates to delivering stakeholder value. Finally, value streams facilitate priorities and approaches for how to achieve this vision through a phased migration strategy.

Most strategies require incorporating a view that crosses business units, product lines, and even enterprise boundaries in cases where a business has outsourced a given capability. A value stream provides the high-level, non-technical view of the current state and business vision that is uncluttered by technical or process level implementation complexities. Figure 2.4.18 shows

how an organization can represent a current state assessment and target state vision for a given set of stakeholders and value stream.

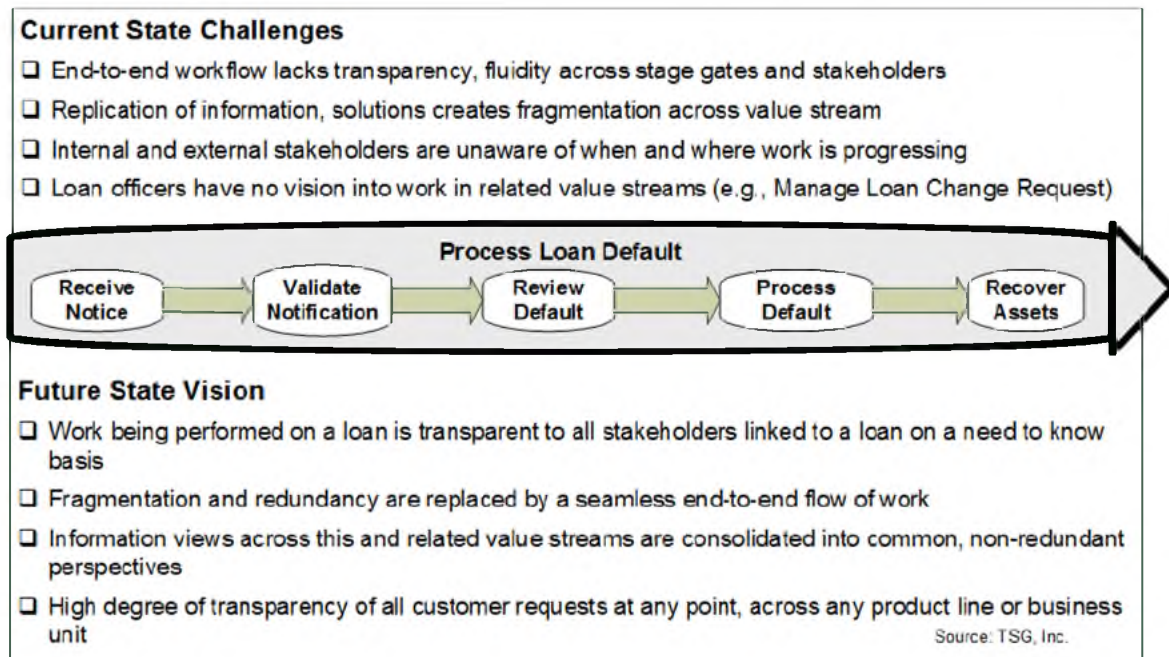


Figure 2.4.18: Value Mapping Enables Current State Analysis / Target State Visioning

When a vision is articulated and agreed upon, executives and planning teams will typically want to understand how the vision can be implemented across the business, which is often times comprised of multiple business units that rely on a given value stream. Value stream articulation helps frame a business vision from a high-level perspective that can then be decomposed into more detail.

When examining the current state of a business and how stakeholder value is achieved, value streams offer the ability to align views of business processes to one or more value streams. Determining and communicating where business processes are redundantly defined across business units, product lines, and third-party organizations is an essential analysis requirement for a number of real-world scenarios that business architecture can support.

Once the complexity of the overall landscape has been determined, a strategy can be established that determines which stages and impacted business units should be addressed in priority sequence. This enables a phased deployment that focuses on high-priority, high-payback areas while avoiding the common trap of spending a lot of money for minimal value.

A second and related implementation discipline that can leverage value stream views of the business is the concept of dynamic rules-based routing (DRBR). DRBR is a business discipline that enables what case management calls a “case”, and what business architecture calls a “binding object”, to transition seamlessly across value streams in complex business environments characterized by a high number of knowledge workers, multiple complex business scenarios, and a high degree of unpredictability. Solution deployment within these environments cannot be accommodated through traditional business process modeling techniques due to the complexity and unpredictability of workflow across value streams. DRBR is discussed in more detailed in *BIZBOK® Guide* section 3.5.

One DRBR scenario that organizations are pursuing involves improving the customer experience through customer journey mapping and related means. This scenario requires a comprehensive customer perspective focused on enhancing the customer experience at each stage of the customer’s end-to-end journey toward achieving a given value proposition. Value streams enable an extended customer engagement perspective leveraging DRBR, which provides detailed stakeholder engagement views on a value stream stage-by-stage basis. Routing maps expand customer journey transparency by detailing stakeholder engagement among a business, its customers, and third parties that collectively contribute to achieving end state value proposition. As a result, value streams play an important role in customer experience scenarios.

As other transformation and business deployment disciplines evolve, value mapping will provide a constant for business executives and planning teams to articulate current state challenges as well as target state vision. Regardless of the issue at hand or implementation strategy being pursued, value mapping provides the visibility and simplicity to perform root cause analysis, envision and settle on resolution options, and enable various implementation teams to move forward with a common vision.

Defining Value Stream within the Business Architecture Knowledgebase

The value stream is a powerful representation of how organizations deliver stakeholder value. As such, the value stream allows those organizations to rapidly drill down into areas where competitive or strategic issues or opportunities exist and understand in detail the actions that can be taken to improve the value being delivered. In order to establish clarity as to where to drill down, enable comprehensive analysis, and target areas of improvement, value streams must establish formal associations to other business architecture domains. Cross-mapping value streams to other business architecture domains offers a wide array of analysis that would not be possible through the value stream by itself.

Figure 2.4.19 shows the direct relationships between value streams and other value-related items and related business architecture domains.

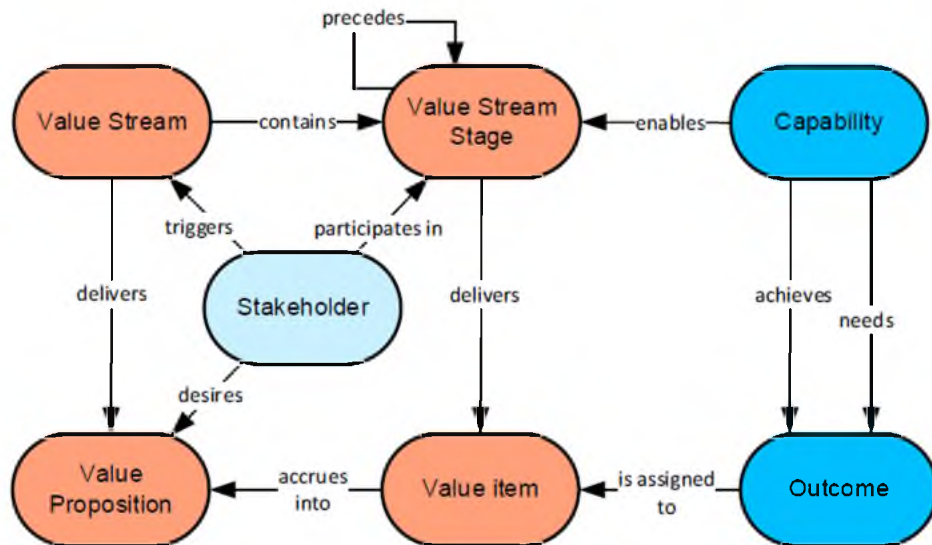


Figure 2.4.19: Value Stream Knowledgebase Relationships

The following represent the key relationships that are required to support these analyses.

1. Value stream contains value stream stage.
2. Value stream delivers a value proposition.
3. Value stream stage precedes value stream stage.
4. Value stream stage delivers one or more value items.
5. Value item accrues into a value proposition.
6. Stakeholder desires a value proposition.
7. Stakeholder triggers a value stream.
8. Stakeholder participates in a value stream stage.
9. Capability enables a value stream stage.
10. Capability achieves an outcome.
11. Capability needs an outcome.
12. Capability outcome is assigned to a value item.

Several important points related to the above relationships are worth recapping to help clarify value stream mapping in practice for practitioners and tool vendors.

- Value stream stages are unique within a value stream and, unlike capability, not a reusable domain concept

- Value proposition is unique to a value stream and may be traced through the value stream to the triggering stakeholder
- Any given stakeholder may trigger one or more value streams
- Triggering stakeholders typically participate in the value streams that they triggered, meaning that for a given stage, the triggering stakeholder is also a participating stakeholder assuming they contribute to delivery of the value item delivered by that stage. For example, a customer can contribute information required to further efforts to approve a loan request.
- Participating stakeholders for each stage contribute to value delivery via capability outcomes
- Value items may appear across multiple value stream stages in multiple value streams; value stream stages are unique, but value items can repeat
- The relationship between value stream stage and business unit is a derived perspective through stakeholder and not a direct one
- Value stream stages in practice do not “flow sequentially” in a traditional sense, but the value stream stage preceding a value stream stage association establishes a de facto sequence

Value Mapping Summary

Value mapping in general and value stream mapping in particular provide a powerful approach to help organizations focus on business/stakeholder interactions from a value-based perspective. This clarity can be used to enable an enterprise to re-examine its activities to better utilize its existing processes and assets to deliver greater value. Value streams are also used to help guide the investment in changes or improvements in an organization’s capabilities to support the creation of kinds of value to be exchanged with stakeholders.

It probably is not surprising to find that over time organizations tend to evolve toward focusing their improvement efforts on their own behavior. This desire creates a very inward-looking view of where organizations need to invest in improving. These perspectives typically focus on systematizing and streamlining the existing processes within the organization. These benefits are the most easily quantified because they can show things like reduced operational costs per client and reductions in processing time. However, these same perceived benefits are generally narrowly focused on improving the time, cost, or quality of a particular piece of the organization’s processes.

Value streams, on the other hand, offer a more powerful and transformative set of improvement options for executives because they focus on an outside-in view of the business, with the Take a Trip value stream being just one example, as provided in this section. Rather than being arranged

by how processes impact the internal costs and productivity of the organization, they are arranged and evaluated according to how they impact the entire set of stakeholders with a strong focus on the customer.

This outside-in perspective allows an organization to create a “virtual” reorganization along stakeholder-based value delivery lines. The virtual nature of the value-based approach delivers significantly more agile solutions than do internally focused, process-centric realignments. By recasting an organization’s activities into a series of value streams, it becomes possible to discover if an organization is aligning its investment with its vision for how core value should be created.

The various historical approaches to creating value maps have emphasized understanding either the actions that create value or the differentiation of various types of value. This variation reflects differences in emphasis depending upon the relative importance that an organization places on the overall “ecosystem” of interactions vs. individual actions. Value streams provide an excellent vehicle for businesses to formally shift their thinking toward stakeholder value delivery and away from the internal efficiency and cost reduction efforts that have dominated business discussions over the past two decades. Coupled with capabilities and the remaining aspects of business architecture, value streams enable businesses to embark on a much more strategic, long-term journey.

¹ “The Great Transition”, Martin, James, 1995, AMACOM, ISBN-10: 0814403158.

² Dynamic rules-based routing maps are discussed in depth in *BIZBOK® Guide* section 3.5.

³ Business Architecture Guild, Financial Services Reference Model v5.0.

⁴ Note that the Process Loan Default value stream may be time triggered but is still considered a stakeholder triggered value stream. This scenario is an example of stakeholder trigger “by proxy”, which, in this case, is a time dependent event that initiates a value stream.

SECTION 2.5: INFORMATION MAPPING

This section discusses the role of information mapping within business architecture, defining the information concept, outlining related mapping benefits, principles, and guidelines, and formalizing the use of the information map within the context of the overall business ecosystem.

Background

A substantial change has taken place in the way businesses use information and the technology supporting the collection, storage, and analysis of information. Businesses are increasingly focused on using information to understand the wants of distinct groups of customers and to reach these customers with offerings tailored to these wants. In addition, instantaneous information about the operations of the business and the behavior of competitors is improving the efficiency and competitiveness of business.¹

Accurate, timely, relevant information is crucial to good decision-making, including strategic decisions². Information and knowledge are key assets in the current knowledge worker-driven economy. It has been consistently shown that information is essential for innovation³ in a culture that encourages and rewards intelligent risk-taking. Information facilitates the assessment of both upside and downside risk associated with a course of action.

Business stakeholders are responsible for governance of information and associated data. This section discusses establishing information governance and identifying the business architecture practitioner's role in the governance process. In this context, information is considered a ubiquitous concept that includes human knowledge, sense of mission, and learned behaviors, in addition to more traditional perspectives on information.

IT organizations are usually responsible for providing technology support for information governance and design, deployment, and operation of data sources that realize and automate the processing of business information. The aforementioned business changes require IT organizations to utilize increasingly complex data technologies, store and operate on unstructured data (e.g., text, video, audio) as well as semi-structured data (e.g., XML, RDF, HTML), and manage an increasing volume of data.⁴

Business architecture provides a way of describing information that accommodates all these business and technological applications. Historically, businesses attempted to capture information via single-point data requirements, which were then translated into relational data models and query language. This was inefficient and cumbersome, as is the case with many other direct-to-technology modeling and analysis approaches.

Information does not exist by itself; information exists to be used by various parts of a business. Consequently, the information map of a business is most useful when cross-mapped to the capabilities, strategic plans, and initiatives that require changes in how information is employed by the business. This approach highlights the value not just in the definition of information concepts but also in their relationships, usage, and consumption. By further extending the information concepts with cross-mappings to other business architecture domains, such as capabilities, the mapping moves from a singular, static reference to a dynamic, foundational tool for the business.

Information concept is an umbrella business term that represents the foundational concepts of several different modeling approaches. In Codd⁵ relationship terminology, these foundational concepts would be called entities, domains, relations, or tables. In the Semantic Web approach, these concepts are called individuals, objects, classes, data types, object properties, and data properties. Regardless of approach, information concepts represent the business vocabulary. Making concepts tangible in this way allows for discussion and the creation of a consensus – a common understanding of what business objects and relationships are intended by the labeled shapes and lines.

A thorough, properly-documented information map provides a formal structure for representing information concepts used for any number of business scenarios. The information map also enables related disciplines and activities, including data requirements alignment, application service design, and data architecture efforts with increased accuracy and efficiency. In particular, these relationships are explored in other sections of the *BIZBOK® Guide*:

- Information mapping and requirements alignment is discussed in section 3.8
- The alignment of business architecture and service-oriented architecture is discussed in section 6.5
- The usage of information mapping concepts to create data architecture is highlighted in section 6.6

The alignment of multiple business and IT perspectives enables coordinated, consistent, and cohesive information use — as well as its deployment by business professionals, business architecture practitioners, and IT architects.

What is Business Information?

Figure 2.5.1 shows how the concept of information relates to other concepts. Data is often defined "as being discrete, objective facts or observations, which are unorganized and unprocessed and therefore have no meaning or value because of lack of context and interpretation"⁶. Information may be built on top of data, but may also only exist in the mind of

a person or be conveyed in speech or ephemeral documents; information is the combination of data and a context for interpreting that data. The interpretation comes from associating the data with business capabilities and decisions, and these associations provide the context for interpreting the data. For example, a profit and loss statement incorporates certain rules in an investment bank when it is used to determine cash on hand, and incorporates a different set of rules when used in portfolio risk assessment.

Knowledge comes from the ability to apply information in order to solve a problem or create value. Wisdom is the accumulated experience of using that knowledge, resulting in learned patterns for the application of knowledge to a problem or opportunity.



Figure 2.5.1: Information Pyramid⁷

While data is often considered an IT domain, business information is the baseline from which business knowledge evolves. Further, while knowledge and wisdom build on information, they often fall under the domain of management because they require judgment that interprets information in ways that allow executives to make highly informed opinions. While the highest value comes from wisdom at the top of the pyramid, wisdom depends on the layers below it. Consequently, information mapping has a crucial focus on the conversions between the layers of the pyramid.

The Lifecycle of Information

The transformation of data into information is a continuing source of frustration between business and IT. IT has lots of data, mostly for the purpose of recording business transactions that are required for daily operations, audit, and reporting, or because they imply future actions that must be managed (such as the payments on a loan or insurance policy). IT is also collecting massive amounts of real-time data from an increasingly diverse array of real-time systems,

artificial intelligence, and sensor technologies that appear in everything from automobiles to common appliances.

When put into context, this data may contain information about business trends that would be valuable for making marketing and other investment decisions. However, this data alone often reveals very little about competitor behavior, customer motives, or the impact of economic or regulatory factors.

The assumption that the IT data store will be the primary source of business information and knowledge is not always correct. Business information is challenging and expensive to obtain, and many businesses are deficient in storing the information created in their business operations. Reducing this deficit can have a big impact on the ability of the business to achieve its value objectives. The information map, which represents information, can be associated with data entities to describe the business meaning of the data and thus reduce this deficit.

Business information is transformed into business knowledge when people and processes can use that information to improve business decision-making and respond to challenges. This transformation is enabled in two ways: training and automation. Training helps people make better decisions faster, but can be expensive, especially when the knowledge being taught is abstract and the body of knowledge is large. Automation requires that decision-making rules and processes can be made concrete and turned into automation software. While the transformation of business information into business knowledge can be very profitable, it also presents unique challenges.

The transformation of business knowledge into wisdom can be very valuable. A major oil producer encouraged its business strategists to prepare for innovation by thinking of market scenarios that would significantly enhance or diminish the company's business if they occurred. One such scenario was the formation of a cartel of oil-producing nations that could cause a price shock by limiting production. This scenario was analyzed to determine political and marketplace indicators that would be early signals of this scenario's occurrence. It was also analyzed to determine the best course of action to take. In the 1970s, this scenario did occur and the oil producer profited while its customers struggled to cope with diminished supplies and increasing prices.

Scenario analysis is a pattern for transforming business knowledge into wisdom. Another such pattern seeks innovation by transferring business knowledge from one business domain to another, while a further one provides conservation of assets by paying close attention to risk factors.

One consideration in taking a broad perspective on information involves understanding how

business knowledge is classified. Business knowledge can be classified as tacit, explicit, or cultural⁸, as follows.

- Tacit knowledge is often associated with skills, is difficult to explain in words, and is often taught by example. For example: “A business executive looks at a competitor’s product announcement and realizes that this competitor will be attacking them in Central and South America”. This realization is derived from experience and cannot be easily made explicit. Tacit knowledge is difficult to convey among persons and to IT systems.
- Explicit knowledge is often associated with decisions, can be translated into words and data, and can be conveyed by publication. This form of knowledge is often termed “information”. Explicit knowledge is easily transmitted through common communication vehicles such as messaging and documentation, through technical databases and other solutions, and via IT automation.
- Cultural knowledge is also often associated with decisions, is learned by association, and often takes the form of beliefs that are used to make decisions in the presence of uncertainty or lack of explicit knowledge. Cultural knowledge is usually tacit, ingrained, and known within a specific group of people sharing a common element. When used by a human, the human is often unaware of the source of the knowledge. Cultural knowledge can range from traditional stories to family traditions to institutional knowledge.

Tacit and cultural knowledge will be difficult to transform, except through labor-intensive training programs like apprenticeships and mentoring. At present, social networking and “always connected” technologies offer great potential for the conversion of tacit and cultural knowledge, both within the organization and with customers, suppliers, and partners. Consequently, businesses are always looking for ways to make tacit and cultural knowledge explicit so that the spread of business knowledge is enhanced.

Information mapping provides a formal approach to evaluating information of all kinds by defining and exposing clear, consistent, and comprehensive information perspectives that cross business boundaries and diverse dialects employed across a business ecosystem. Information mapping formalizes an organization’s perspective on information that enables the interpretation and synthesizing of data while enriching the ability to discern business knowledge.

Identifying Information Concepts

Businesses make use of tangible objects (such as microprocessors, wheels, and steel) to make other tangible objects (computers and automobiles). A tangible object is one that has a physical presence; it can be seen and touched. Businesses also create and use intangible objects (such as solutions to problems, financial products, messages, competencies, decisions, agreements, and

counseling services). Intangible objects are conceptual in nature, typically ideas or commitments. Both tangible and intangible business objects are used to create value for business stakeholders.

To recap, the *BIZBOK® Guide* defines a business object as:

“A representation of a thing active in the business domain, including at least its business name and definition, attributes, behavior, relationships and constraints, that may represent, for example, a person, place, or concept.”⁹

In general, the term ‘business object’ is used to designate things that are referred to using nouns. In addition, a business object is a persistent thing that is of interest to a business. Business objects, as represented by information concepts, have definitions, types, states, and relationships to other information concepts. An information concept is comprehensive in terms of representing objects across a business ecosystem, but may or may not be defined in a data model or a database.

The remainder of this section will discuss how information concepts have relationships with other information concepts, such as an Agreement having a relationship to a Partner, such as a reseller, or a Customer. The discussion will also outline how capabilities use and modify information concepts to produce outcomes. Information concept relationships to other business architecture domains are formalized at the end of section 2.5, under the discussion on the business architecture knowledgebase. Two important attributes of information concepts that should be defined up front are information concept types and information concept states.

Type is a key aspect of information mapping. For example, a business may exist in four locations, where Location is the information concept. A City may be modeled as a *type* of Location. Four individual pieces of information associated with the City type might be Paris, London, Beijing, and Singapore. Information type is relevant to a business in terms of creating real-life categories for information in practice, as well as a source for data architecture definition and deployment. The metamodel does not permit modeling of individual pieces of information such as the “April 19, 2014 Quarterly Sales Report for the Northeast Region of XYZ Corporation”, but it does permit modeling the “Quarterly Sales Report” information type.

Information concepts also have a number of finite states. A state of a Facility, for example, may be open or closed. Finite states are formally defined in the information map for each information concept. States are used to control value stream navigation via entrance and exit criteria. Information concept state, like type, is useful input to establishing a formal data model and leveraging data in practice as defined in software systems.

Introduction to the Information Map

The information map is a representation of the information required as input to or that results from the actions associated with capabilities. The information map consists of information concepts and relationships, along with additional descriptive, type, and state perspectives on the information concepts. The representation may be a diagram, a spreadsheet, or the contents of a computer database. These information concepts are labeled with terms and definitions commonly used in business language to evoke corresponding information concepts. Common examples include information concepts identified by labels such as Customer, Product, Financial Account, Claim, or Agreement.

It is common to begin the construction of an information map by identifying and recording the information concepts that represent fundamental business objects. Figure 2.5.2 depicts an example of a most basic information map for an insurance company, showing nine information concepts. This map is simply depicted as a list of information concepts that form a foundation for the overall business vocabulary; the structure represents an easy way to view information concepts and serves as a starting point for further mapping.

Customer	Agreement	Location
Product	Claim	Partner
Payment	Legal Proceeding	Human Resource

Figure 2.5.2: Sample Basic Information Mapping

Business architecture provides a way to talk about business information unhindered by the restrictions of IT systems. For example, in business architecture, it is appropriate to talk about Customer Motivation, an information concept that is not easy to realize in an IT system because it requires interpretation and representation of the mind of a Customer. Similarly, businesses need to define the culture that contributes to product marketing and innovation, without the potential or need to directly capture the culture as data in an IT system. IT systems are more easily designed to track business events than to describe or assess the hopes, aspirations, and cultures of the people who enable the business to operate. However, data in IT systems is sometimes used as a proxy for things that cannot be directly observed (such as Customer Motivation).

Along with information concept mappings, business architecture provides clearly defined, rationalized definitions, type and state descriptions, cross-information concept relationships, and capability mappings. However, the information map will have little value without the backing of

a cross-section of business units that have agreed to use these concepts, terms, and definitions. The benefits, principles, mapping guidelines, and usage-based discussions for information mapping are provided in the remainder of this section.

Diagrams are an excellent way to represent information concepts when it is important to convey the capabilities and relationships that present an opportunity to address a business goal. However, information concepts can also be represented in a tabular or relational database form that is better suited for analysis, which can be used to produce diagrams for communication.

Benefits of Information Mapping

In his book, *On War*, Carl von Clausewitz prioritized the need to clarify and agree on terms in order to move forward with strategy, stating that “the first task of any theory is to clarify terms and concepts that are confused . . . Only after agreement has been reached regarding terms and concepts can we hope to consider the issues easily and clearly, and expect others to share the same viewpoint”¹⁰. An important objective of business architecture is to clarify and obtain consensus on the terms and concepts of business information. The information map is the vocabulary the business will use to build strategy maps, to identify types of stakeholders in value streams, to identify delivery of value in the value streams, and to identify the objects and related actions against those objects defined by capabilities.

When discussing the benefits of information mapping, it is useful to take a step back to recognize what most businesses are dealing with when it comes to mapping their information concepts into a common vocabulary. Figure 2.5.3 depicts the idea that different parts of an organization use the same terms to mean somewhat different things. While on first review this may appear to be problematic, it usually reflects the different perspectives that different parts of the business have on the underlying concept. A naive approach to getting consensus will eliminate those aspects of the meaning which differ from group to group, resulting in a definition that nobody can use. Instead, the consensus-making effort should distinguish those features of the concept that are common to all groups (e.g., the X-ray machine) while retaining the additional meanings that are used and understood by each group.

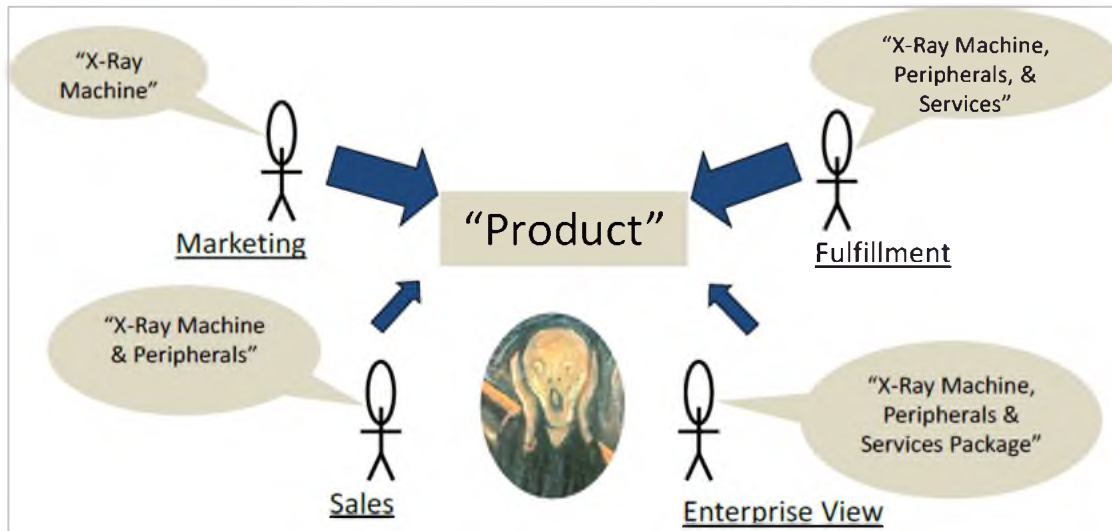


Figure 2.5.3: Same Concept from Different Perspectives

Business information mapping provides the basic business vocabulary about the information that is required to communicate and collaborate across a business. Historically, businesses have left the work of formally organizing their vocabulary to IT. As a result, the vocabulary turns out to be an IT vocabulary, populated mostly with terms relating to data. This demonstrates that business professionals cannot leave information mapping and alignment to IT, and rather must own and drive information alignment through business architecture.

The impacts of inadequate information definition include the inability to implement business strategy, miscommunication across teams that need to collaborate, a breakdown in communications with business partners, incorrect financial reporting, the need to carry larger than ideal monetary reserves, and the inability to align or synchronize business processes across business unit boundaries. From a technology perspective, poor information definition and mapping results in massive, uncontrolled spreadsheets; multiple, ineffectual data warehouses; no “single source of truth” for reporting results; an inability to reuse services outside a given application; and significant data integrity issues. Generally, a situation where the same term means many different things across multiple business units can throw business transformation initiatives into chaos.

The benefits of information mapping include:

- **Ability to deliver customer value more effectively**

When customers are not recognized or treated equally across various parts of the business, cannot get essential information, are repeatedly asked for the same information, or cannot get consistent answers to questions, there is likely a high degree of information

fragmentation. A common information vocabulary allows each part of the business to view the customer as seen by the other parts of the business.

- **Improved strategic planning and financial management**

Consider an insurance company that must maintain larger than ideal financial reserves because of inadequate reporting. This is likely because of issues related to getting accurate financial information to the right team and indicates problems with information governance, which likely has only been formulated as data governance. An obvious symptom is the hundreds to thousands of spreadsheets at an organization, many of which are daisy chained together through non-obvious, convoluted process fragments. The information map is a foundation for analysis to identify information and data governance; it serves as a basis for planning to remedy the problem.

- **Communication and collaboration across business units**

In a business, everything begins and ends with vocabulary, and the information map establishes that vocabulary for the business. If two business units say one thing but mean something else, tasks and projects can go awry, and customers can be lost. Having a baseline vocabulary streamlines communication and coordination. Consider the numerous meetings where everyone is just trying to get their bearings as to what the other people are saying or meaning. A common information vocabulary becomes the “Rosetta Stone” for these discussions. It is important to recall that this does not mean the information map should create a generic, non-specific definition for each information concept, but rather it should retain the essence of the definition as well as the business unit-specific variances on the definition.

- **Communication and collaboration across business partners**

If there is little concurrence on an information vocabulary internally, then it is likely that information exchange with strategic business partners is also at risk. Consider a vendor organization attempting to deal with an enterprise that has multiple definitions for various business concepts. At a minimum, reporting is compromised and at worst, there could be ordering and shipping delays. Just as a common business vocabulary enables coordination across internal business units, the vocabulary offers the same type of value when dealing with business partners.

- **Streamlined merger and acquisition deployments**

When two organizations merge, there will be multiple vocabularies. Having a commonly defined set of business information for both organizations enables merger and acquisition deployment to move forward with a common foundational language along with translations between terms favored by each member of the merger.

- **Improved integrity of financial and other executive reporting**

Executive and related business decision-making relies on robust, high-integrity information. When information is compromised due to inconsistency of the information being reporting on, reporting and decision-making are compromised. A tremendous amount of time is spent attempting to massage, reinterpret, and roll up information into reports for various management teams and executives. The common vocabulary enables teams to gradually align terminology and contents of reports. At the same time, the teams can streamline the process and increase the integrity of the result.

- **Increased accuracy, integrity, and timeliness of regulatory compliance**

The inability to fulfill regulatory reporting in an accurate or timely manner can result in fines or other penalties and can also tie up large numbers of business professionals. Establishing a shared information vocabulary establishes the path toward building a cohesive regulatory reporting environment.

Business capabilities, value streams, stakeholders, and other aspects of business architecture all require a basic set of definitions. Those definitions must also stem from and align with information definitions. Without clarity of the information to be used and shared within the business, the basis for interoperability with capability maps, value streams, balanced scorecards, and other business views is significantly eroded.

In addition, the data architecture should be based upon commonly agreed upon definitions, which have been hard to come by in the absence of a business information vocabulary. Information mapping provides this baseline and enables data architects to craft a robust, commonly agreed-upon data architecture. The data architecture then enables deploying and sharing services within the application architecture.

Principles of Information Mapping

The following principles guide the concept and practice of business information mapping.

1. **Information is a strategic business asset.** Information is now recognized as having real value. As an enterprise asset, information must be managed and cultivated as part of an overall enterprise strategy. In a knowledge economy, information is one of the most valued enterprise assets. Information has broader applicability and longevity than applications, thus requiring management of information concepts through time – even as applications and processes change.¹¹
2. **Information improves decision-making and innovation.** Accurate, timely, relevant information is crucial to good decision-making, including strategic decisions. Information and knowledge are key assets in the current knowledge worker-driven

economy. It has been consistently shown that information is essential for innovation, together with a culture that encourages and rewards intelligent risk-taking. Information facilitates the assessment of both upside and downside risk associated with a course of action.

3. **Information is owned by the business and its suppliers, partners, and clients.** Information ownership falls to the business as opposed to the IT organization. Unfortunately, the business has often abdicated responsibility in this area to IT – allowing IT to make decisions on how to define certain information and to make the call when multiple business units cannot agree on terminology, definition, stewardship, and content. Businesses must also act as responsible stewards for information they do not own, such as customer identification, shared supplier production schedules, and partnership deals. This information governance is explored in more detail later in this section, and becomes an important first step in a successful data governance program.
4. **Information integrity is essential to business success.** Low-integrity information can result in misstatements on financial documents, regulatory violations or non-compliance, over- or under-funding reserves, additional paperwork, fines, and other challenges. When executives order IT to fix the problem, it is likely not an IT problem that needs to be fixed. Rather, many of these situations arise due to the inability of the business to steward information effectively.
5. **Information is a foundation for other business views.** When information is not identified or defined uniformly, the result has a significant ripple effect on business decisions, business processes, business reporting, and IT architectures. Strategic deployments become particularly risky with no information foundation. When information is inconsistently defined, everything else the enterprise wants to accomplish is compromised.
6. **A common, shared business vocabulary streamlines collaboration, communication, and automation.** Stakeholder and internal communication and collaboration are often compromised when business vocabulary is not consistently defined. Simple terms such as customer, account, and product often have many meanings across business units and stakeholder environments. This may be fine in general conversation, but when it results in misstating financials, miscommunicating requirements, or deploying solutions that miss the mark, it can be costly.
7. **Business rules are intrinsically associated with business information.** These rules are important for the consistency of the information and must accompany the information whenever and wherever it is used. For example, an owner of a bank account must provide an address for notices from the bank. In legal terms, the bank

- has fulfilled its obligation to notify the customer by mailing a notice to the listed address. Without an address, the bank has no way to satisfy this obligation – hence the business rule requirement that an address must exist for each account holder, and, in many cases, that the account holder is solicited to update this address whenever contacting the bank.
8. **Information access is restricted by security, confidentiality, and privacy policies.** If information is not properly identified, then security, confidentiality, and privacy can be compromised on information. Yet for many organizations a thorough grasp on stakeholder identification, authorization, and authentication remains a challenge. Numerous other privacy issues are dictated by regulation. This is not an IT issue but is rather a business issue that begins with a concurrence on terminology and definitions for business information.
 9. **Information is based on business objects.** Business objects represent abstractions of real-world things engaged in the course of doing business. Information concepts represent informational perspectives on those real-world things. Consider, for example, the computer an individual uses to do their work, versus information describing that computer. Every business object has a corresponding information concept in the information map, the exact same business objects that serve as the basis for capabilities in the capability map.
 10. **Information is categorized into types.** Information may be categorized into types based on real-world conditions present within a given business model. Type categorization provides insights into the breadth and depth of the business model. For example, a legal case may be a civil case, criminal case, or administrative case. If a court system handles more limited or alternative case types, the type set would be modified accordingly.
 11. **Information has states.** Formal tracking of information states, set via capability outcomes, is required to navigate value streams and satisfy value stream stage entrance and exit criteria. The information state is relevant to business decision-making and for controlling value stream-framed workflow. For example, an expired insurance agreement would result in the rejection of a claim submitted against that agreement and, at the same time, prevent further processing of the claim in that value stream.
 12. **Information has relationships to other information.** Organizations have a naturally occurring set of associations. For example, an agreement would be associated with a customer, a partner, or a human resource, such as an employee. The association or associations between agreement and customer, partner, or human resource are made explicit in the information map. This may include varying types of relationships

between the same two information concepts.

13. **Capabilities modify information.** The actions or verbs defined in the capability map and associated with a given business object create capability outcomes that impact information. For example, the capability Agreement Preference Determination would update agreement information, specifically agreement preferences.
14. **Capabilities use information to deliver outcomes.** Capabilities require information in order to deliver quality outcomes. For example, Agreement Risk Determination aggregates related risks to formulate an accurate risk rating. Customer risk rating, location risk rating, and other information is used to formulate agreement risk. Without this type of information, capabilities cannot be effective.

How to Do Information Mapping

This section introduces the information mapping template and outlines mapping guidelines for defining the information map. Guidelines are presented in a progression, but the sequence of steps is not prescriptive in practice, as practitioners of business architecture may revisit most (if not all) of these steps as different initiatives leverage and impact the information map. While the information map provides a baseline for guiding the creation and/or extension of an organization's business vocabulary, it is not intended to address all of the complexities associated with business information or with the ensuing IT architecture.

The Information Map Template

Prior to beginning an information mapping effort, a mapping team should have a format in mind for capturing the information. While formats can vary based on tools that may be in use, a basic mapping template is shown in figure 2.5.4.

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States

Figure 2.5.4: Information Mapping Template

Each column serves a specific purpose and is summarized as follows:

Information Concept: The information map names and incorporates all information concepts for a business ecosystem. The information concept realizes or makes explicit a business object, with

the object serving as the basis for the information concept name.

Information Concept Category: There are two information concept categories. A primary information concept realizes a business object that is not dependent on another business object for its existence. A secondary information concept realizes a business object that is dependent on another business object for its existence. For example, Legal Proceeding is a primary information concept because it does not rely on another business object for its existence. A legal appeal, trial, or similar legal filing can exist in multiple business contexts independent of any given agreement or other business context. Conversely, Motion and Evidence are secondary information concepts because their existence relies on the existence of a Legal Proceeding.

Information Concept Definition: The definition of an information concept expresses the exact meaning of that concept. The information concept definition should be clear, concise, and not reuse the term that is being defined. Every information concept has a corresponding definition.

Information Concept Types: Type represents variations of an information concept that exist in practice. Type may be multidimensional. For example, an Agreement may be a supplier or customer agreement and may also be perpetually renewing or a fixed-term agreement. Type specification is essential because it avoids creating multiple information concepts based on type, as would be the case if one specified Customer Agreement, Vendor Agreement, and Supplier Agreement information concepts. Creating multiple information concepts based on type proliferates redundancy across information and capability maps and runs counter to a fundamental benefit of business architecture; to rationalize a business into its most fundamental perspectives as a basis for simplifying complexity.

Related Information Concepts: The information map represents relationships among information concepts. Relationships are abstractions of the realization that natural associations exist in a business between two business objects. For example, agreements may be associated with a customer, partner, asset, product, or other business objects based on various business scenarios. The information map makes these relationships explicit. Relationships are bidirectional but only need to be listed once from the initiating business object. Guidelines for determining which business object establishes a relationship to another business object are outlined in section 2.2 (the section on matching capabilities).

Information Concept States: Information concept state is used to represent conditions or statuses that can occur during various business cycles. The states defined in the information map should represent the finite set of possible states that may occur in practice for that information concept. Information concept states are controlled via capabilities, expressed in capability outcomes, and serve as the basis for value stream stage entrance and exit criteria. Section 2.4 depicts the role of information concept states in value stream stage navigation.

An example of a partial information map is shown in figure 2.5.5 and highlights primary and

secondary information concepts, definitions, types, related concepts, and states for various information concepts. Figure 2.5.5 is not meant to represent a complete map. Where a relationship or state field is left blank, as is the case for Finance, it is due to the fact that Finance is an object defined by an aggregating capability called Finance Management, which binds multiple business objects to a higher-level perspective.

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
Agreement	Primary	A set of legally binding rights and obligations between two or more legal entities.	Bilateral, Unilateral, Express, Implied, Executed, Executory, Aleatory	Customer, Partner, Product, Asset, Policy, Order, Agreement, Financial Account, Payment, Facility, Channel, Tax, Decision, Collateral, Time, Content, Human Resource	Pending, In Force, Terminated, Abandoned
Agreement Term	Secondary	A legally enforceable condition set forth within the bounds of an agreement.	Condition, Warranty, Innominate	Policy, Time, Location	Pending, In Force, Terminated, Abandoned
Customer	Primary	A legal entity that has, plans to have, or has had an agreement with the organization, or is a recipient or beneficiary of the organization's products or services.	Individual, Organization	Strategy, Plan, Initiative, Market, Product, Customer, Partner, Human Resource, Channel, Location, Policy, Language, Decision, Content	Potential, Actual, Past
Financial Instrument	Primary	A tradable asset, such as stocks, bonds, bills of exchange, futures, options, evidence of ownership, and cash.	Stock, Bond, Bill of Exchange, Future, Option, Evidence of Ownership, Cash	Financial Instrument, Market, Decision	Pending, Issued, Matured/Expired
Order	Primary	A request by one party to another to buy, sell, or exchange financial instruments or other goods or services.	Buy, Sell, Exchange	Agreement, Customer, Financial Transaction, Financial Instrument, Partner, Product, Decision, Channel, Market, Payment, Research, Facility, Asset	Pending, Executed, Expired, Cancelled
Investment Portfolio	Primary	A set of resources expected to increase in value or provide income.	Aggressive, Defensive, Income	Agreement, Financial Account, Monetary Amount, Strategy, Plan, Asset, Payment, Policy, Research, Decision, Investment Portfolio	Pending, Active, Retired
Collateral	Primary	Property or other asset that a customer offers as security to a borrowing or lending agreement.	Real-Estate, Financial Instrument, Property	Asset, Channel, Customer, Decision, Location, Message, Partner, Policy, Product	Vested, Secured, Pledged, Accepted
Finance	Primary	Monetary aspects and resources.		Strategy, Policy	
Currency	Secondary	An agreed medium of value exchange.	Representational, Intrinsic (for example, CAD, USD, GBP)		Historical (Retired), Current (In-Use), Future/Intended / Planned
Financial Account	Secondary	A named container of monetary value transactions that are typically organized into assets, liabilities, income, expense, equity, and other related categories.	Asset, Liability, Income, Expense, Equity/Capital (Suspense)	Policy, Financial Account, Partner, Location, Business Entity, Currency	Pending, Open/Current, Closed, Suspended/Frozen
Financial Forecast	Secondary	A prediction of a future financial aspect of the organization.	Straight-Line, Moving Average, Linear Regression, Multiple Linear Regression		Current, Historical, Being-Prepared, Prepared / Completed
Financial Transaction	Secondary	An instance of a monetary amount movement or related exchange across businesses, agreements, or financial accounts.	Sale, Purchase, Receipt, Payment, Deposit, Withdrawal	Agreement, Financial Account, Payment, Monetary Amount, Order, Investment Portfolio, Channel, Customer, Partner, Asset, Currency	Historical/Executed, Pending/Current, Rejected, Cancelled
Monetary Amount	Secondary	A representation of value as expressed in a given currency.	Negative, Positive, Zero	Financial Transaction, Financial Account, Payment, Currency, Tax	Determined / Actual / Known, Estimated, Undetermined / Unknown
Payment	Secondary	An obligation to remit or receive a monetary amount between an organization and a customer, partner, or other external party.	Inbound, Outbound	Agreement, Financial Account, Human Resource, Investment Portfolio, Submission, Financial Transaction, Monetary Amount	Paid, Unpaid, Cancelled

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
Tax	Secondary	A compulsory contribution of monetary value to governing bodies.	Income, Sales, Property	Agreement, Financial Account, Monetary Amount	Historical (Retired), Current (In-Use), Enforced, Future Planned, Assessed/Levied, Paid/Deducted

Figure 2.5.5: Information Mapping Example

Information Mapping Guidelines

There are seven primary steps involved in establishing and articulating an information map:

1. Identify information concepts
2. Categorize information concepts
3. Define information concepts
4. Identify information concept types
5. Establish information concept relationships
6. Identify information concept states
7. Identify information concept usage

Step 1 – Identify information concepts

Information concepts are derived from business objects, which are discoverable using the whiteboard derivation techniques outlined in section 2.2 or directly from the capability map (assuming an object-based capability map is in place). The business object name is incorporated as the “noun” in a capability name and can exist at multiple levels of the capability map. Practitioners can extract the business object name from the capability to create the corresponding information concept. Note that only the object name (i.e., the noun) and not the verb is extracted from the capability map. Figure 2.5.6 depicts this simple approach to extracting an information concept from a capability.



Figure 2.5.6: Extracting Information Concept from a Capability

All information concepts included in the information map should be business objects that correspond to capability map-defined business objects. Information concepts should not represent technical or data modeling artifacts. An example of a business artifact is an invoice,

which would be represented using an association of two information concepts: Payment, which is an obligation to receive or remit, and a corresponding Message. A second example of an artifact is a document, which is simply an instantiation of how an object may present itself in the real world. A document may represent an agreement or a legal proceeding, but in and of itself, a document is not an information concept. Establishing document as an information concept would introduce information concept redundancies that business architecture seeks to rationalize, while hiding the explicit business objects the organization is seeking to manage.

Mapping teams should articulate the information map in concert with or after articulation of the capability map. The reason behind this sequencing is that capability mapping principles result in a highly rationalized baseline set of business objects as input to information mapping. Once capabilities are named and defined to level 2, it becomes easier to identify information concepts. For example, a level 1 Agreement Management capability would result in a primary information concept called Agreement. Similarly, a level 2 or 3 capability under Agreement Management called Agreement Term Definition would result in a secondary information concept called Agreement Term. Primary and secondary mapping concepts are discussed in step 2.

Initial information concept extraction from the capability map assumes that the capability map was articulated in conjunction with the business. In these cases, the information map will also be reflective of the business.

Step 2 – Categorize information concepts

Information concept categorization is relevant because primary and secondary information concepts represent implied relationships that are important to a business. For example, the fact that evidence or a motion can only exist in a meaningful context when a legal proceeding has been established or filed is relevant because, in the absence of this context, stakeholders would lack critical insights needed to manage a trial, appeal, or similar legal case.

There are two information concept categories. Primary information concepts realize a business object that is not dependent on another business object for its existence. All objects established by level 1 capabilities fall into the primary category. For example, an Agreement is established by a level 1 capability and is, therefore, a primary information concept. A secondary information concept realizes a business object that is dependent on another business object for its existence; secondary information concepts are derived from child capabilities defined at level 2 and below. For example, Agreement Term is a secondary information concept derived from a child capability under Agreement Management where Agreement is the primary information concept.

Assuming there is an object-based capability map in place for the business, the shortest path to defining primary and secondary information concepts is to categorize objects defined by level 1

capabilities as primary information concepts in the information map.

Identifying secondary information concepts is also fairly straightforward but with certain caveats. As a rule, a level 2 or lower-level capability containing an object name (i.e., a noun) that differs from the object name defined at level 1 is a secondary information concept. For example, if Agreement Management has an agreement term or order object defined in a child capability, these objects become secondary information concepts.

The first caveat involves avoiding information concept creation for attribution, valuation, or rating of capabilities. For example, valuation of an Agreement may produce a price outcome, but the Agreement Price would not be incorporated into an information map because it is simply a valuation or, in data terms, an attribute. Similarly, an Agreement Risk Determination capability produces a risk rating outcome. A risk rating, however, is simply an attribute of an agreement, not a business object and, therefore, not an information concept candidate. Data architects would be interested in valuation, rating, and similar perspectives as data attributes, but the information map does not incorporate these perspectives as information concepts as they do not rise to the level of a business object.

A second caveat involves aggregating capabilities that serve as organizing focal points in a capability map. For example, a level 1 capability called Finance Management would typically have several child capabilities defining financial account, financial transaction, payment, currency, and related objects. These child-defined objects represent secondary information concepts linked by a common aggregating object that broadly represents monetary value. Treatment of the aggregating capability-defined object (Finance, in this example) involves omitting certain descriptive content for the primary information concept.

For example, Finance is depicted in figure 2.5.5 as a primary information concept, but does not depict type, relationship, or state contents. Another aggregating capability found in certain reference models is Work Management, which aggregates objects such as work item and work queue. Work, as an information concept, should be treated much the same way as the Finance information concept, where Work Item and Work Queue information concepts would have assigned types and states as required.

[Step 3 – Define information concepts](#)

The definition of an information concept gives deeper meaning, uses language that does not restate the information concept name in whole or in part, and is generally accepted as part of the business vocabulary. The information concept definition should be clear and concise, and readily understandable in relation to other terms used in the business and language in general.

The information concept definition is derived from the object portion of the capability definition

and omits the action portion of the definition. In most cases, definitions can be readily extracted by removing the verb or action-related language that begins with “the ability to...” from the beginning of the capability definition. This technique, in turn, exposes the definition for the business object upon which the capability was originally based. The information concept can then adopt this definition.

It is important for each definition to reflect the business view of the information. In many cases, the practitioner can create a starter definition, but this should always be vetted with as many stakeholders as possible. As referenced above, the goal in this step is not to create a generic definition that meets all business needs, but rather to abstract the common pieces of the definition while retaining additional business unit-specific definitions or synonyms, often incorporated as examples in the definition. If useful, the mapping team may create a thesaurus for different business units that have their own dialects for certain terms in the information map.

Step 4 – Identify information concept types

In step 4, the business architecture practitioner identifies the universe of information concept types that occur in practice. Information concept type allows a business to specify the different categories that a given information concept falls into in the real world. As an aside, type determination is managed or controlled by the Type Management capability defined under each level 1 capability for that business object.

Type accommodates multidimensional categorizations. The information map provides a means to map these perspectives in list format but a mapping team may choose to refine the mapping structure to create type-related categories and hierarchies. For example, an Agreement information concept may be related to a corporate or an individual agreement. But an Agreement may also be an automotive insurance policy, credit card agreement, or savings account agreement – all for the same business. These types represent multidimensional perspectives on a singular information concept.

Type mapping also accommodates type hierarchies. For example, a Product Information concept type might decompose into an insurance product or a financial services product, but these type categories may further decompose to another level such as an auto insurance product or a mutual fund product. As with subcategories, mapping teams may want to create type hierarchies to accommodate real-world complexities that the information represents.

Figure 2.5.7 depicts multiple dimensions of information concept type. In this example, an Agreement information concept falls into two major categories: corporate and individual, representing one dimension on type. Another dimension involves whether an Agreement is an insurance policy or a financial agreement, a second dimension on type. This second dimension

may be represented along with the first dimension: individual versus corporate. In addition, these categories decompose into hierarchies. Figure 2.5.7 depicts just one example; there are many potential variations on type that apply to agreements, products, customers, and other business objects, each of which should be considered during information mapping.

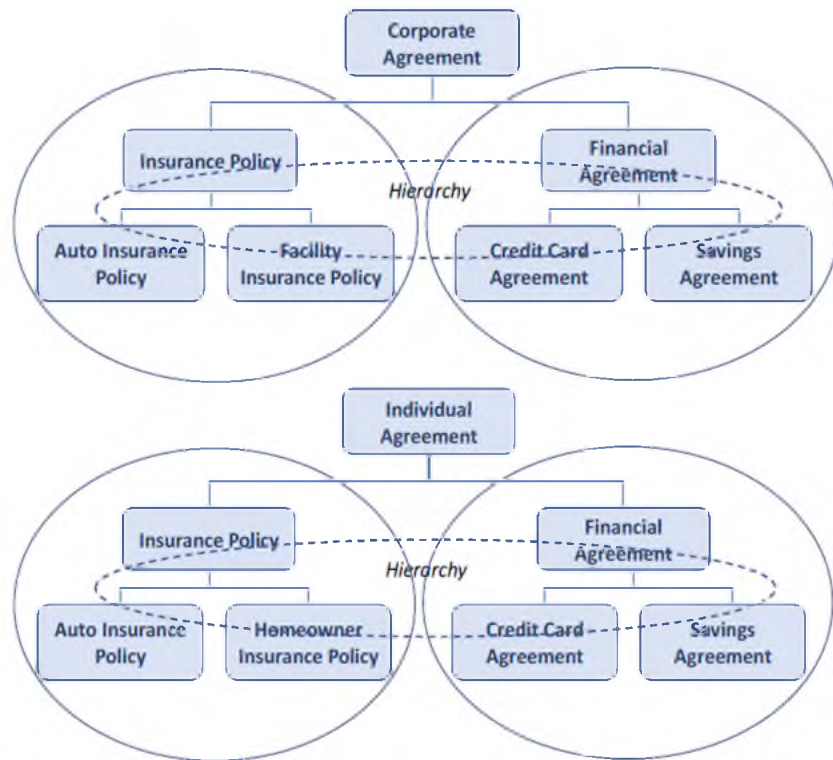


Figure 2.5.7: Type Concurrently Representing Categories and Hierarchies

Other business architecture mappings provide insights into and can further augment type mapping. For example, the product map, discussed in section 2.7, defines various product categories that could serve as a source for information concept types. The product map alternatively augments the information map as the decomposition of various products in the actual products offered to customers. Information concept type definitions would not need to go to this level of detail as this information is already contained in the product map.

The stakeholder map is another source for information type mapping. Consider that stakeholder-related business objects such as human resource, customer, and partner, are decomposed into greater detail in the stakeholder map, as outlined in section 2.7. The stakeholder map provides a detailed breakdown of the universe of stakeholders associated with certain business objects defined in the capability map. The stakeholder map may, for example, define multiple types of partners including vendor, supplier, auditor, outsourcer, agent, or contractor, which may then be reflected as customer, partner, and human resource type categories.

Other sources for deriving insights into information concept type come from policy maps, strategy maps, organization maps, and value streams. Regarding value streams, as various scenarios are run through value streams, discussions will unearth useful insights into information concept types and other aspects of information.

Short of having these mappings at hand, deriving information concept types involves interrogating multiple business sources, including documentation, SMEs, or even business partners. One can generally start with the main business objects most likely used in the course of business, meet with SMEs across different business units and domains to assess variations in practice, and incorporate these into the information map.

Step 5 – Identify information concept relationships

To represent naturally occurring associations among business objects, the information map must represent relationships among information concepts. For example, if a customer has an agreement with a company, anyone with access to the agreement should be able to determine that the agreement is with that customer. While capabilities establish these relationships in practice, the information map is where these relationships are formally represented.

Establishing relationships among information concepts is a natural outgrowth of understanding business abstractions in a variety of contexts. For example, agreements are associated with customers and products in one scenario and with partners and assets in another scenario. The information map must represent the universe of possible relationships among information concepts for all business scenarios.

Mapping teams may derive these relationships from SME discussions or from the capability map. Either way, mapping teams must understand the collective set of business object associations as a reflection of how the business works in practice. As the business architecture is used and applied to a growing number of business scenarios, experience will dictate adjustments and additions to these relationship mappings.

A relationship between two information concepts may be defined once from one concept to another with the understanding that relationship traceability is bidirectional. The information map represents a relationship from the perspective of the controlling object in a matching capability, as discussed in section 2.2. For example, if an Agreement information concept is associated with a Customer information concept, the Agreement capability initiates the relationship with a matching capability. The second implied relationship between two information concepts involves the primary-to-secondary information concept relationship, which is discussed further below.

The Agreement-to-Customer information concept relationship is shown in figure 2.5.8. The

corresponding matching capability would appear in the capability map as “Agreement/Customer Matching”. To represent this relationship, the mapping team adds the Customer information concept to the column named “Related Information Concept” for the Agreement line item in the information map example previously shown in figure 2.5.5.

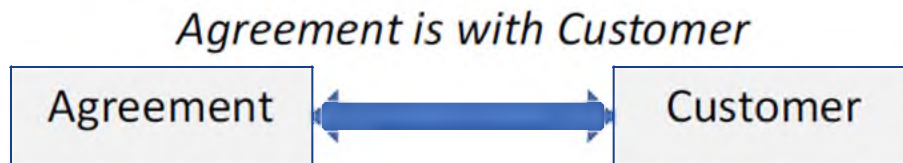


Figure 2.5.8: Extracting Information Concept from a Capability

While the figure 2.5.8 association and other relationships are bidirectional, the related information concept is only shown once in the information map. The information concept that depicts the relationship is patterned after the corresponding capability that controls the match. For example, in the Agreement/Customer Matching capability, Agreement controls the match, and therefore the Agreement information concept would depict the relationship to Customer. However, mapping teams do have the option of representing bidirectional relationships using either the information map template or alternatively depicting the relationships graphically.

For example, the line item in figure 2.5.5 for the Customer information concept could depict Agreement under the “Related Information Concept” column in addition to the Agreement line item, which depicts Customer in the “Related Information Concept” column. Representing bidirectional relationships in the template tends to clutter the map, but the option to list information concepts bidirectionally resides with the mapping team. The following is an example of such a bidirectional relationship:

- Customer has an Agreement
- Agreement is with a Customer

Alternatively, bidirectional relationships may be depicted graphically. Figure 2.5.9 depicts how these relationships may be viewed when connected in a visual format. The sample mapping in figure 2.5.9 represents an insurance company where Agreement represents the insurance policy. Note that only a subset of all the company’s information concepts and relationships are shown here.

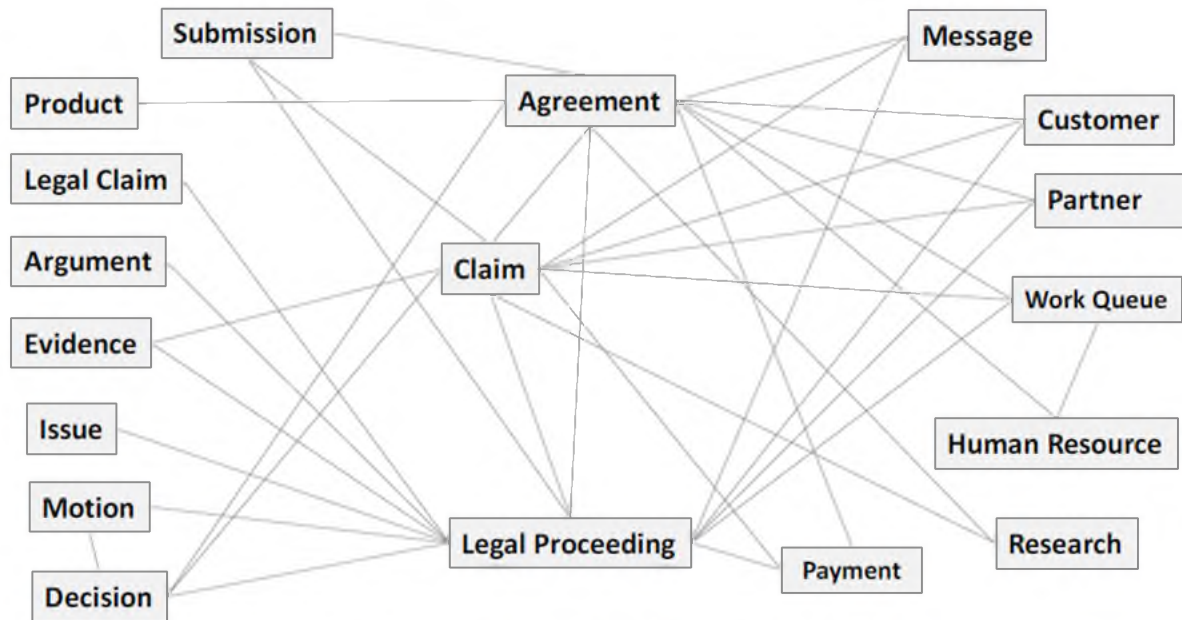


Figure 2.5.9: Sample Insurance Company Information Map

Figure 2.5.9 represents information concept relationships based on two perspectives derived from the capability map, where the capability map contains:

- Matching capabilities that establish object-to-object, and as a result, information concept-to-information concept, relationships
- Parent-child capabilities that resulted in defining secondary information concepts that can only exist based on the existence of the primary information concept

Secondary information concepts have an implied relationship to primary information concepts. However, certain primary information concepts are left out of formal relationship mapping by virtue of being defined by an aggregating capability. Aggregating capability-defined business objects are listed in the information map template (see figure 2.5.4) but have no types, states, or relationships defined in the map. Consider a case in point; the Finance information concept is represented in the figure 2.5.5 mapping, but it is not represented in figure 2.5.9 because the Finance information concept lacks inherent relationships. However, one of Finance’s secondary information concepts, Payment, is included in the figure 2.5.9 mapping.

Conversely, Legal Proceeding is defined by a level 1 capability and is not an aggregating capability because it is a concrete actor in the business and does have type, state, and relationship definitions as previously shown in figure 2.5.5. As a result, Legal Proceeding is shown in figure 2.5.9, where it has relationships to Motion and Evidence, secondary information concepts that only exist when there is a Legal Proceeding, as well as other information concepts.

Relationship mapping the information concepts, like any other aspect of information mapping, is not meant to take over work that is done during the conceptual and logical data modeling perspectives. Rather, the information map simply represents the business relationships between information concepts. But mapping teams often need to identify the nuances of the relationships between the information concepts. For example, an Asset may be used to assemble another asset, such as when a part that is kept in inventory is inserted into a piece of equipment. The part and the equipment, as generally defined, are considered assets where one asset is comprised of another asset. This relationship is shown in figure 2.5.10.

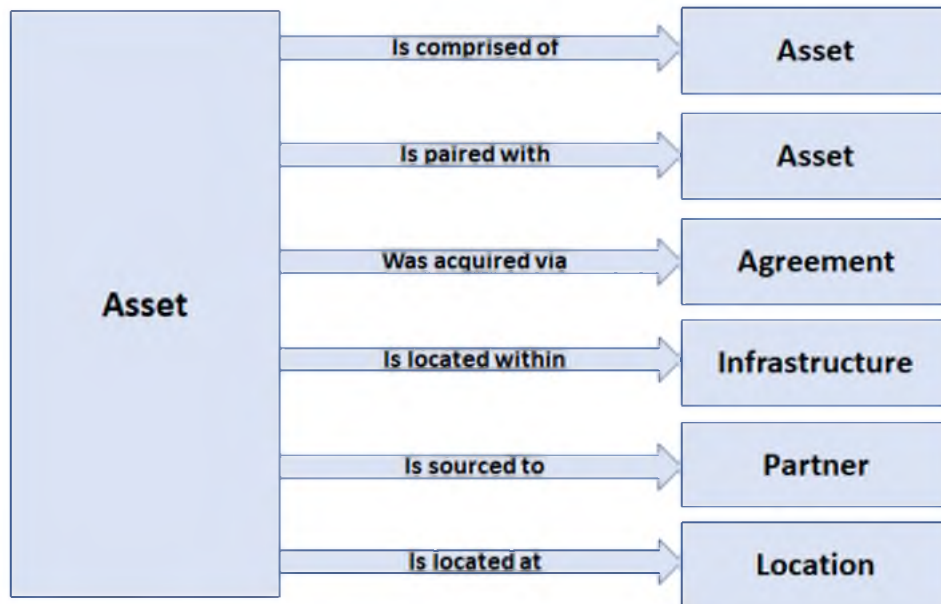


Figure 2.5.10: Information Concept Relationships Made Specific

The second asset-to-asset relationship shown in figure 2.5.10 is a pairing relationship. An example of this type of relationship is an application system that requires a given operating system to run on. Both systems are assets, with the application system being paired with the operating system in practice to make it work.

Step 6 – Identify information concept states

State identifies a finite list of information concept conditions or statuses that can occur during various business cycles. Determining a finite set of information concept states is important to frame the overall business architecture in terms of value stream navigation, in which various information concept states satisfy value stream stage entrance and exit criteria. State changes result from capability outcomes, which is why information concepts mirror the business objects that are defined and acted upon by various capabilities. Examples of states that were listed in the sample map previously shown in figure 2.5.5 include:

- **Agreement:** Pending, In Force, Terminated, Abandoned
- **Legal Proceeding:** Pending, Closed
- **Asset:** Deployed, Inactive, Retired

Determining and concurring on information concept states involves ongoing SME discussions with a cross-section of business units. Over time, mapping teams should be able to determine and specify a rationalized set of information concept states that can be associated with capability outcomes, and that are linked to the definition of value stream stage entrance and exit criteria.

Step 7 – Identify information concept usage

Information concept usage is primarily linked to the capabilities that require and/or modify certain business information. To map out information concept usage, the mapping team should cross-reference each information concept back to the capabilities that use it. There can be two types of cross-references: the first is where a capability can modify certain information while the second is where a capability is using certain information.

Information modification relationship: Maps an information concept to any capability that can establish or otherwise modify the information concept. Capabilities with the capacity to modify information are generally lower-level capabilities that act against the referenced business object. For example, the following capabilities would modify the Agreement information concept.

- Agreement Definition (establishes and uniquely identifies the agreement)
- Agreement Preference Determination (modifies or updates agreement preferences)
- Agreement Risk Determination (modifies or updates agreement risk information)
- Agreement Profile Management (manages descriptive information about the agreement)
- Agreement State Management (manages state of the agreement)
- Agreement History Management (tracks history of the agreement)

Information usage relationship: A capability may require and use a wide variety of information to produce an outcome. For example, the following capabilities would use Customer, Location, Financial Account, and other information concepts to establish risk ratings and set preferences.

- Agreement Risk Determination
- Agreement Preference Determination

Determining usage context often requires more research than determining modification context. Consider that the capabilities that modify a given business object are defined under the level 1 capability that manages that object. For example, when looking for capabilities that impact Agreement information, those capabilities will be confined to child capabilities under the Agreement Management capability.

Usage analysis is ideally performed on a capability-by-capability basis. Unearthing the above usage example, where the Agreement Risk and Preference Determination capabilities require certain information, would require engaging a cross-section of business SMEs. Consider the following points of discussion, for example, when discussing how an underwriter, in-house counsel, and other stakeholders might determine risks related to a loan agreement. Underwriters and other stakeholders would be interested in understanding:

- Risks associated with the customer proper, requiring customer information
- Risks associated with the particular loan product, requiring product information
- Risks based on other loans the customer may have outstanding, requiring related agreement information
- Risks associated with the location of the asset being insured, requiring location information
- Risks associated with the asset being acquired or being used as collateral, requiring asset information

This analysis takes time, but as it emerges, it may be documented in a formal way where the information concepts are mapped to capabilities based on either a modify or usage relationship. Figure 2.5.11 depicts sample relationships between capabilities and information concepts, focused on Legal Proceeding and several related information concepts.

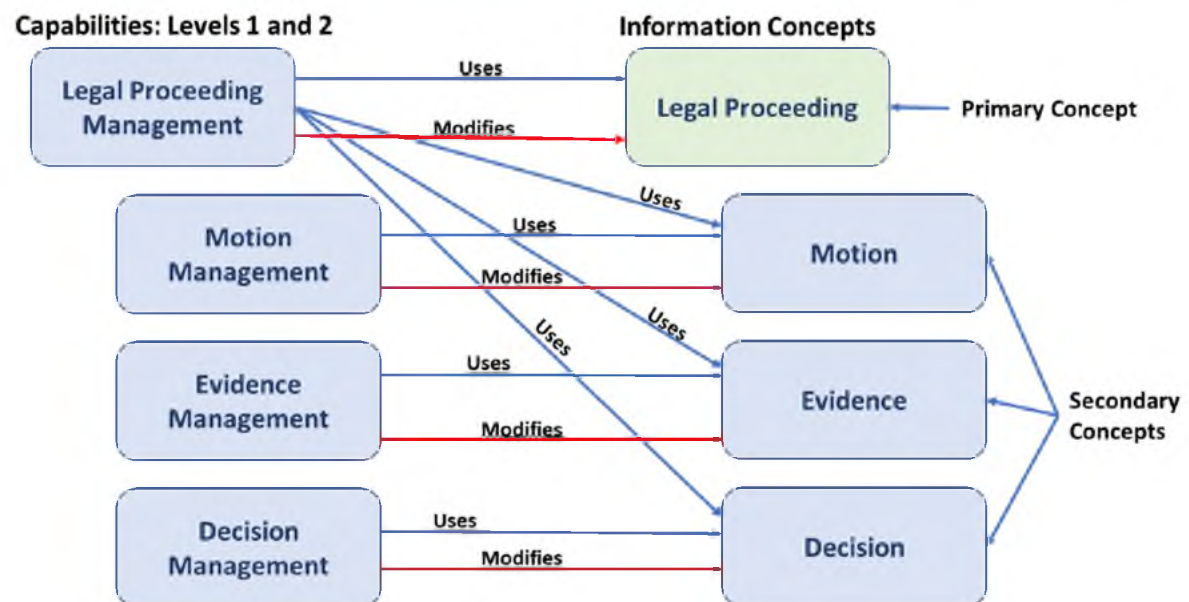


Figure 2.5.11: Capability and Information Linkage

Figure 2.5.11 shows how Legal Proceeding Management *uses* Motion, Evidence, Decision, and

Legal Proceeding information. Figure 2.5.11 also depicts how the Motion information concept is modified by Motion Management, how the Evidence information concept is modified by Evidence Management, and how the Decision information concept is modified by Decision Management. To summarize, the rules for capability and information concept relationship mapping are:

- A capability uses any combination of information concepts required to create an outcome
- A capability only modifies the information concept that shares the same business object

For example, as shown in figure 2.5.11, Legal Proceeding Management only modifies Legal Proceeding information, but uses a variety of other information concepts to produce an outcome.

By linking capabilities with information, business architecture provides an understanding of some of the ways that information, associated with a capability, can produce value. For example, a level 1 Campaign Management capability may have a level 3 capability called Campaign Targeting to identify potential new customers. This capability is likely to be associated with the Customer information concept, where prospective customers would be incorporated into this set of information.

The importance of information associated with a capability can frequently be determined by the value stream stage associated with that capability. For example, a level 3 capability to identify new potential customers is less important in a value stream about sales to existing customers. Because capabilities can be associated with many value stream stages, it is not sufficient to simply associate the information concepts to the capability; they must also be associated to the value stream stage. The importance of having a robust business architecture knowledgebase is highlighted by the depth of information concept-to-information concept relationship tracking and by the usage and modification relationships that need to be established and maintained between capabilities and information concepts.

Information Map Evolution and Deployment

Throughout the development of the information map, there is an ongoing dialogue with the SMEs in the business and the practitioner of business architecture. Validating the information map is an ongoing and iterative process, even after it is first established. For example, as the capability map is defined and refined, updates are made to the information concepts and definitions. Similar change cycles follow during project work as new scenarios are uncovered, capabilities are defined and/or improved, and value stream gaps are addressed.

This last step is important to ensure that the business terminology and definitions are validated and accepted by a cross-section of the business. This socialization process follows the same pattern as performed in capability mapping. If each capability definition coincides with the

corresponding information concept, then information concepts will have been socialized by default when the capability has been socialized. Lower-level information maps or concepts will need to undergo additional socialization, but this may be done in conjunction with subsequent data architecture work discussed in section 6.6.

Heat Mapping the Information Map

The information map is heat-mapped to indicate information that is unavailable or of poor quality. However, an examination of the associated heat-mapped capabilities will be more valuable as it indicates the degree to which the functioning of the capability is inhibited by an information deficit. One should be careful to consider if the deficit is caused by lack of information, or by the inability of the employees to make efficient use of the available information, as this will require a different kind of business transformation to remedy the deficiency. The latter is a deficiency of the capability rather than a deficiency of the information.

It will often be the case that information desired by the business, its partners, and its customers will not be available because it is not collected or because it is not known how to obtain the information. These cases are particularly challenging for the business architecture practitioner. Information that is known to be useful to a business may not be available because collecting it is too expensive or is not feasible because the information is tacit or cultural. In such cases, the business architecture practitioner, working with the stakeholders of the business architecture, may be able to design an information proxy that can be collected and which is thought to exhibit the same behavior as the ideal information.

Using the Information Map for Business Planning and Transformation

Uses for the information map involve delivering a rationalized business vocabulary, provisioning formal information states to enable value stream formalization and navigation, establishing the basis for data modeling efforts, and providing an information baseline from which to manage a variety of business and IT transformation efforts.

One immediate use for the information map involves establishing a common vocabulary to communicate issues, requirements, and strategy within or across business units and divisions. This practice should be reinforced from executives through to project teams. Any involved stakeholder must not fall into the trap of using an old vocabulary where a given word has several meanings depending on the audience. Additionally, the language in executive documents such as strategy maps, mission statements, and other top-down views should begin to use this agreed language.

Not every business unit or business partner will align to a common vocabulary on day one, but having a common vocabulary provides clarity for any discussion that crosses business unit

boundaries or is within or between project teams. Disciplines outside of business architecture also benefit from a common vocabulary, such as business processes that are being synchronized across business units or case management benefit significantly from a common vocabulary.

Value stream navigation requires clearly defined states to be associated with value stream stage entrance and exit criteria. An information map provides a clearly defined set of finite states that the business can rely on to determine when a value stream stage may be entered or exited. This same set of finite state definitions becomes important for mapping out event models where information states are set and checked to determine intra-stage and stage-to-stage transition navigation. Section 3.5 provides more information related to these event models.

Information Mapping Usage Scenario: Mapping Program Scope

Information maps are useful in setting the business objective and initiative scope, especially when there are upstream or downstream impacts that are not readily apparent to planning teams. Consider an example of a financial services company that acquires financial data from a variety of partners, where each partner captures and delivers financial data on demand. The company contracts with multiple data providers (i.e., partners) based on agreement usage terms and preferences.

On-demand data requests focus on markets, investments, financial orders, financial instruments, products, and competitors. Once the data has been captured, the company must interpret, transform, integrate, and disseminate the information in a useful, agreed-upon format for end-user consumption. Note that while the scenario is framed around the concept of data on-demand, the discussion that follows references information in relation to business architecture-related perspectives.

In this scenario, issues arose related to myriad usage agreements and shifting preferences, some of which were with the same partner. Management lacked clarity as to what rights the company had as far as accessing, using, and distributing data from various partners under a multitude of agreements. Further complicating matters, agreement preferences changed over time, meaning that certain data could be omitted, included, or restricted on a case-by-case basis. Where data overlapped across partners, the company lacked a common view of the data being captured so that it could be meaningfully integrated. In summary, the company lacked the industry data needed to effectively service clients on a timely basis. Research was stymied and competitive challenges were becoming more problematic.

While management wanted the situation addressed quickly, the IT organization's initial scoping efforts focused on data capture and transformation, and targeted those areas for investment. The business sought greater clarity of scope through its business architecture.

Figure 2.5.12 shows a snapshot of the business ecosystem used to scope this scenario based on holistic cause-and-effect analysis. The figure shows the impacted information concepts (defined to the right) along with the capabilities that modify or use this information (defined to the left). The figure shows these capabilities in context of the value streams they enable, which include Onboard Partner and Disseminate Information. A third-partner value stream, called Obtain Research, is defined along the bottom of figure 2.5.12, highlighting the partner perspective that delivers the on-demand data.

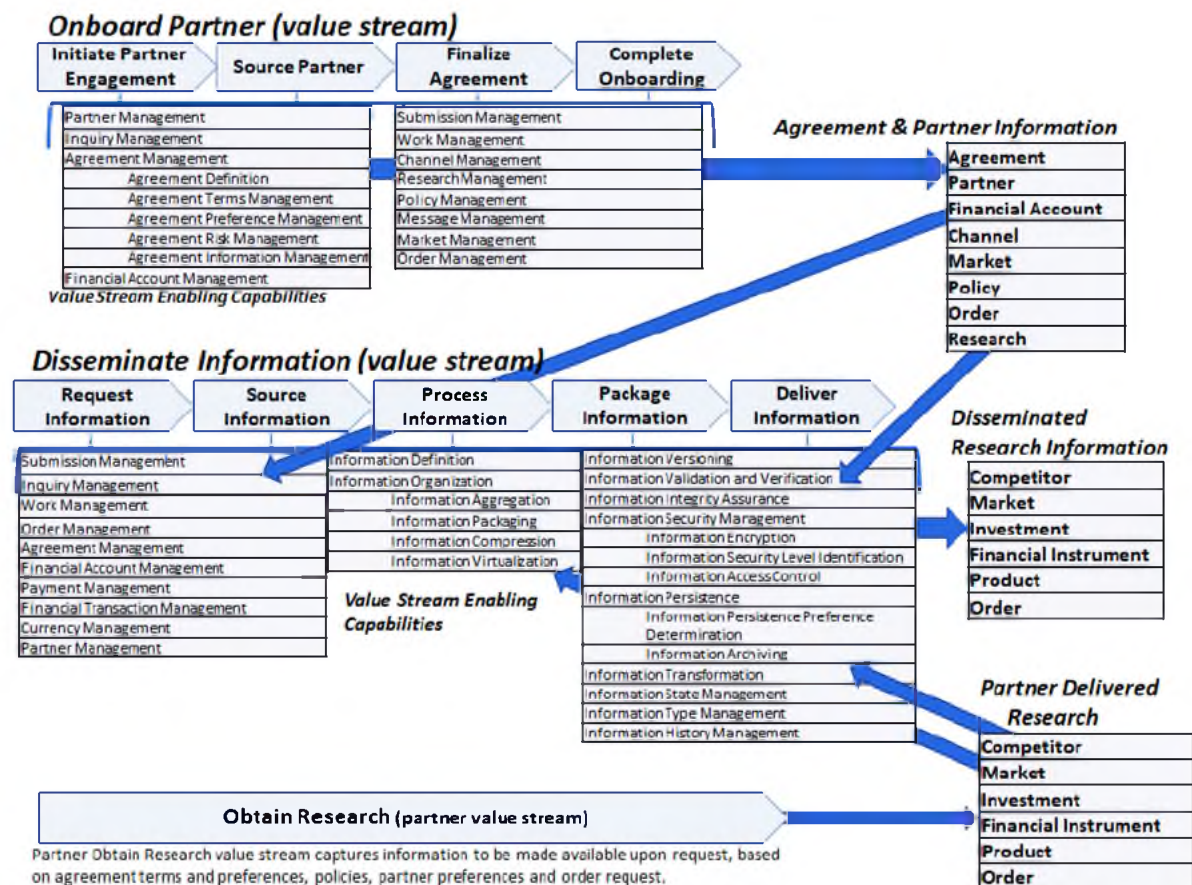


Figure 2.5.12: Role of Information Mapping in a Research Dissemination Scenario

The financial information to be captured and transformed, shown to the bottom-right of figure 2.5.12, frames the starting point for issue analysis and scope determination. Keyword analysis identified information concepts that included competitor, market, investment, financial instrument, product, and order. This business architecture-related view highlights where the information is managed and used by the capabilities that enable the Disseminate Information value stream, which is responsible for transforming, augmenting, packaging, and distributing data on-demand to the business.

A secondary keyword analysis points to agreement terms and preferences, e.g., order, policy, financial account, and other data that dictates data access and usage constraints. This information, shown to the upper right side of figure 2.5.12, is established and managed by the Onboard Partner value stream-enabling capabilities, and required by the Disseminate Information value stream to enable secure and contract-constrained data capture, transformation, packaging, and distribution.

Based on the snapshot of the business architecture-framed scope, planning and program management teams were able to determine the following:

- Planning teams can establish parallel projects under an overall program to focus on the Onboard Partner and Disseminate Information value streams, related capabilities, and information concepts, where agreement information issues are addressed in parallel with the rationalization of captured partner information.
- The program investment should incorporate the creation and access to partner, agreement, policy, and related information from the Onboard Partner value stream to ensure that subsequent information dissemination is aligned to contractual constraints.
- IT solutions and data associated with partner agreement and related information are in-scope. They are identified by tracing the capabilities and information enabling the Onboard Partner value stream to those IT solutions and related data.
- Rationalization of captured data across partners (particularly where it overlaps) should be identified as a focal point of investment, along with the software services that automate the capture and transformation capabilities as well as manage information-related data structures.
- Captured information from the Disseminate Information value stream, regardless of source, should be rationalized into a common, integrated perspective that reflects the needs of the business.

Value stream, capability, and information perspectives, mapped to application and data architectures, enable planning teams to formulate a comprehensive business and technology program that accurately scopes and addresses the range of issues raised by management. Figure 2.5.12 highlights the value of adding information concepts to scenario-scoping analysis, providing an analysis perspective that capabilities and value streams cannot deliver on their own.

Defining the Information Concept in the Business Architecture Knowledgebase

Defining information concepts in the business architecture knowledgebase is an important step towards scaling a business architecture because information concepts have numerous,

multidimensional relationships to capabilities that are hard to represent in spreadsheets or other desktop tools. The domain relationships to be represented in the business architecture knowledgebase are summarized in figure 2.5.13.

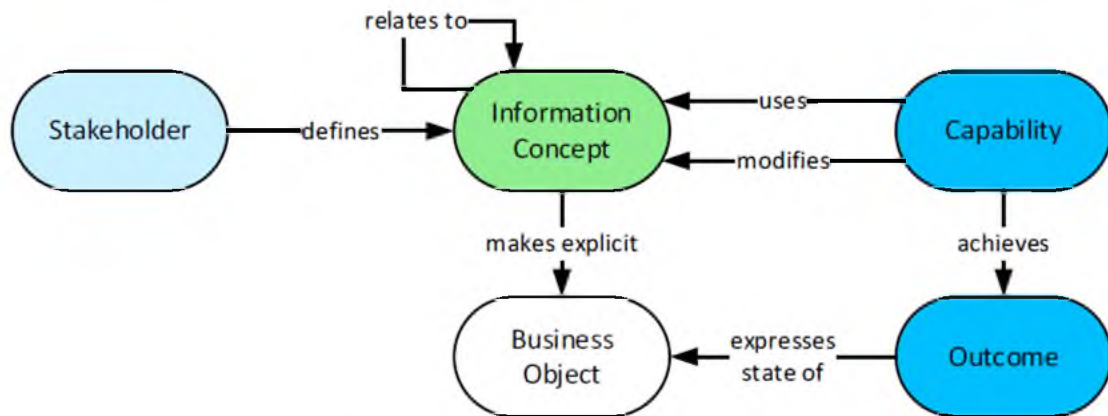


Figure 2.5.13: Information Concept Knowledgebase Relationships¹²

The relationships shown in figure 2.5.13 are summarized as follows.

1. Information concept makes a business object explicit; for example, an Agreement information concept articulates definition, types, states, and relationships for an agreement object.
2. Information concept relates to information concept, forming the basis for using the information map to define ecosystem-wide information context and to derive data architecture.
3. Capability uses information concept, specifically capabilities may require a wide range of information concepts to produce outcomes.
4. Capability modifies information concept, where an Agreement Management capability would define and evolve the Agreement information concept.
5. Capability achieves an outcome, where the outcome represents a result that updates the state of a business object, and where state is made explicit by the information concept.
6. Stakeholder defines an information concept, specifically where detailed stakeholder definitions identified in the stakeholder map define types for information concepts such as customer, partner, and human resource.

Business architecture domains associated with information concepts are generally discoverable and visualized through capability-related associations. For example, a business objective or an

initiative may impact a capability, which in turn would impact the corresponding information concepts linked to that capability. Similarly, value stream navigation relies on information concept state settings to accommodate stage entrance and exit criteria. These states are controlled by capabilities that produce outcomes and enable a given value stream stage, where these states are represented in the information map. Therefore, it is important to understand the collective set of associations across a knowledgebase.

Summary

The important point of information mapping is that a common vocabulary is established by the business that crosses all business domains. Business partners, project teams, and IT architects no longer have to struggle with the best way to align information because a consistent map, definition set, and vocabulary have been created. The information map provides a common framework and vocabulary that can be used in any business initiative, including strategic planning, analytic efforts, and business-IT transformation.

¹ Thor Olavsrud, "11 Market Trends in Advanced Analytics," *CIO*, July 2014, <https://www.cio.com/article/253116/11-market-trends-in-advanced-analytics.html>

² Chun Wei Choo, *The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge, and Make Decisions 2nd Edition*, (Oxford: Oxford University Press, 2005).

³ Marc De Jong, Nathan Marston, Erik Roth, and Peet Van Biljon. "The Eight Essentials of Innovation Performance." *McKinsey*, Dec. 2013, https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/strategy/pdfs/the_eight_essentials_of_innovation_performance.ashx.

⁴ John Bantleman, "The Big Cost of Big Data." *Forbes Magazine*, Apr. 16, 2012. <http://www.forbes.com/sites/ciocentral/2012/04/16/the-big-cost-of-big-data/>

⁵ E.F. Codd, A Relational Model of Data for Large Shared Data Banks, IBM Research Laboratory, <https://www.seas.upenn.edu/~zives/03f/cis550/codd.pdf>

⁶ Jennifer Rowley and Richard Hartley, *Organizing Knowledge: An Introduction to Managing Access to Information* (Hampshire, England: Ashgate Publishing, Ltd., 2006), 5–6.

⁷ Zbigniew Gargas, "Data, information, knowledge, and wisdom – DIKW Hierarchy," 2011.

⁸ See M.H. Boisot, *Knowledge Assets: Securing Competitive Advantage in the Information Economy* (New York: Oxford University Press, 1998).

⁹ Source: IMIS, https://help.imis.com/enterprise/features/rise/business_objects/understanding_business_objects.htm#What_is_a_business_object.

¹⁰ von Clausewitz, Carl, *On War*, 1832, CreateSpace Independent Publishing.

¹¹ NASCIO, "Data Governance – Managing Information as an Enterprise Asset," Apr. 2008, <https://www.nascio.org/wp-content/uploads/2019/11/NASCIO-DataGovernance-Part1.pdf>.

¹² The Business Architecture Metamodel Guide v2.1, Business Architecture Guild®, 2022.

SECTION 2.6: INITIATIVE MAPPING

This section discusses how initiatives are integrated into the business architecture framework to enable the governance that delivers strategic alignment of those initiatives. The term “initiative” itself may be unfamiliar to some individuals. Most individuals are probably more familiar with the terms: project, program, or portfolio. Within the business architecture framework all of these are considered kinds of initiatives. An initiative is:

“A course of action that is being executed or has been selected for execution”

An organization’s initiatives represent the choices the organization has made about how to pursue the change that allows it to achieve its objectives.

Most individuals are familiar with initiatives primarily from an operational standpoint, where the key activities are centered on the execution of initiatives. From an organizational standpoint, it has become increasingly common to assign execution of initiatives to a Program or Project Management Office (PMO). The PMO typically has the responsibility for coordinated planning, prioritization, execution, and tracking of projects, including tracking how well an organization is delivering on the milestones within the various initiatives that they oversee. To perform this tracking, the PMO applies budgets, gathers estimates, and records actuals. This operational effort focuses on assuring that initiatives follow the defined project management lifecycle and meet various delivery targets.

The operational role of the PMO is an essential function, but this is only one piece of the process of governing initiatives. The larger question organizations must address is how to make sure that initiatives are aligned to deliver the value that is targeted by the organization’s strategic objectives. One of the most common issues that organizations face is finding a way to judge how well the myriad of initiatives that are simultaneously underway contribute to the organization’s strategic plan. The initiative map is the key tool that provides a way for organizations to gain visibility into the how their initiatives align with strategic objectives.

As emphasized in section 2.1, initiative planning in the absence of a well-defined link to strategic objectives, stakeholder value delivery, and related capabilities results in duplicate, poorly coordinated, and even conflicting initiatives. As a result, this section considers it essential to incorporate a clear understanding of the objectives to be achieved, stakeholder value to be improved, and capabilities to be leveraged when engaging in initiative definition, planning, and evaluation. The means of accomplishing this goal involves integrating initiatives into the overall business architecture framework.

Defining the Initiative Map

In order to successfully align initiatives with an organization's business architecture, it is essential that an organization have a consistent and structured approach to the governance of initiatives. Initiatives are among the most complex items with which business architecture must integrate. This complexity comes from the number of touchpoints that initiatives have with other business architecture domains. A comprehensive approach to governing initiatives must include a way of integrating aspects of strategic planning work, stakeholder value delivery, and capabilities. Initiatives also impact information perspectives and are typically tied to a given business unit. The key business architecture tool for capturing and analyzing the relationship between initiatives and other elements of the business architecture is the initiative map. The initiative map may take many forms based on the intent of the beneficiaries of this information and the relationships being depicted within the map.

Elements of the Initiative Map

Initiatives are where an organization reconciles their strategic objectives with decisions about where to invest in order to produce additional value, the capabilities that will enable this, the assets and processes that will be needed or impacted and the resources and organizational elements that will be involved in the initiative. After all, initiatives are where all of the work and related resources must coalesce to achieve the stated objectives. In other words, its where "the rubber meets the road". To understand the overall perspective more fully, it is important to examine each of the major linkages in more detail.

The Initiative

The term Initiative is purposely used rather than other terms like program or project. Programs and projects represent particular ways of organizing and governing initiatives. Choices about how to organize an initiative are driven by the dependencies within an organization's portfolio of initiatives. For example, an initiative that is dependent upon several capabilities that are best delivered as part of several independent efforts should be organized as a program. Each of these independent efforts would then be organized as projects within the program. This decision reflects that the program cannot deliver its value through a single work stream, yet it remains responsible for delivering the totality of its objectives.

Figure 2.6.1 shows the overlap between program and project, where multiple projects are subsumed under a program seeking a higher or more comprehensive goal. Each project contributes by achieving a set of related objectives. Note that certain external projects may have dependency relationships to projects within the program. This dependency relationship is shown by a partially overlapping external project to the program in figure 2.6.1.



Figure 2.6.1: Relationship of Programs and Projects

For purposes of mapping initiatives to business architecture, assume that program and project will be referenced as initiative going forward.

Objectives and the Initiative Map

In order to make sure that an organization's initiatives are aligned with the strategic objectives, the first piece of work is to explicitly link each initiative to those objectives. This seems like an obvious statement, but it is quite common for organizations to miss this first step. The most common reason that this linkage is missed has to do with two different issues: granularity of objectives and completeness of objectives.

The granularity of objectives is important for initiative maps because it is essential that initiatives have some level of quantifiable metric that can be used to determine their success. For an initiative's metric to be quantifiable, it has to, at a minimum, be something achievable within the scope of that initiative. Many organizations link objectives to initiatives that are certainly strategic but are well beyond what would be possible to reasonably deliver within a particular initiative.

For example, it is common for organizations to have strategic initiatives related to sales growth. However, many initiatives exist at a level where they have no ability to directly impact sales growth. In order to properly link such an initiative to an objective, that objective itself needs to be further broken down into a series of sub-objectives that support the higher-level objective and the rationales that define why it is believed that achieving these sub-objectives will deliver the top-level strategic objective.

An example of this type of objective mapping is discussed in section 2.1 where lower-level objectives contribute to achieving higher level objectives and higher-level objectives may be decomposed into lower-level objectives. The generic objective map as well as the Norton Kaplan Strategy Map provide a visualization of this building block approach to objective mapping that enables the decomposition of high-level objectives into more granular and more specific objectives that align to various communities of interest. As stated previously, objective decomposition is relevant to initiative mapping because high-level objectives can rarely be achieved by a single initiative.

Planning teams may use the initiative map as the guide to determine if one or more initiatives can individually or collectively achieve a set of objectives that decompose or aggregate into related objectives. This relationship analysis is critical to determining if strategic objectives can be made actionable through one or a combination of initiatives. The linkage between initiatives and objectives, which are linked to related objectives, provides the transparency required to help justify initiative investment funding.

While granularity is an important issue, it is equally important to be able to determine whether the initiatives associated with an objective represent the complete picture of what has to be done to deliver the objectives. One common way that completeness becomes an issue is when an organization focuses on the perspective of a narrow set of stakeholders as part of developing their objectives. For example, an organization might focus solely on the operational cost perspective while failing to consider investment in growth opportunities.

The failure to successfully identify the way that these other non-financial benefits contribute to an organization makes them vulnerable to one of two situations: initiatives that cannot be directly linked to financial benefits could be stripped of the investment, which ultimately results in a competitive deficit in key capabilities; or initiatives that deliver non-financial benefits could be proven to have no clear relationship to organizational goals and potentially represent wasted investment. With this as a background, we move on to reviewing initiative mapping benefits, principles, and guidelines.

Benefits of Initiative Mapping

Initiative mapping provides a framework that supports existing practices within an organization. These practices include things as varied as: strategic planning, program and project management, investment evaluation, and budgetary realignments. Initiative mapping is a powerful tool to add rigor to these practices and provide visibility into complex tradeoffs that can be difficult to visualize without such a framework. The benefits of initiative mapping are as follows.

- **Initiative maps demonstrate how initiatives and related investments focus on improving stakeholder value delivery.** Linking initiatives to stakeholder value delivery provides a solid basis for initiative investment analysis. The means by which businesses can demonstrate how investments improve stakeholder value delivery requires linking initiatives to value streams. These may be externally triggered value streams, such as Obtain Service, Establish Account, or Request Claim Payment, or they may be internally triggered value streams such as Hire Employee or Execute Promotional Campaign. When businesses establish these initiative / value stream relationships, they can clearly demonstrate benefits and articulate the scope of work to be performed from a business perspective.

Let's assume that executives wish to streamline end-to-end delivery of customer service. An initiative linked to achieving this objective would focus on the Obtain Service value stream, which clarifies the initiative focal point and relationship to business objective and narrows the scope of the initiative and related investment. An initiative may target one or multiple value streams and value stream stages. For example, a given project is often constrained to a single value stream stage and subset of stakeholders within that stage while a program may include a number of projects that cross one or more value streams. There is no set rule, but the business now has the ability to frame and articulate initiative investments from a clearly articulated, commonly understood business perspective.

One benefit that is derived from exposing the initiative-to-value stream relationships is that the value streams highlight capabilities that become specific targets for a given initiative. Targeting these enabling capabilities is a related benefit of initiative mapping.

- **Initiative maps allow organizations to gain a comprehensive view of how their investments support strategic investment priorities.** Organizations frequently find that their strategic investment targets fail to successfully translate into substantial new business behavior. This gap is frequently a direct result of the difficulty in aligning enterprise investment priorities with the deliverables across an organization's entire portfolio of initiatives.

Because capabilities are a key mechanism used by organizations to identify potential investment opportunities, it is essential that all such investments are mapped to the initiatives that will deliver them. By developing maps that link each initiative to capabilities that it will deliver and then linking these capabilities back to the value streams they enable and business units involved, it becomes possible for

organizations to rapidly assess the alignment of actual initiatives to investment priorities.

Adopting the capability-to-initiative mapping also provides a discipline for individual initiatives that helps prevent unplanned investment. Many organizations are not even aware of the incremental investment opportunities that are embedded within their initiatives. By establishing that all investment choices within an initiative must be linked to business outcomes and capabilities, initiative mapping can help expose and provide control over these hidden investment choices.

- **Initiative maps provide visibility into the alignment of an organization's efforts to pursue its objectives.** Understanding how enterprise objectives align with each of the initiatives underway within an organization is a complex undertaking. Simply mapping enterprise objectives to each initiative results in a fuzzy mapping since most initiatives cannot directly contribute to objectives at the enterprise level. Attempts to simply decompose enterprise objectives into lower levels of objectives may or may not result in a set of objectives that map well to deliverables within real initiatives.

By mapping the outcomes of initiatives to concrete objectives that are themselves linked to enterprise level objectives, it becomes possible for organizations to more readily understand the rationales driving various initiatives. This visibility into the rationales for deliverables within initiatives makes it possible for organizations to more rapidly re-evaluate the investments *within* each initiative to reconsider the alignment with enterprise objectives and open opportunities for reallocating resources.

For example, one organization found that an initiative that was supporting the rapid introduction of a new product contained deliverables that were designed to provide longer-term flexibility in product definition. However, this investment in longer-term flexibility was one of the items responsible for the undesirable timeframe for the initiatives which was threatened with cancellation. Both deliverables were supported by higher enterprise objectives, but the failure to understand that they were being addressed within a single initiative meant that the organization was unable to rationalize these conflicts and segregate the efforts to deliver the greatest value.

- **Initiative maps enable portfolio decisions by capturing the complex relationships among initiatives.** The choice of which initiatives to pursue is seldom as simple as picking the individual initiatives with the greatest value to the organization. Complex interrelationships among initiatives makes the understanding of how each initiative

interacts with others an essential part of any organization's process for selecting the initiatives within their organization's portfolio.

The relationship among initiatives exists by virtue of some shared element in the business architecture. These relationships result in conflicts when two different initiatives pursue objectives that, when applied to the same target, come into conflict. Examples of this are objectives which focus on cost vs. time and flexibility.

Initiative maps provide mappings among initiatives and the organizational elements, assets, and capabilities that they impact. These relationships allow organizations to easily discover hot-spots where multiple initiatives are simultaneously impacting another element of the business architecture.

- Initiative maps support the creation of roadmaps to provide horizon-based planning. The conflicts among various initiatives often reflect the unresolved timings of deliverables among various lower-level objectives. For example, an organization might be faced with a decision about whether the near-term delivery of cost reductions within a process is a higher priority than gaining time and flexibility. While it is possible that both objectives can be achieved, it is unlikely that both can be achieved simultaneously.

The need to resolve conflicts like the one mentioned above requires that initiatives and the deliverables within them be examined according to a timeline. This timeline-based approach is referred to as road-mapping, and it is an effective way of visualizing how organizations deploy resources to achieve their objectives through a series of initiatives that incrementally deliver the desired outcomes over a determined time period.

Roadmaps are generally bounded by the timeframe within which some set of enterprise objectives must be achieved. Sub-objectives are developed that capture deliverables that are necessary steps in achieving the enterprise objectives. Each objective is then examined to determine which initiative should be tasked with delivering that objective. This exercise should continue until a granular level of objectives has been created that the objectives can be readily assigned to corresponding initiatives.

- Initiative maps enable dynamic reevaluation of in-flight initiatives. One of the most difficult problems that organizations face in managing their portfolio of initiatives is how to adapt that portfolio to the constantly changing demands of the organization.

While new initiatives can be evaluated as they become viable or as a new funding cycle begins, ongoing initiatives represent a very different problem.

In-flight initiatives tend to be viewed as independent efforts directed toward accomplishing a set of objectives established at the onset of the initiative. This approach can lead to missed opportunities for rationalizing how an organization pursues objectives that were established after the initiative was underway. Alternatively, continuing to pursue deliverables that no longer support prioritized enterprise objectives, or which are no longer constrained by other elements in an organization's business architecture, can lead to stranded investment.

Following the objective hierarchy from their strategy map, organizations can rapidly identify existing initiatives where reassessment should be considered. Further, by identifying the impact of modifications to objectives and existing initiatives upon the processes, assets and capabilities that they are constrained by, it becomes possible to rapidly reevaluate in-flight initiatives to determine if any adjustments in their deliverables or timeframes should be made.

Principles of Initiative Mapping

Defining and using initiative maps requires concurrence on a basic set of principles. Principles ("agreed upon truths to guide our actions") guide efforts to establish and leverage initiative maps within the context of various business scenarios. Principles of initiative maps include:

1. **Initiative mapping delivers cross-business transparency of initiatives and related investments in those initiatives.** This essentially clarifies the context and impact of an initiative insofar as businesses require a level of transparency on initiatives to understand where their investments are being spent and where they may be misaligned to business objectives or are at risk of clashing with related investments across business units.
2. **Initiative mapping highlights areas of potential redundancy and overlap across multiple initiatives.** Redundancy, overlap, and the resulting conflict experienced by projects, particularly where both projects are targeting the same capabilities and by inference the same information, is a major issue for many businesses. Initiative mapping highlights these issues as a foundation for business-wide analysis of initiatives that are often defined in siloes.
3. **Initiative mapping demonstrates how well a business's portfolio of initiatives is aligned with its business objectives.** Basic initiative mapping links initiatives to objectives, which

may be linked to other initiatives. Sophisticated initiative-to-objective mapping incorporates relationships among lower level and higher-level objectives that can link two initiatives in ways that would otherwise not be transparent to the business. Objective-to-initiative mapping is a critical initiative mapping perspective.

4. **Initiative mapping highlights gaps between stated business objectives and current or planned initiatives.** Many times, organizations find that they have strategic objectives that have no corresponding initiative either planned or inflight to satisfy those objectives. In other cases, initiatives are planned or underway that cannot be tied back to a valid business initiative. Both cases represent scenarios where money is being spent unwisely on the one hand while priority business objectives are ignored on the other hand.
5. **Initiative mapping provides insights into how initiatives are focused on improving stakeholder value delivery.** In the absence of understanding where an initiative investment will improve delivery of value to customers, partners, or internal stakeholders, it is difficult to fully justify an investment in that initiative. Some initiatives communicate value as a cost savings vehicle, but even these investments have a stakeholder value delivery context. The stakeholder value delivery improvement perspective should at least be a consideration if not the motivation for these types of investments.
6. **Initiative mapping identifies which initiatives impact or target business capabilities.** Ultimately initiatives will impact a number of capabilities and it is always important to understand how these capabilities will be impacted across one or more business units, where capability improvements can be leveraged in other areas, and the quantifiable improvements business are seeking in those capabilities.

These principles are useful as a way to ensure that initiative mapping efforts are balanced and apply best practices, which in turn enhances the value of the end result and usability of initiative maps in a variety of planning and transformation initiatives. Note that principle #6 benefits from business performance analysis based on certain metric analyses of capabilities and other business architecture perspectives, as discussed in detail in section 3.7.

Initiative Mapping Guidelines

The following guidelines provide practitioners with a basic roadmap of initiative mapping steps. While a mapping team, portfolio management, and other stakeholders will want to adjust tasks and priorities based on need, the guidelines below establish a basic starting point.

1. **Determine initiative mapping priorities.** Because initiative mapping can take a multitude of perspectives, the mapping team, working with management, should establish clear objectives and priorities. The goal for the mapping team is to prioritize which mappings perspectives should be pursued in a given sequence based on priorities related to redundancy reconciliation, gap analysis, stakeholder value delivery objectives, and overall budgetary realignment across business units.

For example, the team may require a wide spectrum analysis of redundancy impacts of capabilities across a portfolio of initiatives or may want to quickly drill down to selected initiatives associated with a given stakeholder and related business objective. Both are valid pursuits but require different mapping approaches to achieve them. Therefore, priority setting up front is essential to achieving the full benefits of initiative mapping.

2. **Establish initiative inventory framed by the scope of the business.** Initiative mapping begins with an inventory of initiatives. Most organizations have an initiative inventory in place because programs and projects are linked to investments and budgets. However, some businesses have split program offices by business unit, resulting in a decentralized inventory that represents cross-sections of the business. This, by the way, is a symptom of the silo-oriented approach to initiative funding and deployment that creates redundancy, gaps, and conflicts across initiatives. An initial inventory does not have to be perfect or considered finalized, but it should provide a foundation from which to build an organization's initiative mappings.
3. **Map initiatives to business units.** If a business unit sponsors or funds an initiative, that business unit may be associated with that initiative. There are also impact relationships where an investment by one business unit impacts that of another. If a program is defined across multiple business units, with funding derived from a horizontal pooling of funds, an initiative maps to the highest-level business unit authorizing that funding. The results of a business-to-initiative mapping effort aligns the initiative inventory to the primary funding sources of those efforts, providing clarity as to which business unit has defined the scope and objectives associated with a given investment and related deliverables.
4. **Map initiatives to business objectives across business units.** This step associates various business objectives to the initiatives that fulfill those objectives. The basic objective-to-initiative mapping simply shows one or more objectives linked to one or more initiatives. Teams may also link objectives to higher level goals and key performance indicators, which are then directly or indirectly link to initiatives. Another perspective links objectives and initiatives with business units, enabling management to see if overlapping objectives

and initiatives span business units and determine where redundancies, conflicts, and gaps may exist from a planning standpoint.

5. **Map initiatives to value stream stages.** Associating initiatives and stakeholder value delivery requires mapping initiatives to value streams. Value stream-to-initiative mapping may be performed at multiple levels. If the goal involves looking across a landscape of initiatives, then the mapping effort would focus on mapping multiple initiatives to the value streams and stages they are impacting or will impact. This wide spectrum analysis highlights potential points of conflict and opportunities for collaboration and alignment across initiatives. Objective links to value streams are often link to key words involving the triggering stakeholder (e.g., customer) or business object undergoing state changes in a given value stream (e.g., loan, payment). This approach enables rapid analysis across multiple objectives, value streams, and initiatives.

A second approach involves using the value stream to drill down on a given objective and related initiative, ultimately using the value stream as a basis of dissecting an initiative into projects or releases within a project. For example, if loans are being issued that are defaulting at a high rate, issue analysis should target the value stream where the loan is being issued, not where it is being defaulted. Detailed analysis then focuses on the value stream stages where underwriters, risk managers, and others develop risk ratings and approve loans that should not be approved. This approach often narrows issue analysis to the stage or stages that becomes the focus of one or more initiatives, down to a release level.

6. **Map capabilities to initiatives.** Mapping capabilities to initiatives is ultimately required to ensure that action can be taken to improve those initiatives. Capability-to-initiative mapping may be performed at multiple levels. The first and often initial approach typically involves an aggregated mapping of an initiative inventory to the universe of capabilities in the capability map. This offers a broad perspective of where multiple initiatives are targeting actions against the same capabilities. Adding business unit to this analysis offers greater insights into the source and target of those capability investments.

The capability-to-initiative direct mapping approach above lacks the stakeholder value perspective that value streams provide. To incorporate this perspective, mapping teams will want to engage in value stream-to-initiative mapping first, and then highlight the capabilities enabling value delivery for various value stream stages. This latter approach would be applied to formulate a more granular scoping of the impact of a given initiative on value delivery and related capabilities.

Depending on one's mapping objectives, initiative-to-capability mapping may start with wide spectrum analysis of the impact of multiple initiatives on a universe of capabilities or alternatively leverage the value stream / capability cross-mapping to link initiatives to capabilities. Ultimately both approaches have value and are often applied at different stages to address different needs as initiative mapping matures and is used throughout the life of a given initiative.

7. **Perform an overall assessment review of the overlap, gaps and conflicts across each initiative.** Once the desired business unit, objective, value stream, and capability cross-mappings to initiatives are in place, redundancy, gap, and impact analysis may begin. The results are again tied to the overall objectives set forth for the initiative mapping effort as a whole. The end goal is to identify areas where strategies may require updating, highlight scenarios where certain initiatives require alignment or consolidation with other initiatives, and articulate starting points and roadmaps for detail initiative decomposition and roadmap creation.
8. **Leverage value streams and capabilities to frame, scope and roadmap individual initiatives.** This last step extends analysis performed in guidelines #5 and #6 to use the business architecture perspective to frame the scope of time-boxed programs, projects, and project release schedules.

Initiative Mapping Approaches

Keeping the aforementioned principles and guidelines in mind, the following sections provide selected examples of various initiative mapping approaches. These examples focus on the commonly used initiative mappings to business units, objectives, key performance indicators, capabilities, and value streams. Because two-dimensional mappings limit the breadth and depth of understanding, the sections that follow incorporate more commonly used, 3- and 4-way initiative mapping approaches.

For example, business unit-to-initiative mapping also incorporates capabilities, as would often be done in practice. These examples are not meant to represent the full universe of initiative mapping options, but rather serve as examples of the commonly used approaches. Other mapping options can be useful but identifying every initiative mapping set of options would be beyond the scope of this discussion. However, the knowledgebase discussion at the end of this section provides insights into additional mapping options.

Framing Scope, Building Inventory

Scoping an initiative mapping effort requires aligning the analysis and establishing an initiative inventory that covers the same scope of the business as defined by the business architecture.

Framing the scope of the business architecture is defined under foundational mapping sections as covering the scope of the business ecosystem. As a result, the guidelines that follow are based on framing the scope of the initiative inventory to match the scope of coverage of the capability map and value streams. This approach eliminates the risk of establishing silo-based initiative inventories that are limited to a given program management team, a given business unit, or IT-based programs and projects.

The inventory exercise occurs at two levels with the first step involving gathering and organizing all programs and projects into a list and the second step involving a decomposition of various programs and projects. The approach relies heavily on how programs and projects are defined in a given enterprise but generally programs decompose into projects. Regardless of the approach, most businesses apply a multi-tiered structure to their program management environment and the initiative inventory should reflect this structure. The inventory should ideally reside in a tool-based, business architecture knowledgebase but various alternatives often include spreadsheets and program management tools. Regardless of how the inventory is stored, mapping teams must be able access and cross-reference initiatives to related business architecture domains.

Initiative Mapping to Organization

In order for an organization to successfully monitor and govern their portfolios of initiatives, it is essential that the information about the status of initiatives be readily accessible to the organization. In order to provide this information, it is necessary to map initiatives to various business units. Reporting at an organizational level is different from those needed for tracking individual initiatives. Organizational level reporting needs to capture the status of initiatives along a variety of different perspectives including: investment focus, relation to organizational hierarchy and initiative hierarchies, horizontally funded initiatives, and even joint ventures with third parties.

Organizational initiative analysis and reporting should include overall spending vs. projected spending for major initiatives as well as the status of the initiative. For example, an initiative may be planned or underway, also termed as being in mid-flight. Because major initiatives typically include investments in capabilities, organizational initiative reporting should include capabilities as part of this analysis. This may include milestone-based analysis of progress toward the delivery of these capabilities. When this information is consolidated and mapped against enterprise objectives, it provides the ability to examine how current spending matches up with strategic spending priorities.

Figure 2.6.2 shows a 3-way mapping among business units, capabilities, and initiatives. The business unit-to-capability mapping shows that these business units have the referenced capabilities. The business unit-to-initiative mapping depicts that these business units are funding

and sponsoring the listed initiatives. The intersection of capabilities and initiatives indicates which capabilities are impacted by the listed initiatives.

			Business Units				Intersection of Business Units & Initiatives
			Underwriting Division	X			
			Customer Service Dept.			X	
			Contract Management		X		
Business Units	Underwriting Division	Customer Service Dept.	Contract Management				Initiatives
				Loan Handling Modernization	Loan Default Upgrade	Customer Account Upgrade Project	Intersection of Capabilities & Initiatives
Intersection of Business Units & Capabilities	X	X	X	Case File Management	X	X	X
	X	X	X	Routing	X		
	X	X	X	Work Queue Management	X	X	
	X	X	X	Notification		X	X
	X		X	Agreement Structuring	X	X	
			Capabilities				Intersection of Business Units & Capabilities

Figure 2.6.2: Initiative, Business Unit and Capability Mapping

Although this figure represents a small cross-section of initiatives, business units, and capabilities, it provides some immediate insights. Analysts can surmise from this cross-mapping that the three initiatives shown are being sponsored by three different business units. And while each business unit has most of the capabilities shown, there are clear gaps in terms of the capabilities being incorporated under the scope of the three initiatives.

For example, the Loan Default Upgrade initiative appears to ignore the routing of work while the Loan Handling Modernization initiative is ignoring the Notification capability. These gaps are likely to mean that there will be solutions that ignore customer notification and the routing of work when these capabilities clearly cross business unit boundaries. An equally problematic concern involves potential redundancies across initiatives. For example, all three initiatives listed in figure 2.6.2 impact the Case File Management capability, yet each of these initiatives is sponsored by a different business unit. This signals a potential risk of creating or reinforcing redundancy, inconsistency, and a lack of alignment in the organization's ability to effectively manage customer case files.

While these are high-level perspectives, they allow management to identify and address cross-business initiative risks in advance of those embarking upon solutions that at best will not align and at worst create a more problematic business environment for the organization as a whole.

When the analysis in figure 2.6.2 is expanded across a larger inventory of initiatives and business units, strategic planning and portfolio management teams gain access to an entirely new level of analysis they can use to put a hold on ill-conceived investments before they get off the ground.

Initiative Mapping to Business Objectives

Initiative planning performed in the absence of a link between business objectives and business initiatives opens up businesses to the risk of not addressing critical objectives while making investments that cannot be tied back to a clear business need. Figure 2.6.3 represents a cross-mapping among business objective, key performance indicator, and initiative.

			Objectives										
Key Performance Indicator	Intersection of KPIs & Objectives			X			Ensure stakeholder loan notice	X			Intersection of Objectives & Initiatives		
						X	Expedite loan default process	X	X				
				X			Expedite loan restructuring	X		X			
											Initiatives		
				Reduce unintended defaults to .05%	Lower loan restructuring time to 5 days	Lower loan default process to 5 days				Loan Handling Modernization	Loan Default Upgrade	Customer Account Upgrade Project	
										Reduce unint'd defaults to .05%			
										Loan restructuring to 5 days	X		X
										Loan default process to 5 days	X	X	
												Intersection of Initiatives & KPIs	
		Key Performance Indicator											

Figure 2.6.3: Initiative, Objective, and KPI Mapping

Two of the three business objectives shown in figure 2.6.3 align to each of the three initiatives listed while one objective does not align to any initiative. This indicates that initiative investments have missed a critical business objective during the planning stages for these efforts and that investments are being made in the very areas of the business that would benefit from addressing this object. This is termed an objective gap.

A second takeaway from figure 2.6.3 is that multiple initiatives share common business objectives. While this is not necessarily a problem, it does signal a situation that requires more investigation because overlapping objectives across independently sponsored initiatives could signal a lack of coordination across value delivery and capability perspectives. One last note is that KPI alignment across initiatives mirror that alignment to business objectives. KPI analysis is

important in this context because even though multiple business units may share common objectives, the measurable outcomes (i.e., KPIs) may not align and require more cross-business unit coordination.

Initiative Mapping to Value Streams

As planning teams seek to establish a clearer picture of how various initiatives may or may not overlap, conflict, or align, they will want to understand how initiatives align to stakeholder value delivery perspectives (i.e., value streams). Value stream-to-initiative mapping has numerous standalone benefits that include conflict analysis and resolution as well as ensuring that customers, partners, and other stakeholders are not left out of internal initiative investment and planning efforts.

		Value Streams								
Intersection of Objectives & Value Streams		X		X	Manage Loan Change Request	X		X	Intersection of Value Streams & Initiatives	
					Acquire Loan	X				
		X	X		Process Loan Default	X	X			
Objectives	Ensure stakeholder notification on loans								Initiatives	
	Expedite loan default processing							Loan Handling Modernization		
	Expedite loan restructuring							Loan Default Upgrade		
								Customer Account Upgrade Project		
Intersection of Objectives & Capabilities		X	X	X	Case File Management	X	X	X	Intersection of Capabilities & Initiatives	
		X	X	X	Routing	X				
		X	X	X	Work Queue Management	X	X			
		X	X	X	Notification		X	X		
		X	X	X	Agreement Structuring	X	X			
		Capabilities								

Figure 2.6.4: Initiative, Objective, Value Stream, and Capability Mapping

Figure 2.6.4 highlights relationships among value streams, objectives, capabilities, and initiatives. This cross-mapping example highlights several concerns. The first is that two of three initiatives appear to be targeting the same value streams as the remaining initiative. This can be interpreted to mean that there will be concurrent work against the same value streams, which may or may not be an issue.

Further analysis, however, shows that these same two initiatives are targeting overlapping capabilities including Case File Management, Notification, Agreement Structuring, and Work Queue Management, within the context of the same value streams or related value streams. This

clearly signals that a close degree of coordination, alignment, and reuse is required across these initiatives, which is unlikely because each one is independently funded and sponsored. Note that from here, identifying redundant and shared IT assets and related impacts is an easy next level of analysis.

Another takeaway from figure 2.6.4 is the apparent fragmented perspective of certain initiatives that omit what would be considered important capabilities. For example, the fact that two of three initiatives omit Routing when cross-business unit, cross-stakeholder routing of work is key to the collective functionality of these value streams and related business objectives creates a red flag that planning teams should address. Individual business units typically lack visibility into the cross-value stream, cross-business unit impacts of ignoring routing perspectives, resulting in these fragmented approaches. The end result is that silo-oriented solutions prevent cross-business unit visibility into a coordinated solution, meaning the business objectives associated with parallel work streams are likely to remain problematic.

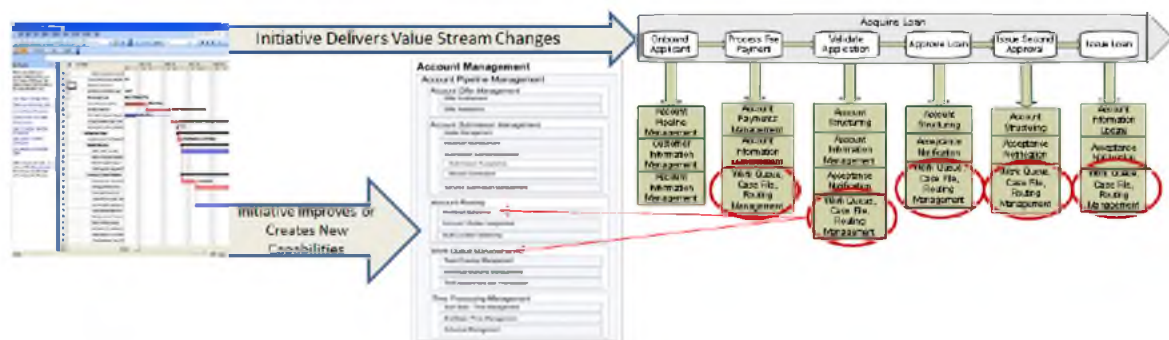


Figure 2.6.5: Mapping a Program to Value Streams and Capabilities

Identifying the capabilities associated with these value streams and initiatives rely on the value stream / capability cross-mappings as shown in figure 2.6.5. When this analysis is applied to each value stream listed in figure 2.6.4, it quickly becomes clear that certain capabilities, shared across those value streams. Anytime shared capabilities are undergoing modification across multiple initiatives it requires close analysis to assess the level of alignment, overlap, and other risks and planning considerations. When those capabilities are within the context of the same or related value streams and impact the same business objectives moving across those value streams, the importance of aligning these initiatives grows in significance.

Once last point involving figure 2.6.5 involves pinpointing capabilities through the lens of the value stream. As a rule, value stream analysis is required for any degree of in-depth initiative analysis. The benefit of leveraging value streams early in the analysis cycle is that the impact on shared capabilities becomes much clearer. Therefore, the mappings in figures 2.6.4 and 2.6.5 are

best applied iteratively as required to build the level of cross-initiative impact analysis required to provide the best insights into planning teams.

Initiative Mapping to Business Capabilities

We have already shown two initiative mapping views that incorporate capabilities into the analysis. This section provides a more in-depth discussion of capability-to-initiative mapping and its uses. While initiatives may be undertaken to pursue any number of objectives, many initiatives are intended to expand an organization's available portfolio of behaviors. These expansions can be seen as investments in either new capabilities or changes to existing capabilities. This expansion is typically intended to support efforts to expand into new markets, deliver new products, or any number of behaviors that allow an organization to develop differentiated offerings. Figure 2.6.6 illustrates a simple capability hierarchy for an automobile rental organization.

In order to provide a means for organizations to rationalize the investment choices represented by these capabilities, it is essential that organizations identify the capabilities being impacted by each initiative. In the simplest case, the mapping of initiatives to capabilities makes it possible for an organization to rapidly identify the set of capabilities that the existing portfolio of initiatives is impacting.

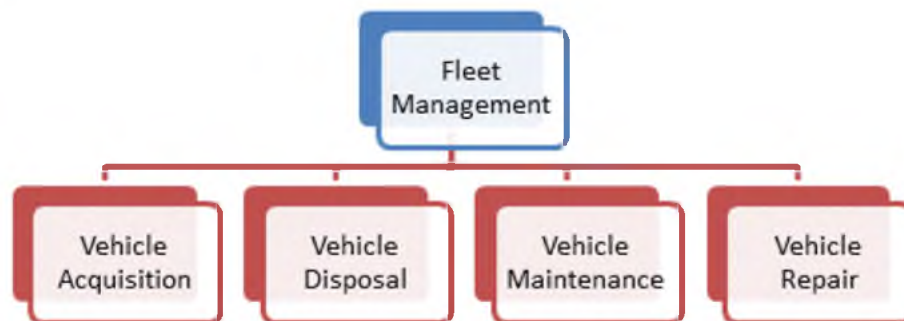


Figure 2.6.6: Auto Rental Capabilities

When mapping capabilities to initiatives, it is essential to do so at the right level of granularity. Organizations should strive to identify capabilities at a level that is granular enough that they can be delivered completely within a single initiative. More complex capabilities should be linked to these more granular capabilities within the capability map to capture the dependencies between them. Figure 2.6.7 illustrates how the Total Cost initiative is intended to impact only the Vehicle Acquisition and Vehicle Disposal capabilities. While all of Fleet Management, including Vehicle Maintenance and Vehicle Repair, might have been equally relevant to addressing total cost, in this case these capabilities are not in the scope of this initiative.

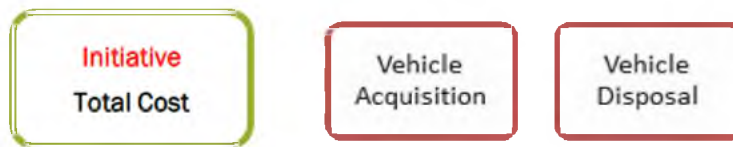


Figure 2.6.7: Initiative to Capability Mapping

When initiatives are linked to capabilities, organizations gain a view of how investment in these capabilities is being driven across the organization’s portfolio of initiatives. Linking initiatives to capabilities enables organizations to quickly cross reference whether or not the capabilities targeted as part of their strategic mapping effort align with the capabilities that are being targeted by the initiatives being undertaken. This is shown conceptually in figure 2.6.8.

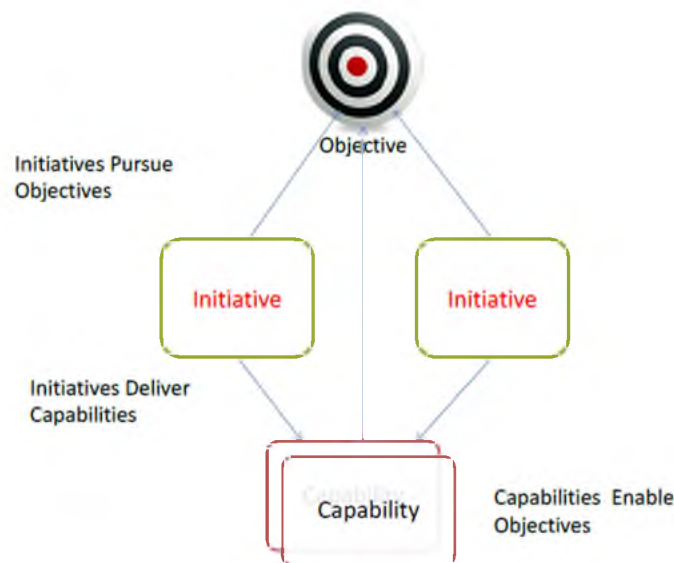


Figure 2.6.8: Relationship of Initiatives to Objectives and Capabilities

When this knowledge is combined with the linking of strategic programs to the initiatives that support them, it enables organizations to more readily understand the way in which the entire portfolio of initiatives contributes to strategic objectives. Using simple visualizations, such as those shown in figure 2.6.8, provides a powerful mechanism for rapidly understanding and assessing the implicit investment structure that exists within an organization’s portfolio of initiatives.

Using Business Architecture for Initiative Planning and Roadmap Definition

As the aggregated analysis discussed in prior sections matures, individual portfolio managers will want to provide more granular analysis to program and project planning. Figure 2.6.9 represents the analysis that often goes into determining this cross-mapping. This strategy discussion

document provides a way in which planning teams and management can discuss and envision the overall impacts of a given initiative and relation to business challenges, strategy, objectives, action to be taken, KPIs, and business architecture.

Strategy:					
Achieve complete transparency of a Loan for all Internal and external stakeholders					
Business Objective	Business Challenge	Business Architecture Impact	Action to be Taken	Key Performance Indicators	Initiative
Ensure that stakeholders are notified of all loan activity	Loan defaults processed without knowledge of loan officer refinancing the loan	Value Streams: - Manage Loan Change Request - Process Loan Default Capabilities: - Case File Management - Routing - Work Queue Management - Notification	Resolve loan information redundancy Formalize state management Correct capability weaknesses Deploy capabilities consistently across value stream stages	Reduce unintentional loan defaults to zero	Loan Handling Modernization

Figure 2.6.9: Linking Objectives, Challenges, Business Impacts, Actions, and Initiatives

Based on the analysis completed and shown in figure 2.6.9, mapping teams and portfolio management can articulate the where specific projects or project phases impact value stream stages and capabilities. Figure 2.6.10 shows how an initiative can be phased into multiple projects or releases, based on an organization's in-house approach to program planning.

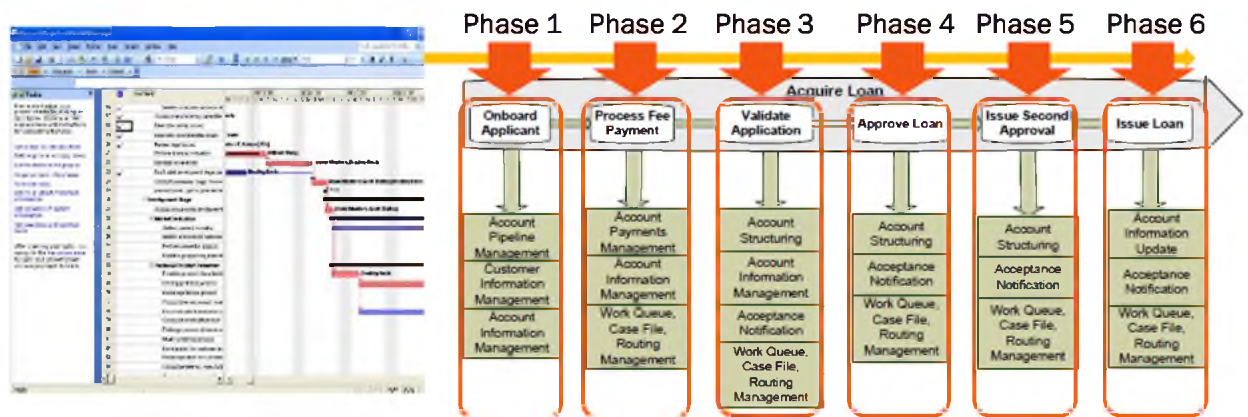


Figure 2.6.10: Framing Initiative Decomposition, Phasing Using Value Streams

The phasing of a program into subparts can become fairly specific. For example, a project phase may focus on a given value stream stage, a subset of capabilities enabling that stage, and a subset of stakeholders participating within that stage. The key element is to ensure that there is an effective and consistent framing of the work to be performed, with the value stream as the primary focal point, and that other initiatives have aligned, consistent, and non-conflicting frames of reference. This way, multiple initiatives have a fully transparent perspective of the scope of

work for each phase of their effort as well as transparency of the work being performed by related or adjacent initiatives.

Initiative Mapping in Portfolio Management Context

Based on the general initiative mapping approaches outline to this point, the following discussions apply some of these approaches in context of modern portfolio theory, strategic portfolio analysis, and governance of in-flight initiatives.

Overview of Classic Modern Portfolio Theory

Modern portfolio analysis approaches are modeled on Modern Portfolio Theory from the securities domain.¹ In the Modern Portfolio Theory approach, the overall risk of the portfolio is reduced by balancing the selection of securities so that a portfolio can achieve the least risk for any targeted return. Figure 2.6.11 shows this return / risk rating for portfolios.

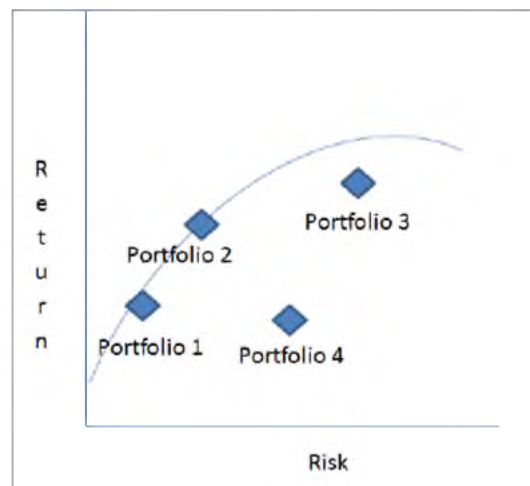


Figure 2.6.11: Classic Modern Portfolio Theory

While the idea of achieving the highest value, or return for an organization, certainly applies to initiatives in general, composing a portfolio of initiatives is considerably more complex because of two factors: the lack of a single measure to evaluate value against, and the complex dependency structure that exists among initiatives. However, the concepts in figure 2.6.11 remain relevant. The following sections expand upon this analysis in context of portfolio management.

Using Initiative Mapping for Strategic Portfolio Analysis

The integral nature of initiative mapping means that organizations need to broadly integrate this work into their existing planning processes. Initiative mapping is an integral part of how an

organization goes about planning where they will invest over some time horizon, typically somewhere between six months and three years. Since initiative mapping is closely aligned with strategy planning, strategy mapping techniques are relevant to this discussion. For details see section 2.1, Strategy Mapping. As part of the strategic planning process, planning teams identify and prioritize enterprise objectives. This initial set of objectives provides a reference point for the analysis of the items that will be impacted in order to deliver the objectives. These impacted items can be operational, such as processes, or they may require that new capabilities be established or existing capabilities be enhanced.

Once strategic objectives have been established, the next step is for organizations to develop a set of potential initiatives that could deliver on the objectives. Each of these initiatives should be linked to the objectives that they are intended to support. This linking of candidate initiatives to objectives will typically require the development of more detailed objectives in order to allow the objectives to be at a level where they can be completely achieved within the initiative.

The candidate set of initiatives will need to be evaluated further to develop a candidate portfolio to pursue. This evaluation should begin with a determination of whether or not the initiatives have adequately addressed the scope of impact. To do this, organizations should examine the impact to end-to-end value streams for these initiatives. For example, a product line extension might be a viable way of increasing value in a management related value stream. However, this same product line extension might change the servicing needs of clients and because of this also impact a customer-facing value stream.

		Initiative 1	Initiative 2	Initiative 3	Initiative 4
Objective 1					
	Sub-Objective 1a	X	X	X	
	Sub-Objective 1a			X	
Objective 2					
	Sub-Objective 2a				X
	Sub-Objective 2b	X			X
	Sub-Objective 2c		X		X
Objective 3					
	Sub-Objective 3a	X	X		
	Sub-Objective 3b				

Figure 2.6.12: Visualizing Initiative Relationships

Once the initial set of initiatives has been defined, the next stage of portfolio analysis involves selecting from among the various proposed initiatives. This selection process is complex because an organization must consider a variety of factors such as: alignment with objectives, value

delivered, organizational constraints, and dependencies among initiatives. By making use of the initiative map, organizations can create various visualizations of the relationship between initiatives and these various factors. These visualizations frequently take the form of simple relationship matrices which provide a rapid way of understanding relationships such as which initiatives support which objectives.

These kinds of simple relationship mappings often provide a valuable way of identifying gaps and redundancies across the candidate set of initiatives. This technique offers an initial way of validating the candidate initiatives for a variety of factors including: coverage of objectives, hot-spots for impacts, and dependencies upon new or enhanced capabilities.

This kind of simple relationship visualization can provide basic analytics, but it is not sufficient for understanding some of the more complex tradeoffs inherent in the portfolio composition process. In order to provide support for understanding these more complex relationships, a combination of visualizations and weightings should be developed. For example, multiple initiatives may support the same objective, but the relative contribution to that objective may differ greatly among the initiatives.

When these types of relationships are being explored, an organization may want to consider developing basic scoring criteria for the strength of the relationship (e.g., No relationship, Low contribution, Medium contribution, High contribution). This categorization approach allows for relative contribution for candidate initiatives to be evaluated across various factors.

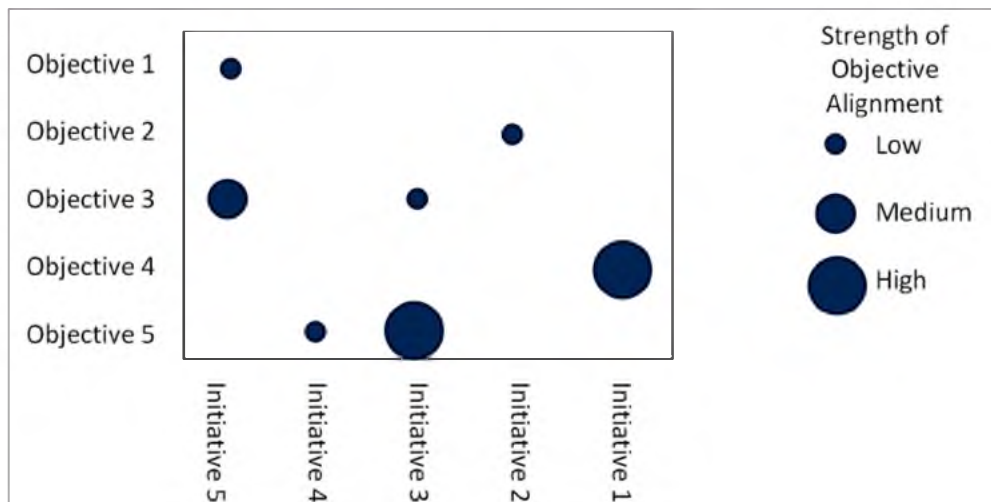


Figure 2.6.13: Relative Contribution Visualization for Initiatives

While relative contribution visualizations can help organizations find the correct balance of initiatives to include in their portfolio, the dependency among initiatives must be dealt with in a different manner. Many initiatives cannot deliver their entire value through a single cohesive

effort or what we typically think of as a project. The reason for this is overlapping demands for capabilities as well as the existence of dependencies to the work involved in delivering those capabilities. Dependencies exist in portfolios whenever one initiative impacts another. This can happen for a variety of reasons including:

- **Resource limitations** – Many resources, especially highly-skilled labor, are not easily expanded. This limitation means that organizations will be faced with decisions about how to best use these limited resources and this limitation will make it impossible for initiatives which required the same limited resources to be undertaken simultaneously.
- **Competition among objectives** - Competition among objectives happens when initiatives make choices about how to pursue their associated objectives that will impact capabilities in opposing manners. The simplest example of this is when an initiative is undertaken to provide more flexibility within a capability to support a decrease in time-to-market. If another initiative is simultaneously undertaken to decrease the variation within the capability, the two initiatives may conflict with each other even though both support enterprise level objectives.
- **Competing needs for assets** – Similar to resource limitations, competing needs for assets constrains an organization's ability to undertake multiple initiatives simultaneously when they require the same resources at the same point in time. Common examples of this are production line and research lab scheduling limitations.
- **Causally staged delivery** – Requirement for an input that is an output of another initiative

Initiative cross-dependencies limit an organization's ability to simply select the set of initiatives with the highest value. All of these issues involve time-dependent decisions, so any way of addressing this must address the time aspect. Road-mapping is an approach which integrates initiatives and their key deliverables with a time-scale that reflects these dependencies. Road-mapping is often used in conjunction with capability mapping and initiative mapping to help organizations create a timeline for the availability of new or enhanced capabilities.

Determining the timeline for delivering capabilities involves a range of trade-offs. For example, it is almost always more efficient to alter an existing capability once rather than repeatedly creating initiatives to modify the same capability. The first step in laying capabilities out on a timeline is to determine the set of capabilities that could potentially be impacted by all the candidate initiatives. This process of mapping initiatives to capabilities is typically performed using heat-map analysis. Heat-map analysis involves first identifying the set of capabilities upon

which each candidate initiative will have an impact. This initial linking of capabilities and initiatives provides a rough-cut of where organizations should focus their efforts.

Using weighting schema based upon the number of initiatives impacting a capability and the amount of impact, a visualization can be created that color-codes which capabilities are most critical to the achievement of the various sets of initiatives. From this initial mapping of capabilities to candidate initiatives, it is possible for organizations to identify capabilities where there are high levels of demand for changes to particular capabilities. These are areas where the need for coordination among different initiatives is imperative.

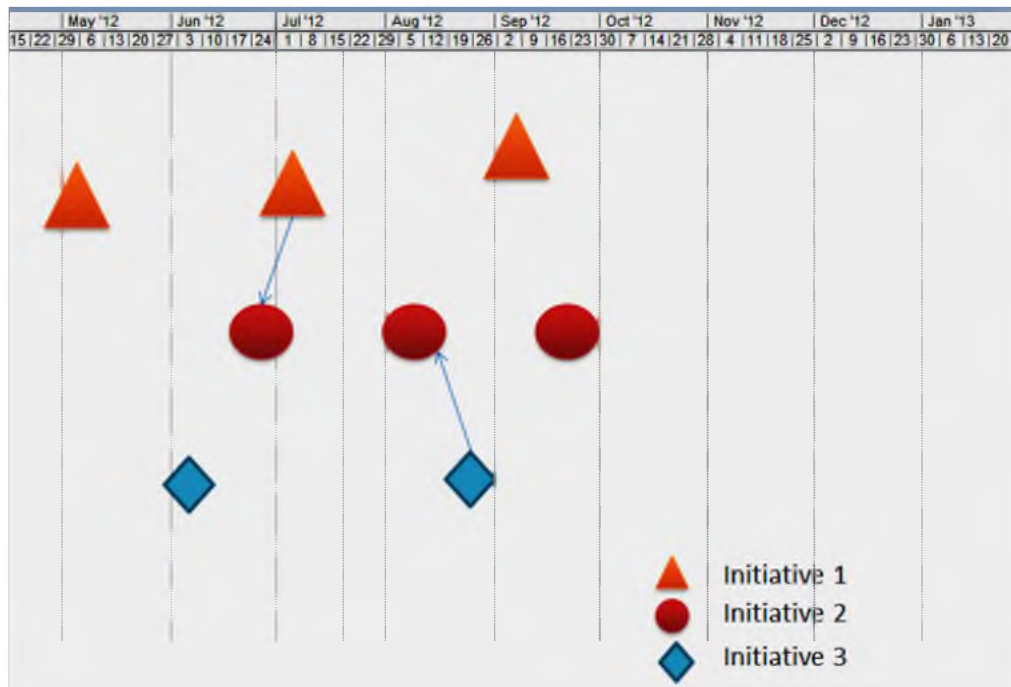


Figure 2.6.14: Capability Road-Mapping

Road-mapping begins with the set of capabilities that were identified as having high demand. Initial target dates for each capability are used as a starting point to allow the capabilities to be populated along the timeline. Figure 2.6.14 depicts an example of this road mapping approach. The dependencies between higher and lower-level capabilities that were captured in the capability map are then layered onto the timeline linking the capabilities using arrows in the direction of the dependency. In addition, the capabilities are coded to indicate which initiatives they are part of to provide an understanding of the interdependencies.

Using Initiative Maps to Govern In-flight Initiatives

Top-down portfolio review is only one piece of an organization's processes for managing its portfolio. While the techniques discussed can assist an organization in their portfolio review process, periodic reevaluation of an organization's portfolio remains a time-consuming and expensive proposition. Even more problematic are long-running initiatives which cannot be reevaluated the same way as new initiatives might be. These realities mean that organizations must find ways to allow their initiative mapping work to be applied on a more dynamic basis.

One approach to this dynamic reevaluation of in-flight initiatives is to apply the initiative mapping work at regular intervals in the lifecycle of these initiatives. One such opportunity is linking this evaluation to the organization's initiative gating process. When in-flight initiatives are evaluated using this approach, each evaluation includes a reexamination of the existing objectives and impacts for the initiative based upon the current state of the enterprise initiative map. This approach means that the accountability for each initiative will not be static during the initiative lifetime.

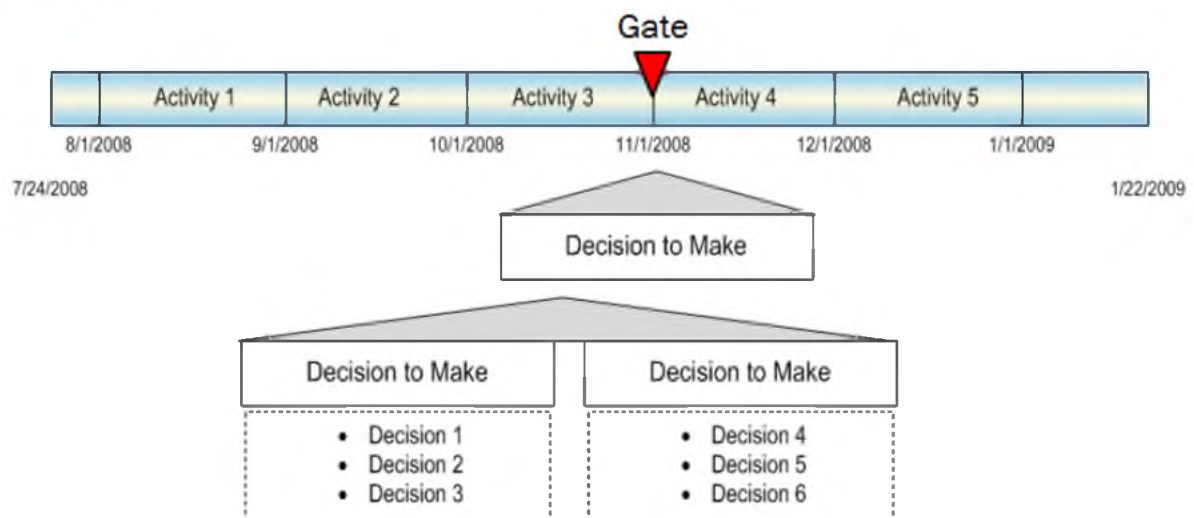


Figure 2.6.15: Linking Initiative Maps to Gated Processes

By forcing in-flight initiatives to reexamine their relationship to the initiative map at regular intervals, organizations can gain early insight to strategic drifts and choose to realign initiatives or reallocate resources from in-flight initiatives on a much earlier timeline than they typically can. Organizations implement this approach by standardizing the set of decisions (reevaluations of alignment and dependencies) that need to be remade at periodic intervals. Figure 2.6.15 provides an example of a stage gate link to program or project phases tied to such a decision structure. This approach provides a set of shared expectations for all initiatives. Each initiative is then expected to assess whether changes to enterprise objectives or constraints have an impact on

that particular initiative and propose if these changes should be addressed as part of the in-flight initiative or be deferred to another initiative.

Defining Initiative within the Business Architecture Knowledgebase

The initiative map is a powerful tool that allows organizations to leverage their business architecture to make decisions about how the organization will initiate changes to achieve its objectives. The initiative map supports a variety of visualizations that allow executives to examine the intricate relationships among initiatives as captured by the relationships of dependent objectives, impacted value streams and capabilities, and sponsoring business units.

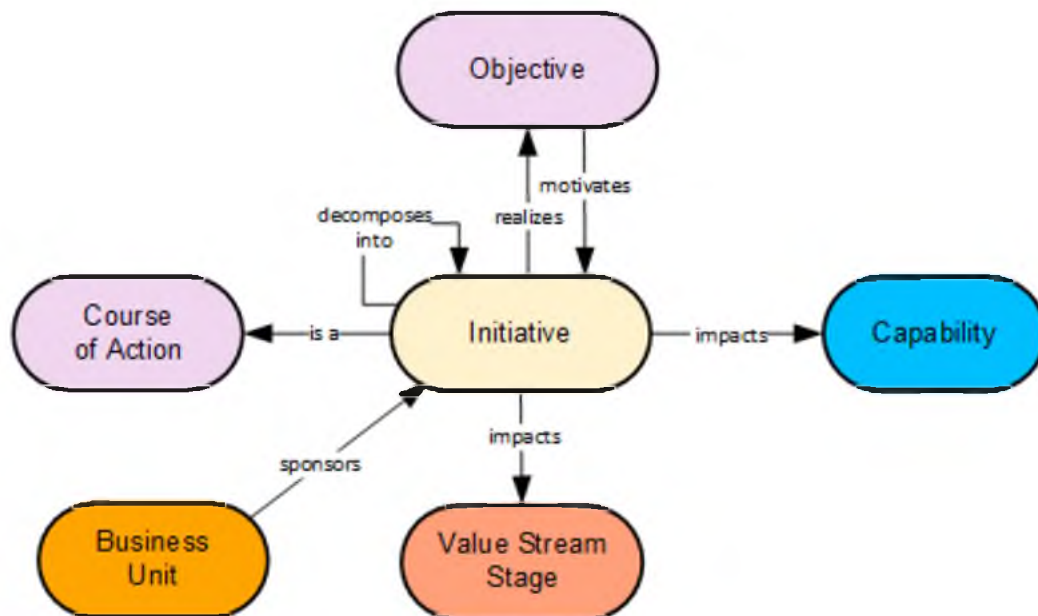


Figure 2.6.16: Initiative Relationships to Related Business Architecture Domains

Below is a summary of the relationships shown in figure 2.6.16.

1. Initiative decomposes into initiative, where for example, based on the methodology being followed, programs may decompose into projects, projects may decompose into phases, and phases may decompose into sprints.
2. Initiative is a course of action, where more granular courses of action may be aggregated into a higher-level course of action represented by an initiative, or a high-level course of action decomposes into multiple initiatives, each of which represents more granular courses of action.
3. Initiative realizes and is motivated by objective, where objectives have dependencies on other objectives or may decompose into more granular objectives.
4. Initiative impacts value stream stage, targeting new or existing value items; this

relationship enables planning teams to target stakeholders participating in that stage and capabilities enabling that stage.

5. Initiative impacts capability, targeting improvements to existing capabilities and corresponding instances and behaviors, or establishing new capabilities where gaps exist; these capabilities would enable the value stream stages impacted by the initiative.
6. Business unit sponsors an initiative, where sponsorship and funding may come from one or more business units.

Summary

Initiative mapping provides an approach that allows organizations to gain visibility into their portfolio of initiatives. This visibility includes both alignment to top-down elements such as objectives and value. Using these relationships, organizations can more readily evaluate which initiatives to select in order to provide the maximum alignment and value from their investment in initiatives. In addition, initiative mapping provides a powerful tool to allow organizations to more rapidly evaluate the ongoing alignment of initiatives that are already in-flight. This support for dynamic evaluation of in-flight initiatives makes it possible for organizations to more readily adapt to changing organizational objectives.

¹ Harry Markowitz. "Portfolio Selection", *The Journal of Finance* 7 (1) (March 1952): 77–91, [doi:10.2307/2975974](https://doi.org/10.2307/2975974).

SECTION 2.7: PRODUCT MAPPING

Section 2.7 provides background on and guidance for incorporating products and services into business architecture. Products and services are the way in which businesses create value and build revenue. They play an important part in business activities that include strategy setting, initiative definition, and operational investments. As a result, Part 1 of the *BIZBOK® Guide* identifies products as important concepts within business architecture.

Product mapping relies on a slightly different philosophy than core mapping approaches which include, for example, capability and value mapping. Products, like initiatives and strategies, are more volatile concepts for many businesses because products are dynamic and need to be fine-tuned, modified, or discontinued on an ongoing basis, in order to stay in sync with rapidly changing markets.

In addition, products rely on their relationships to other business architecture domains, which include value stream, capability, and organization, to provide a more complete picture of their role within an organization. Further, products themselves provide a means of delivering certain capabilities to external stakeholders, especially to customers. As a result, product mapping relies heavily on cross-mapping to other aspects of business architecture. Examples of these cross-mappings are incorporated into this section.

As with other blueprinting sections within the *BIZBOK® Guide*, this section presents definitions, benefits, mapping concepts, principles, guidelines, and mapping examples for product mapping but does not constrain mapping teams to a prescriptive approach.

Defining the Product Concept

Executives may use product mapping concepts to increase visibility across a business from a product performance, investment, and synchronization perspective. For example, an organization could chart the cost and profitability of a product over its lifecycle, see where multiple business units are investing from an aggregate portfolio perspective, and tie these investments to a more formalized view of customer value delivery. Other uses of product mapping include assessing product overlap across product lines or business units, aligning products to a given strategy, and determining product investment and resource requirements based on product capability dependencies.

Baseline Product Concepts

Discussing product mapping requires a clear definition of the term “product”. The term product broadly encompasses what is commonly called “products and services”. Since “service” has

multiple meanings in common use, it is wise to reduce confusion by simply not using "service" when the intention is to describe an "intangible product". Thus, "product", as defined by Forrester Research, is defined as:

"A good, idea, method, information, object, or service that meets a need or satisfies a want".¹

The above definition incorporates the concept of service into the definition of product. The inclusion of the service concept within product is further addressed below, but first consider the definition of a service. A "service" is defined as:

"An intangible product such as accounting, banking, cleaning, consultancy, education, insurance, expertise, medical treatment, or transportation".

Any generalized product definition must recognize that individual organizations will have unique internal views of a product, but a foundational definition in business architecture is essential to the discipline of product mapping. Product, therefore, requires a foundational definition and more importantly a boundary that constrains its use to something that targets the end-state customer. The industry standard definition of product used in the BIZBOK® Guide is from "A Guide to the Product Management and Marketing Body of Knowledge®" (ProdBOK® Guide), which reads as follows:

"The word 'product' is commonly used to describe durable or tangible goods. However, more correctly, products can be goods or services, and are distinguished by tangibility: goods are tangible and services are intangible. From the customer's perspective, the product is the overall experience provided by the combination of goods and services to satisfy the customer's needs".²

Customer, from a business architecture perspective, is always the external buyer or recipient of goods and services, and is never used to refer to an internal stakeholder. Taking the customer's point of view is important because business architecture strives to view the business from many different perspectives, which includes that of the customer. This is true in value stream mapping, for example, where value is viewed from the point of the internal or external stakeholder that receives and accrues value.

The BIZBOK® Guide, therefore, uses the term "product" to mean "the overall experience provided by the combination of goods and services to satisfy the customer's needs", as taken from the ProdBOK® Guide. Product will be inclusive of products *and* services within the context of this section and as well as other BIZBOK® Guide discussions. If the term "service" or another term is an internally used preference, then that term should be substituted for the term "product" throughout the discussion in this section.

Additional Product Concepts

When a customer, including clients, consumers, constituents, and other recipients of goods and services, acquires a product, that product often comes with entitlements. Product entitlements manifest themselves in the form of warranties, commitments to service, continuing delivery of goods, and other rights owed to the customer, which have been identified as part of the product and formalized under the agreement terms. A product entitlement is defined as:

A specified aspect of a product that represents an inherent commitment made by an organization to a customer that is realized as an immediate, on demand, or continuing obligation of the organization to the customer that acquired that product.

Most products have entitlements. For example, when a customer acquires a refrigerator, the product may include installation services, warranties, or even monitoring services via Internet connections. Similarly, a customer acquiring an insurance policy would be entitled to make a claim and be restituted for a loss. Occasionally an entitlement will even require replacement of the original goods purchased as part of that product.

Product entitlements provide insights into a product's reliance on certain capabilities. In the above examples, a commitment to provide installation services, honor warranties, compensate for a loss, or replace a product is highly reliant on having certain capabilities in place and working effectively at the organization offering those products. In the insurance example, the insurance provider cannot make good on a claim if certain Claim Management capabilities are not working effectively. Section 2.7 highlights the role of product entitlement later in this section — under the capability enablement discussion.

Another concept covered as an aspect of product mapping is that of “product line”. The product line concept is used to group a family of products together in a meaningful way. A product line may be based on common traits, such as life insurance or healthcare insurance, or be based on a targeted buyer, such as the consumer product line or commercial product line. A product line is defined as:

“A series of different products which form a group”.

Companies are increasingly selling products that they do not create themselves. This is commonly found, for example, in an insurance company that markets healthcare insurance products that are created and serviced by a third-party company that specializes in healthcare insurance. This is also true of many other industries where the customer may or may not know that the product they have acquired or licensed is from a third-party company.

Therefore, any reference to product or product line may refer to one or more products that are created by a given organization or a partner of that organization. The common thread that binds these concepts is the focus on a “combination of goods and services to satisfy the customer's

needs”.

Benefits of Product Mapping

Incorporating product concepts into business architecture has a number of benefits to a business, particularly if the business is product-centric. These benefits are as follows:

- **Offers visibility into the overall product ecosystem.** Large organizations, particularly ones that have evolved as a result of acquisitions or mergers, can have hundreds or thousands of products. There may be a lack of clarity in terms of how well these products are being supported, delivered, or even aligned organizationally. Companies have even aligned products with the wrong product lines, discontinued products that are delivering customer value, or not realized they have multiple products that are essentially identical. Formalizing product mapping provides a way of structuring the relationships of products to each other and to the investments, strategies, and value delivery views of the business.
- **Enables executives to target specific products or product lines in response to a given set of business strategies.** Consider a situation where a company has a strategy to expand into the Asian marketplace but its current product lines are not an ideal fit for the targeted market. If one or more new or enhanced products are to be established for the new targeted market, an analysis of similar products, strategies, investments, value streams, capabilities, and other aspects of the business provides a foundation for determining what would be required to roll out the offering for this new market. The decision may be to not deploy to that market based on the investment or related risks.
- **Provides a focal point to make product investment decisions and funding allocation in conjunction with a given business strategy.** For example, a strategy to expand into the women’s clothing market would require the creation of a new product line. An existing set of value streams and capabilities could very likely be leveraged to establish and deliver this new product line. However, certain capabilities may be lacking and require investment prior to establishing or delivering that new product line. Executives can then identify costs by value stream, capability, and resources needed to support those capabilities.
- **Offers a point of focus for determining how to improve product dissemination and performance.** Product dissemination relies on value streams to move through various sales and service cycles. Weak product performance can be pinpointed at a given stage or sub-stage of the product management lifecycle and its value stream, and could then be tied back to issues with the product or products that the value stream supports. Targeted efforts to resolve weak product performance through capability and value stream improvements can then be pursued from a focused perspective. These efforts may ultimately provide additional value to other products relying on those value streams and

capabilities.

- **Provides a basis for streamlining product design, creation, and packaging.** Internal value streams such as Develop Product provide the end-to-end view of how an internal stakeholder, a marketing executive for example, would trigger a request for a new product. Such a value stream would embody the entire product conceptualization, design, build, and packaging stages of a product. A Develop Product value stream and enabling capabilities, which is required to establish new products, could be evaluated for performance, cost effectiveness, and other areas where improvement may be warranted. Once a product is packaged, it would await a customer-triggered value stream to move through a sales/delivery cycle.
- **Provides an additional viewpoint for aligning value-specific context to certain views of the business architecture.** For example, an executive may want to determine how a given value stream is functioning for one or more product lines. Or a certain capability may be supporting one product line effectively but be working poorly in the context of another product line – requiring further investigation and investment. There may be a degree of reusability across product lines in these situations which could result in dramatic improvements in product delivery and service for less money and in less time than originally anticipated.
- **Offers visibility into how initiatives positively affect related products or product lines.** In organizations with multiple products and product lines, situations may arise where one or more projects may not recognize interdependencies across products and product lines. As a result, management may miss opportunities for one product line to capitalize on work done on a related product line. Consider aviation achievements over the past two decades that have resulted in lighter planes and quieter, more efficient engines. These advancements have not only been applied to new product lines but have been retrofitted into older, more established product lines.
- **Offers visibility into how initiatives negatively affect related products or product lines.** This case offers a counter scenario to the positive effects of multi-product line cross-impacts. There are situations where investments are being made in multiple new products where parallel customer offerings may be negatively impacted. The stand-alone strategy being driven out of one business may be a good strategy but may be wrong for that business unit. If, however, the resulting product results in cannibalizing related offerings for the company as a whole, the collective result is that an investment in one product resulted in harming another product. Mapping business unit, strategies, and initiative impacts to multiple products and product lines provides visibility into these challenges.

One could argue that the above benefits are just a matter of effective product management in

an organization. This is true; however, business architecture provides a framework for formalizing product management along with planning visibility. For example, providing visibility into multiple, complex products and product lines, along with capability dependencies, across a multi-divisional, international business enables effective product management. The degree of visibility offered by business architecture also offers a perspective into value, initiative, and strategy mapping that a product management executive may lack and a perspective to product management that may not exist elsewhere in the organization.

Basic Product Mapping Concepts

Formalizing product relationship structures within the business architecture represents an extension of business architecture beyond what is described in the Part 1 Introduction as the core or foundational aspects of business architecture (see figure 1.1). Product is included as a business architecture domain category as a means of establishing clear dependencies between the concept of a product, which embodies the goods and services ultimately desired by and delivered to the customer, and the various aspects of the business that enable the effective design, creation, and delivery of those goods and services to the customer. The basic concept of product is shown below.

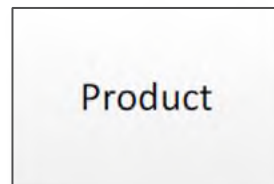


Figure 2.7.1: Basic Product Concept

The product concept in figure 2.7.1 seems simple — it is the starting point. An example of a product could be a Whole Life product for an insurance company. A second product example might be a Term Life product. As discussed earlier in this section, a second related product concept is that of the product line. Establishing a product for mapping purposes requires assigning a non-redundant product name along with a product description as a basic element required in defining a product to the product map. The product line concept, which enables a business to group related products, is shown in figure 2.7.2.

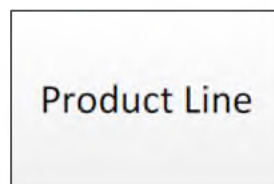


Figure 2.7.2: Basic Product Line Concept

Product line represents a series of different products which form a logical group. Each product line, assuming the concept is used, requires a product line name and accompanying description. An example for an insurance company could be the Life and Disability product line. Figure 2.7.3 illustrates how these two concepts are combined to highlight how product and product line relate to each other in practice.

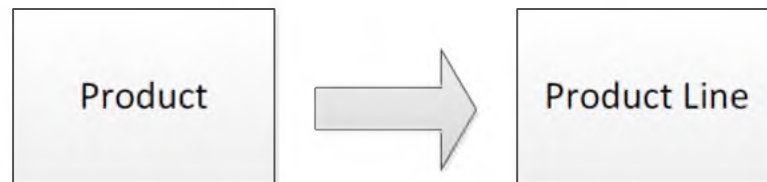


Figure 2.7.3: Product to Product Line Mapping

An example of product being a part of product line uses the Whole Life and Term Life products from the prior example — where these products are part of the Life and Disability product line. Figure 2.7.4 introduces another product mapping concept: the product-to-product relationship.

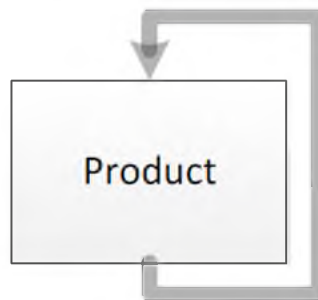


Figure 2.7.4: Product-to-Product Mapping

Product-to-product mapping is used to highlight specific relationships between one product and another product. For example, a website platform from a software company may have a number of individual “plug-in” products that only work with that platform. Each of these plug-ins would be related to the platform product using the relationship shown in figure 2.7.4. A second example of this relationship involves product bundling. If the website platform is sold as a “deluxe” product offering, where all of the plug-in products are bundled with that platform into its own product, mapping teams can create a relationship between the deluxe product offering and each of its plug-ins.

There is a good deal of flexibility in product mapping for organizations, however, this means that clarity of product versus product line must be established prior to defining and mapping products into the business architecture. Care must also be taken not to be overly complex in product line definition. Product volatility, driven by constantly changing market dynamics, requires close

monitoring of the information stored within the business architecture.

It is extremely important to not overextend the concept of product mapping within business architecture. For example, if a company stores product information elsewhere, including profitability and cost analysis data, the business architecture should be cross-referenced to that information to ensure the currency and accuracy of the products and product lines being tracked and mapped within the business architecture. Business architecture is not meant to supersede product design or tracking tools, bill of material technologies, or other in-house or third-party application software designed specifically for product management. This is not the purpose of incorporating product into the business architecture. Rather, product is incorporated into business architecture as a way of providing visibility into product performance and product planning by associating product with other aspects of business architecture. This information would not be available in traditional product management tools.

Finally, product mapping within business architecture requires a degree of maturity and commitment to business architecture that does not exist in many organizations. Product mapping relies on a robust foundation of value streams, capabilities, business unit, and other foundational business architecture perspectives as shown in the *BIZBOK® Guide* part 1, figure 1.1.

Principles of Product Mapping

Product mapping principles guide the definition, articulation, associations, and use of the product domain. Product mapping can take many forms based on what the mapping team is attempting to convey and the creative approaches being applied. While there is a great deal of latitude in the approach, message, and resulting views, a basic set of principles provides a descriptive guide to product mapping.

1. **A product represents the combination of goods and services to satisfy the customer's needs.** When a prospective customer views what is to be gained from a money exchange in terms of product from the organization, the customer has an expectation that a product does or does not come with certain services. Some services, such as extended care, may be optional and this is certainly one aspect of product definition, but the customer viewpoint is important to keep in mind.
2. **A product may be created and managed internally or by a business partner.** To fully represent a business's products within the business architecture, again with a focus on what is being offered to the customer base, requires that third-party products be incorporated into the business architecture mapping. This refers to fully developed products. It would not include concepts such as parts and components acquired from a third party. Where value-added services are incorporated into a product offering, the

mapping team will have to make the call as to whether this is a fully developed view of a product or not.

3. **Product mapping relies on a clearly delineated, well-defined concept of product.** The product is the minimal concept required for incorporating product mapping into the business architecture. An organization may choose an alternative name, such as a “service”, given that concept is clearly defined and consistently applied across the business architecture mapping effort.
4. **Product mapping may be expanded through the use of a product grouping concept.** If assembling products into groups is a mapping requirement, then the concept of product line or an equivalent may be introduced into the business architecture to represent a group of related products. Care must be taken to clearly and consistently apply the concept of product line across the entire business architecture, or mapping integrity issues will arise.
5. **Product is a volatile aspect of the business architecture.** This principle may be interpreted as recognizing the fact that products come and go, especially in large organizations. As a volatile aspect of business architecture, care must be taken to not overload the business architecture with information that is best managed in alternative sources, such as a product management system. In addition, ongoing governance of product information within the business architecture is essential to avoid letting the information go out of date.
6. **Products are unique, non-redundant concepts within the context of business architecture.** Products loaded into the business architecture should be unique, singular representations of products offered by the business. This is also true of product lines or other concepts derived from product. As a result, there should be no duplication of a product in the business architecture.
7. **Product mapping is constrained by a customer focus.** A good and/or service that is not now and not intended to be offered to an external party is not considered a product. For example, a byproduct of a process or a manufactured part that is not offered for sale or exchange would not be considered a product. In addition, any output from a software development effort or agile exercise, unless specifically packaged and offered to a customer, where the customer is a third-party consumer or buyer, is not a product.
8. **Product may be in varying states.** A product may be in various states such as conception, planning, development, launch or retirement. In all cases, it remains a product that may be recognized within the business architecture.
9. **Products map to other views of the business where it further informs about that product.** While not constraining product mapping concepts, common product mappings

include product to business unit, value stream, strategy, initiative, and capability. These relationships and others expand the view and understanding of a product within a business.

10. **Products enable the packaging and delivery of capabilities to consumers of those products.** Products provide or augment certain abilities for the user/consumer of those products. In business architecture terms, these are capabilities that are delivered with a product, and this should be reflected in product mapping as appropriate to a given business's goals.

How to Do Product Mapping

This section discusses general product mapping guidelines, mapping team structure, and sample concepts and approaches for creating basic and extended versions of the product map.

Organizing the Product Mapping Team

The practice discussion found in the *BIZBOK® Guide* section 3.2 discusses business architecture team organization. Product mapping leverages this same team concept, but the team would be augmented by product strategists, product managers, and other individuals who play a role in product definition, product creation, and product management. It is important to establish a mechanism for maintaining product-related information and to ensure that the business architecture does not attempt to replace any formal product management methodology or enabling software. The best-case scenario involves creating a governance structure that ensures that relevant product and product line additions or changes get reflected within the business architecture in a timely manner.

Product Mapping Guidelines

There are a number of variations on product mapping that mapping teams can pursue based on the relationships they wish to expose and information management is seeking. Mapping teams should consider the following general mapping guidelines.

1. **Determine the scope up front.** Following the theme that the scope of the business ecosystem is the scope of business architecture, the scope of product mapping should not be constrained artificially based on a given business unit or division. Product is a global concept for the business as a whole and the degree of cost analysis, redundancy analysis, and other performance analysis decreases in value when scope is artificially constrained.
2. **Leverage existing sources of product information.** Organizations have a wide range of product information that is typically not centralized. These sources should be centralized, or, at the very least, utilized as an ongoing source of product-related information to

ensure that there is one source of product knowledge. Business architecture merely seeks to capitalize on this information and provide a broader view on strategic impacts, value delivery, and other business factors.

3. **Use established product names that are readily recognized by the business.** Product management, brand management, product marketing, or similar input is required to ensure that the products being represented by the business architecture reflect the current product inventory for the business.
4. **Expand the map to include third-party product offerings.** In situations where one or more products, or critical product components, are actually provided by third-parties, as stated in prior examples, these third-party products should be represented accordingly within the product mapping. Third-party managed products are sold as intact products to the business's customers, but the product design and creation, at a minimum, is done by another company.
5. **Define and leverage product grouping or family concepts.** Where appropriate, establish a product line or similar concept that allows for the grouping of related products into a single line or family. Ensure that a product line is defined consistently and create additional grouping concepts as warranted.
6. **Add additional relationships to other concepts where appropriate to expand the information being viewed.** As previously discussed, additional relationships include mapping products to business unit, value stream stage, value proposition, initiative, strategy, or capability.
7. **Eliminate redundancies.** There will be a tendency to load up redundant views of products and product lines so it takes an extra effort to continuously streamline the inventory and eliminate those redundant product views. This exercise may surface a weakness in the business; some businesses may not have good control over their product management capabilities. This is an opportunity to formalize that practice.
8. **Limit attributes of product within the business architecture.** Certain information is best kept in a comprehensive product plan, product databases, and similar repositories. Plan to rely on traditional sources to manage product information and leverage those sources to refresh the business architecture product list accordingly.
9. **Validate the product mappings.** Management must validate the mapping, and it should reflect the organization as it is today. If executives request a view of the future state, the mapping team can embark on this effort with explicit guidance from executives empowered to make these decisions.
10. **Maintain the integrity of product mappings.** Given that products and product

categorizations evolve on a regular basis, mapping teams will want to ensure that these mappings are updated on a regular basis. This should include product categorization as well as product-to-capability relationships.

Basic Product Mapping Steps

The following steps apply to the basic levels of product mapping required to define and classify products.

1. Establish a clear definition of what a product (or related concept) will be within business architecture. This definition should be generally agreed upon business-wide.
2. Obtain various inventory lists or product sources, as may be identified in a product plan, where such an inventory could be attained.
3. Determine if there is a product line concept that is either singular or multi-dimensional in nature. This second scenario would involve, for example, an insurance product line called Personal Lines, which would have a variety of products, and a second product line category within this that would be called Property and Casualty, which could include Personal Lines and Commercial Lines products.
4. Establish a simple mapping such as the one shown in figure 2.7.5 for product-to-product line.
5. If a second product line category is involved, it would need to be called product family, domain, or some other name to delineate it from the original product line.
6. Where there are multiple products in the same category, two fire insurance products for example, apply the concept shown in figure 2.7.5 where product is similar to product.
7. Establish a sample mapping blueprint for management and review this as an approach.
8. Expand capability mapping by associating enabling capabilities that are required to fulfill the purpose of the product.
9. Establish product relationships to value delivery including where products are used across value stream stages and where these products may be associated with a given value proposition.
10. Refine this approach and related mappings based on blueprint delivery requirements.

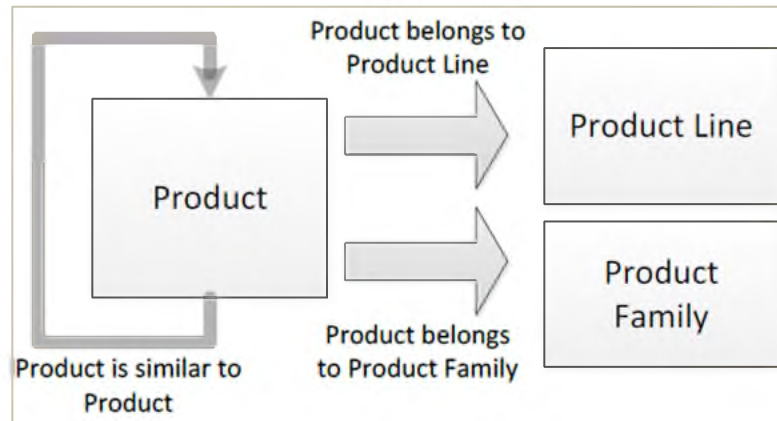


Figure 2.7.5: Product-to-Product, Product-to-Product Line, Product Family Mapping

Using the concept shown in figure 2.7.5, an organization may establish and maintain a multidimensional view of product-to-product line or product-to-product family. These relationships and resulting blueprint perspectives are called “product classification mapping” and a basic mapping approach that product-centric businesses naturally incorporate into their product management practice.

Figure 2.7.6 depicts a sample blueprint template for product classification. This template allows a business to represent various products on a multidimensional scale. In this case that means a given product may be shown to belong to a product family on one hand, and a product line on the other hand. Sample templates such as these may of course be modified as appropriate for a business. This is critical to remember as this is not a prescriptive template and merely one way of representing product classifications as business architecture blueprint.

PRODUCT LINE	Product Line #1	Product Line #2
PRODUCT FAMILY		
Product Family 1		
Product Family Type		
Product Family Type		
Product Family 2		
Product Family Type		
Product Family Type		
Product Family 3		
Product Family Type		
Product Family Type		

Figure 2.7.6: Product Classification Template

For an insurance company, this product classification concept could manifest itself in the product-to-product line and product-to-product family mapping blueprint as shown in figure 2.7.7. Note that a product is shown to be concurrently classified under a given product line and a given product family, enabling multidimensional product mapping for product management.

PRODUCT LINE	Personal	Commercial
PRODUCT FAMILY		
Property & Casualty		
Auto	Personal Auto	Commercial Auto
Fire	Residential Fire	Commercial Fire
Homeowners	Residential	Commercial Liability
Health		
Preferred Provider	Individual PPO	Group PPO
Health Maintenance	Individual HMO	Group Model PPO
Life		
Term Life	Individual Term Life	Group Term Life
Universal Life		Group Universal Life
Variable Life		Group Variable Life

Figure 2.7.7: Product Classification Example

While basic product mapping addresses product definition, inventory, and classification, there are a number of useful extended product mapping options that businesses can apply to provide further visibility into product planning, usage, and performance. The most relevant and useful examples center on product to capability mapping and product to business unit mapping as follows.

Product/Capability Enablement Mapping

Capabilities play a dual role in the life and value of a product. Initially, products rely on certain capabilities to enable product conceptualization, design, creation, and lifecycle management. In this context, a capability may enable both the goods and the services associated with a product. If a business lacks the capabilities to envision, create, package, deliver, or service a product, those capabilities must either be improved or secured through third parties. For example, capabilities, typically associated with some type of Develop Product value stream contribute to the ultimate delivery of and support for a product. Leveraging this type of product to capability relationship is a matter of effective capability and value definition and execution for relevant value streams and capabilities. This section previously highlighted this mapping concept as the *Product relies on Capability* mapping relationship.

The second capability to product relationship involves product enablement, a more fundamental practice to ensuring that the products that are delivered maximize stakeholder value through the effective delivery of product-related services. This mapping concept is shown in figure 2.7.8.

PRODUCTS	Product A	Product B	Product C
ENABLING CAPABILITIES			
Capability			
Capability			
Capability			
Capability			

Figure 2.7.8: Product/Capability Enabling Template

Figure 2.7.8 simply shows that a given product (e.g., A, B, or C) has certain capabilities packaged into the product in a way that maximizes product value in the eye of the consumer that enhances usability of that product. This enabling concept is a different perspective on business architecture because it looks at product capabilities through the lens of the product as opposed to viewing capabilities through the lens of the value stream. This product-enabling perspective is important for businesses seeking to increase the level of sophistication associated with their product management practices. Consider the example in figure 2.7.9.

PRODUCTS	Financial Software Product	Manufacturing Software Product	Enterprise Software Product
ENABLING CAPABILITIES			
Payment Management	X		X
Financial Account Management	X		X
Financial Transaction Management	X		X
Monetary Amount Management	X		X
Tax Management	X		X
Agreement Management		X	X
Order Management		X	X
Customer Management	X		X
Asset Management		X	X
Product Management		X	X

Figure 2.7.9: Product/Capability Enabling Example

In the figure 2.7.9 example, a company offers three software products to customers (in this case the consuming stakeholder). The products are a Financial Management product, a Manufacturing product, and an Enterprise Solution product. These commercial off-the-shelf packages deliver certain capabilities to customers seeking to automate these capabilities. For example, if a business is a customer seeking to buy a Financial Management product, the first product listed in figure 2.7.9 would provide the business with payment, financial account, financial transaction, monetary amount, tax, and customer management capabilities. If that is all that is required, the organization may opt to lease this product. But if the organization is additionally seeking a product that delivers financial, agreement, order, asset, and product management capabilities, it would more likely seek the third product listed to the right, the Enterprise Solution product.

Now — flip the perspective from the buying or consuming customer back to an organization, where that company is the designer, creator, and provider of the products listed in figure 2.7.9. Assuming that organization has numerous products with overlapping capabilities, the sample matrix in figure 2.7.9 would be expanded to reflect the capabilities each product delivers, where capabilities overlap across products and product lines, and how well each product scores in terms of the capabilities it delivers to customers. In this latter scenario, heat-mapping capabilities across product lines would indicate which products are most effective at delivering these capabilities to consumers. Product management may even decide to create a hybrid product from the set of existing products.

Capability enablement of products crosses a wide swath of product categories across all industries. Figure 2.7.10 highlights a sampling of enabling capabilities for products as diverse as navigation applications, appliances, automobiles, credit cards, and insurance policies.

Product	Sample Enabling Capabilities
Navigation Product	Route Management, Map Management, Channel Management, Location Management
Freezer with Repair Warranty	Incident Determination, Customer/Location Matching, Human Resource/Location Matching, Asset/Location Matching, Human Resource/Competency Matching, Channel Management, Agreement Information Management, Agreement Access Management, Customer Profile Management
Car Repair Service	Agreement Management, Agreement/Vehicle Matching, Vehicle Access Management, Vehicle/Asset Matching, Asset/Partner Matching, Human Resource/Vehicle Matching, Human Resource/Competency Matching
Credit Card Offering	Agreement Access Management, Agreement/Financial Account Matching, Financial Transaction/Financial Account Matching, Channel Management
Insurance Policy	Claims Management, Agreement Access Management, Channel Management

Figure 2.7.10: Product/Entitlement Enabling Capability Example

As discussed previously in this section, product entitlements provide insights into mapping enabling capabilities to products. Product entitlement examples are not formally called out in figure 2.7.10 but would include route provisioning, warranty service repairs, credit and fraud

protection, and claim adjudication. In each case, the organization offering these products must ensure that the capabilities in place to enable those entitlements are comprehensive and effective to maintain customer satisfaction.

To summarize usage scenarios for capability enablement of products, consider two perspectives. If an organization is the owner or creator of the products in figure 2.7.10, it would use the capability cross-mapping to assess where enabling capabilities may be needed for improvement. If an organization is the buyer/consumer of the products listed in figure 2.7.10, that organization may use this cross-mapping blueprint to determine if the capabilities it needs are incorporated into the product.

Business Unit, Capability, Product Mapping

To expand upon the product mapping concepts discussed to this point, consider the use of the multidimensional Hoshin Kanri matrix as shown in the template in figure 2.7.11. Certain product lines group various products together. Each of those products are offered by one or more lines of business (i.e., business units). A business unit may include a third-party business partner, where the business offers products that originated with a business partner. In addition, each of these products deliver certain capabilities to customers. Figure 2.7.11 depicts a multidimensional mapping template.

Intersection of product lines & business units	X		X	Business Units	X		X	Intersection of products offered & business units
		X				X		
			X				X	
	X				X			
		X				X		
Intersection of product lines & enabling capabilities				Product Line Business Unit Product Capability				Intersection of products offered & enabling capabilities
			X				X	
		X				X		
		X				X		
		X				X		
Intersection of product lines & enabling capabilities	X			Capabilities	X			Intersection of products offered & enabling capabilities

Figure 2.7.11: Product, Business Unit, Capability Cross-Mapping Template

Business unit ownership of a product, where appropriate, demonstrates where one business unit “owns” a product while another business unit may “own another product”. Note here that this

ownership model may not exist in many organizations, but certainly is relevant where a product is owned by a business partner and made available to a business's customers. The figure 2.7.11 template delivers an even more comprehensive product planning perspective where product maturity, effectiveness, redundancy or overlap, business unit or partner sourcing, and product line categorization are all represented in a single template perspective.

Additional Product Mapping Scenarios

In addition to the product mapping scenarios covered to this point, a number of other business architecture product mapping usage scenarios are worth considering. These are listed below.

- Business strategies frequently drive the design and creation of a product, and influence product demand. In this case, a given business strategy may result in the creation and/or discontinuation of multiple products or product lines. Strategy/product mapping brings visibility to whether or not one or more business strategies are supported by one or more products or product lines.
- Specific business units often own and drive product strategy and are responsible for product profitability and overall performance. Understanding the relationship between business unit and product or even third party and product offers insights into cross-ecosystem product alignment, shared product strategies, and go-to-market planning.
- Externally facing value streams focus on the creation, delivery, and servicing of a product from a customer perspective, while internal value streams serve as a focal point for designing, creating, and managing products. Given that value streams are a focal point for assessing and improving customer experience, they also serve as a key focal point for ensuring effective product creation and delivery to customers. Associate relevant products with the value stream stages in which those products are used or engaged. Sample value streams that benefit from product/value stream stage cross-mapping include Take a Trip, Send Shipment, Use Product, or Recover from Incident.
- Initiatives focus on delivering a product to market or otherwise improving how that product is delivered to market. Initiatives are often tied to a given value stream, and a given value stream is often tied to multiple products and product lines. Product/initiative mapping offers a view into the investment focus being made on one or more products, where initiatives overlap across products or product lines, and where a particular product may be left out or might potentially benefit from a given initiative.
- Metrics and measures provide the analytics to assess how well a product is performing or if a product or product line is effectively supporting or supported by strategy, value delivery, capabilities, funding, initiatives, or other aspects of business architecture.

Consider the first three bullet points above. These relationships illustrate certain aspects of extended product mapping. Figure 2.7.12 depicts the relationships between product and strategy, business unit, and value stream via value stream stage and value proposition. Understanding driving strategy, business unit ownership, and value-related perspectives has many uses. For example, a given strategy is likely broader than a given product and that there may need to be broader collaboration across business units to achieve that strategy.

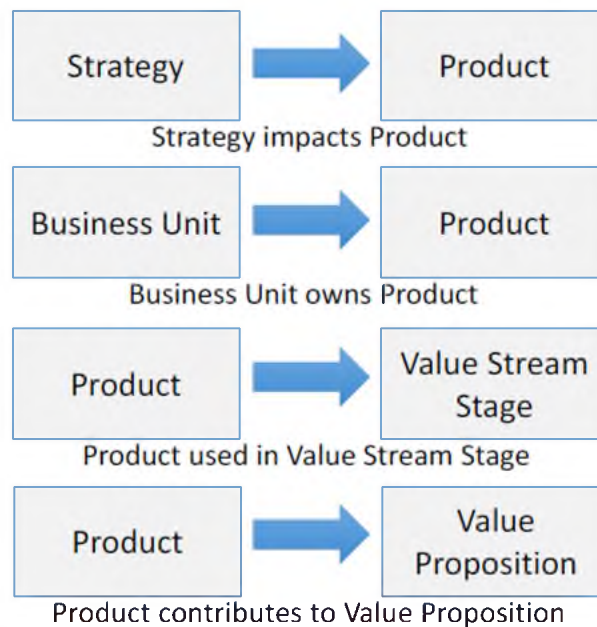


Figure 2.7.12: Product Cross-Mappings

The four cross-mappings shown in figure 2.7.12 are exemplified in figure 2.7.13. While this is a simple example and only involves one strategy and business unit, it highlights certain issues with product planning from a business architecture perspective. If management had populated the business architecture with strategy, product, business unit, value stream, and previously discussed product mapping concepts, the impact of a strategy could be viewed in multiple ways. It may not be clear, for example, which value streams require modification or which business units may be involved in a California expansion strategy. In this example, all aspects of the business tied to the Homeowner's Insurance product are highlighted in a simple chart.

Strategy	Product	Business Unit	Value Stream Stages	Value Proposition
Expand into California Market	Homeowner's Insurance	Property & Casualty Unit	Identify Product, Activate Policy	Homeowner Policy Activated
		Property & Casualty Unit	Validate Claim, Pay Claim	Homeowner is Made Whole

Figure 2.7.13: Product to Business Unit, Value Stream Stage, Value Proposition Example

A second example of product usage within a value stream may be found in a Use Product value stream where a given product is activated for use. With global connectivity to customers, vehicles, appliances, design tools, and other aspects of daily life, being able to associate product usage and related value delivery through the use of those products is a high priority for many businesses. Usage scenarios may include products that help customers navigate on a trip, provide entertainment, deliver design solutions for construction and engineering firms, or monitor power usage of appliances via the Internet of Things. Business architecture provides insights into customer value proposition delivery from an ecosystem wide perspective at each point of a given value stream.

Finally, initiative-related impacts on products, either planned or in progress, may be tracked by associating product creation or updates to the initiatives that drive those changes. In addition, metrics could then be assigned on the impact of changes to the implementation of the value streams, capabilities, and resulting information repositories that may need to change to support capability improvement. Initiative mapping is another area that is not shown, but it would follow the same approach and principles as demonstrated within this section.

Using the Product Map for Business Planning and Transformation

Product mapping's role in transformation planning is that of a potential trigger point. It is easier for an executive or planning team to state that they want to roll out a new product or product line based on a given strategy. The questions that business architecture can answer involve:

- Are there multiple strategies that impact this product or product line?
- Does a new product rollout or product change impact multiple business units?
- Can the organization support various product entitlements through enabling capabilities?
- Are there any initiatives underway that are already doing work in areas related to this product or product line?
- Are there similar products impacted by the strategy?
- Which value streams and capabilities are impacted by a new product strategy?
- How disruptive to other projects and products would an initiative be for a given product line?
- Is there a business partner involved or should a business partner be involved in the work on this product?
- Is the set of capabilities delivered across product lines ensuring that products are rationalized effectively, delivering the maximum level of customer value, or represent a gap between what is being delivered and customer expectations?

Defining Product within the Business Architecture Knowledgebase

Defining product in the business architecture knowledgebase allows an organization to articulate products offered to customers, the entitlements or services associated with those products, enabling capabilities, and links to value proposition, business unit, strategy, and initiative. These perspectives are captured in figure 2.7.14.

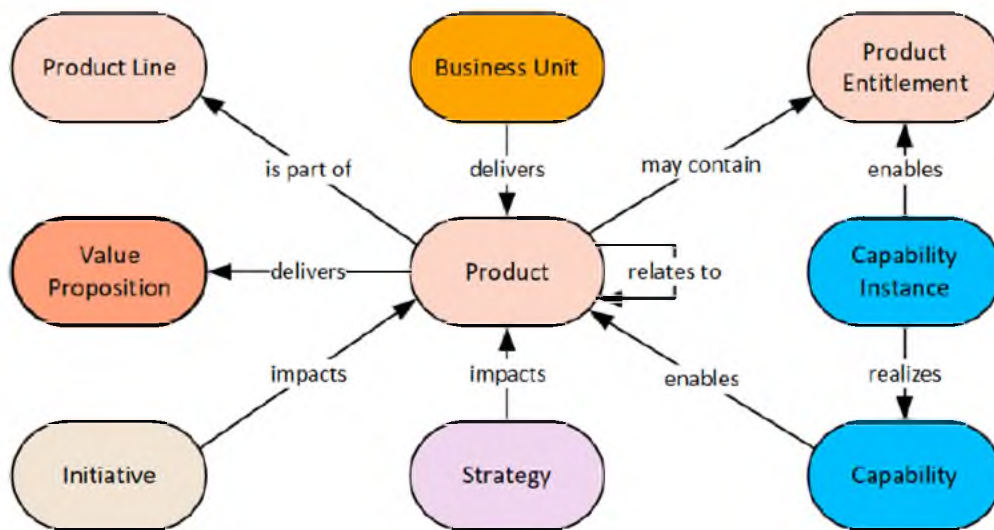


Figure 2.7.14: Product Knowledgebase Relationships

Figure 2.7.14 knowledgebase relationships are summarized as follows.

1. Product relates to product, where one or more products are bundled into another product or where multiple products work together in given context.
2. Product is part of a product line, where product line is a category of product.
3. Product contains a product entitlement, where an entitlement represents immediate, on demand, or ongoing service commitments associated with a product.
4. Capability enables a product, where a capability may support the creation of a good or service element of a given product.
5. Capability instance, which represents a specific implementation, realizes a capability.
6. Capability instance enables product entitlement, which offers business unit context for capabilities that further and deliver services associated with that product.
7. Business unit delivers a product.
8. Strategy impacts a product, meaning a product is the target of one or more business objectives and related investments.
9. Product delivers a value proposition, which would be associated with a value stream

and may be decomposed into more granular value items.

10. Product is impacted by initiative, representing work planned, in motion, or completed on a given product.

To fully represent a comprehensive view of all domain relationships, see similar mapping discussions in other *BIZBOK® Guide* sections or the summary found in *BIZBOK® Guide* part 5.

Summary

Ultimately, providing a product lens into the business, strategic impacts, initiatives, value delivery, and capabilities, and partner relationships provides another way to take on various business challenges. This focus is only possible when the foundational business architecture is in place, including value streams, capabilities, and organization mappings. In addition, strategy and initiative mapping expand up these views.

Incorporating product mapping into business architecture offers a very different perspective from which to do planning, cost analysis, and manage the product portfolio. Finally, certain in-house capabilities may need to be augmented to leverage the capability enabling of a product or products. The principles and guidelines in this section should provide a path toward achieving this unique view into the business.

¹ Product Centricity Is Coming to Your Organization, Charles Betz, Forrester Research, April 19, 2021.

² Greg Geracie and Stephen Eppinger, *The Guide to the Product Management and Marketing Body of Knowledge® (ProdBOK®)* (Association of International Product Marketing and Management, 2013).

SECTION 2.8: STAKEHOLDER MAPPING

A critical capacity of business architecture is to represent key stakeholders within a business. The stakeholder domain is reflected in common business objects such as customer, employee, agent, or partner. The interactions with these stakeholders, which include being recipients or enablers of value delivery, are key to succeeding as a business. This section provides an overview of stakeholders, stakeholder mapping, value delivery, capability and information perspectives, and usage guidelines.

Defining the Stakeholder

Stakeholders come into play within business architecture at several junctures. To ensure a consistent application of the stakeholder concept, it is important to have a common definition. Stakeholder is defined as an internal or external individual or organization with a vested interest in achieving value through a particular outcome.

Stakeholders should not be confused with the non-architectural concept of role, although they may be reflected as certain roles within the context of related disciplines, such as business design and business process management. The role concept typically incorporates a broad set of more granular categories that change frequently, while stakeholder is defined at a higher level, is less volatile, and evolves to be used in more strategic or deliberate ways.

While stakeholders may be organizations, they are widely represented as individuals because doing so provides more specificity as to the part played or function assumed by a stakeholder within a given value stream or related business scenario. Various categories of stakeholders are often expressed as a list that does not frequently change. These categories are typically:

- Customer
- Partner
- Human Resource

This list covers commonly found stakeholder categories often encountered in organizations. Customer may also appear, for example, as Client, Constituent, Patient, or Member, based on a given business model. All three categories can be triggering stakeholders for value streams.

Benefits of Stakeholder Mapping

A central goal of stakeholder mapping is to further the understanding and improvement of the business based on various business scenarios associated with value-seeking stakeholders as well

as those stakeholders who contribute to value delivery. Stakeholder mapping provides an overview as well as a detailed understanding as to how the business delivers value to customers, partners, and other third parties. Stakeholder mapping also offers insight into the stakeholders who are critical to the business' bottom line. Stakeholder mapping delivers a deeper perspective into the importance of value streams, and, in turn, capabilities and related business concepts.

Stakeholder mapping delivers the following benefits:

- Provides a context for determining how to achieve and deliver customer value
- Identifies third-party partners, suppliers, agents, and related stakeholders within the context of stakeholder value delivery
- Offers a perspective on how to organize various value streams based on the stakeholders benefiting from those value streams
- Highlights stakeholder commonalities across business units and third parties as a basis for centralizing analysis and streamlining investments in how those stakeholders receive and contribute to business value propositions
- Establishes a context for externalized resource enablement for certain capabilities
- Provides a basis for identifying the role of stakeholders that participate in various value stream stages
- Highlights specific areas of focus of various internal stakeholders and how they deliver externally and internally focused value to the business
- Offers business executives a concrete set of stakeholder-oriented focal points as input to strategic planning work

Principles of Stakeholder Mapping

The following principles assist practitioners with defining stakeholder concepts within business architecture:

1. A stakeholder is an individual or an organization that has a substantive impact on business.
2. A stakeholder can be internal or external to the enterprise.
3. A stakeholder covers a variety of individual and organizational categories.
4. A stakeholder refers to an information concept within the information map in the form of an information concept type.
5. A stakeholder triggers and participates in value streams, either as a recipient of value or as a participant that enables value delivery.
6. A stakeholder serves as a resource to implement a capability.
7. A stakeholder can be the target of a given strategy.

How to Do Stakeholder Mapping

A business can pursue stakeholder mapping from a variety of angles that include value-oriented, business unit, capability, and information-based perspectives. This subsection addresses each of these perspectives with an initial focus on value-oriented stakeholder mapping. In addition, the mapping discussion that follows covers stakeholder relationships to organization, outlines stakeholder mapping guidelines, and articulates stakeholder and related categories using the stakeholder mapping template.

A Value-Oriented Perspective on Stakeholder

An important driver of stakeholder mapping within business architecture involves identifying the role of a stakeholder in receiving and contributing to various business value propositions as defined in section 2.4. Stakeholder to value stream mapping provides insights into why certain value streams should be prioritized in strategic planning efforts. For example, a value stream that delivers a product to a customer is often the target of major initiatives and investments.

When associating a stakeholder to a value stream, it is important to differentiate between a stakeholder seeking the end state value proposition and stakeholders who contribute along the way to achieving that value proposition. Section 2.4, value mapping, differentiates these two stakeholder perspectives based on the role they play in a value stream as follows.

A “triggering stakeholder” is defined as a stakeholder that initiates a value stream for purposes of achieving a stated value proposition. A triggering stakeholder may be a customer seeking a product, partner seeking a relationship, or a manager seeking a new hire. Note that a stakeholder may trigger a value stream to achieve value for someone who lacks the capacity to do so for themselves. For example, someone may call for an ambulance for a person who is incapacitated. This scenario is an example of a stakeholder triggering a value stream by proxy.

A “participating stakeholder”, on the other hand, has a defined role or responsibility within a value stream stage and, therefore, contributes to capabilities with outcomes that achieve the value item(s) for that stage. As a rule, a value stream has numerous internal and external participating stakeholders and, with few exceptions, includes the triggering stakeholder. Finally, it is important to note that participating and triggering stakeholders are not categories per se, but rather designated as such based on the role they play in a given value stream.

Stakeholder Relationship Definitions

The stakeholder relationships shown in figure 2.8.1 enable a business to represent all internal and external stakeholders in a rationalized perspective across all aspects of value delivery, business units, and third parties.

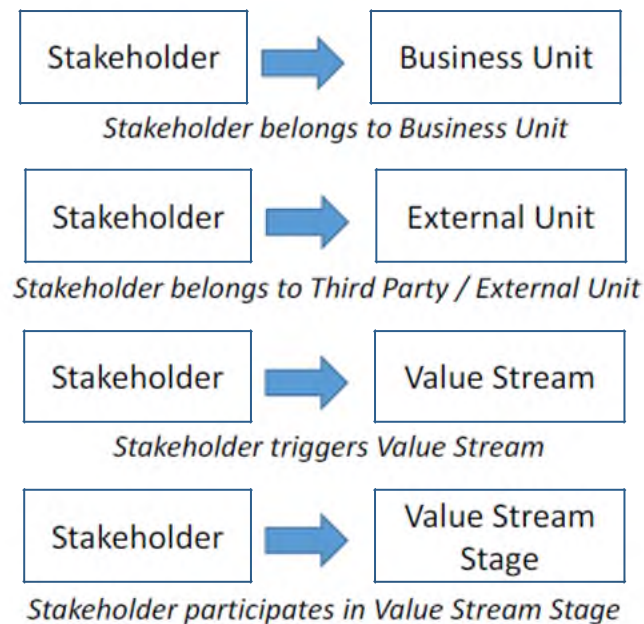


Figure 2.8.1: Stakeholder to Business Unit, Third Party, and Value Stream Relationships

The first two relationships identified in figure 2.8.1 provide a foundation for understanding the organizational context and includes internal and external stakeholder categories. Stakeholder relationships between business units and third parties may be represented in a stakeholder business unit cross-mapping blueprint, which is not shown here.

The last two relationships in figure 2.8.1 depict where a stakeholder benefits from and/or participates in a value stream. The value stream relationships play an important role in evaluating how to prioritize that value stream for improving or transforming the business. For example, if “customer is king” is a business motto, then any customer-triggered value stream is automatically brought to the forefront. Stakeholder relationships are summarized later in this section under the discussion on stakeholder in the business architecture knowledgebase.

Stakeholder Definition: The Stakeholder Mapping Template

The stakeholder mapping template provides a means of documenting stakeholders and related categories in their own right, outside the context of a given value stream or business unit. Figure 2.8.2 depicts a commonly used template for identifying stakeholder type, stakeholder category, stakeholder, and description.

Stakeholder Type	Stakeholder Category	Stakeholder	Description

Figure 2.8.2: Stakeholder Mapping Template

General descriptions and usage context for each column shown in the figure 2.8.2 stakeholder map provide insights into how to document stakeholders within a business architecture.

Stakeholder Type: Identifies the stakeholder party as an internal, external, or both. This initial level of stakeholder classification is useful in determining if the full complement of external stakeholders has been considered during value stream mapping for externally triggered value streams. Note that customers, partners, and regulatory bodies are typical examples of external stakeholders.

Stakeholder Category: Aligns to the capability map and refers to such business objects as customer, partner, or human resource, and similar sentient business objects associated with level 1 capabilities. As a result, stakeholder category establishes a link between stakeholder and the capability map and information map. Stakeholder category is often used to represent the triggering stakeholder for an externally triggered value stream.

Stakeholder: Brings a more granular perspective to stakeholder category by highlighting specific, named stakeholders. This level of granularity brings more clarity to participating stakeholder identification and to triggering stakeholders for internally triggered value streams. For example, an internal value stream to Execute a Campaign would be triggered by a marketing executive with participation from public relations analysts, copywriters, marketing specialists, and other stakeholders. These stakeholders would all be defined within column three of the stakeholder mapping template.

In addition, the information map leverages stakeholder to identify various information concept types, such as a supplier partner versus a reseller partner. Stakeholder identification plays a key role in capabilities such as Stakeholder Management, where executives, front-line personnel, and technical staff alike must consider how to handle different stakeholders. Furthermore, this level of specificity plays a role in allowing business analysts to leverage business architecture for defining and streamlining operating model views, such as process or event models, as well as business requirements definition.

Description: Provides the definition of the named stakeholder shown in column three. These definitions are more specific categorizations than would be found in a capability map. For example, a capability map and information map would contain a generalized definition for a customer that might include contracted and uncontracted individuals or organizations that can acquire, have acquired, or otherwise benefitted from certain products and services. A more specific description, however, would differentiate between a customer that is the shipper of a shipment versus a customer that is a recipient of a shipment. These types would be added to the list of stakeholders under a customer category in column 3 of the stakeholder map.

Note that in practice one may choose to create more stakeholder categorical levels, but the risk of doing so is that additional leveling begins to delve into non-architectural role views, which are best left defined within the operating model versus the business architecture.

Stakeholder Mapping Guidelines

Stakeholder mapping can begin at many points in business architecture. Stakeholders, however, are easiest to identify when a contextual framework is in place. This framework is the value stream, which provides a useful analysis baseline as a starting point. The following mapping steps provide a useful sequence of events for framing stakeholders from a top-down perspective.

1. Use the capability map to identify stakeholder categories in level 1 stakeholder-related business objects such as customer, partner, and human resource. Document these names in column two of figure 2.8.2.
2. For each stakeholder category identified in guideline 1, identify the triggering stakeholders that receive value from the business and document these names in column 3 of figure 2.8.2.
3. Identify external stakeholders that contribute to delivering customer value in context of participating stakeholders. This step specifies stakeholders linked to the third-party partner category and can include suppliers, agents, resellers, and the like.
4. Identify primary external stakeholders that the business must report to for regulatory or similar reasons and list these accordingly in column three of figure 2.8.2. These stakeholders often include, for example, government or regulatory agencies.
5. Identify specific stakeholders in column three of the stakeholder map under the human resource category to include, for example, contract officer, marketing executive, underwriter, auditor, analyst, engineer, architect, conductor, physician, nurse, and other stakeholders specific to a given business model. List these in column three of figure 2.8.2.
6. Validate previously identified stakeholders by cross-checking external stakeholders

- against triggering stakeholders. For example, a customer would trigger value streams such as Acquire Product, Establish Account, Perform Money Transfer, Obtain Service, or Take Trip.
7. Validate internal stakeholders that may initiate internally triggered value streams to include, for example, a pilot, marketing executive, product manager, or materials manager. An example of an internally triggered value stream would include Launch Product, which would be triggered by a marketing executive.
 8. Define each stakeholder with a unique description in column four of figure 2.8.2. Use a one-sentence definition that is derived from or a refinement of the corresponding capability definition. For example, the following customer stakeholder definition is derived from the Customer Management capability. The retail customer description that follows is a refinement on the general definition of customer.
 - Customer: An individual or organization that has, plans to have, or has had an agreement in place with the company, or that directly receives a benefit from the company's service offerings.
 - Retail Customer: An individual or organization that has acquired or plans to acquire a retail product from the company through one of its retail channels or outlets.
 9. Cross-map all relevant stakeholders to the value stream where a stakeholder triggers a given value stream. Note that there may be multiple internal and external triggering stakeholders per value stream.
 10. Cross-map all internal and external participating stakeholders to each value stream stage in which the stakeholder participates. Participating stakeholders typically include a cross-section of external and internal stakeholders, with internal stakeholders largely represented within the Human Resource stakeholder category.
 11. Formalize cross-mappings between the stakeholder and information concepts that align to the stakeholder categories and stakeholders in columns two and three of the stakeholder map. *BIZBOK® Guide* section 2.3 defines the use of stakeholder as a basis for defining information types.
 - Associate stakeholder category with the corresponding information concept (e.g., customer, partner, human resource). For example, a partner stakeholder category would instantiate itself as a partner information concept.
 - Associate each stakeholder connected with this category as an information concept type. For example, a partner category might include supplier, vendor,

reseller, and agent, where each of these names would be associated with a corresponding information concept type.

12. As required, cross-map various stakeholders to each business unit and third party that would have such a stakeholder present as part of its business model. For example:

- An auditor is associated with a regulatory agency, partner, and two business units
- A researcher is associated with multiple internal business units and a third party

Sample Populated Stakeholder Mapping Template

Figure 2.8.3 depicts a partially populated stakeholder map, aligned to the template format shown in figure 2.8.2.

Stakeholder Type	Stakeholder Category	Stakeholder	Description
External	Customer	Retail Customer	An individual or organization that has acquired or plans to acquire a retail product from the company through one of its retail channels or outlets.
External	Customer	Shipper	A business or an individual that has contracted with the company to send a shipment from one location to another.
External	Partner	Supplier	A business or an individual that provides materials to the organization for a variety of purposes.
External	Partner	Reseller	An organization that has been contracted with the company to acquire products from the company and to offer those products to other third parties.
Internal / External	Human Resource	Auditor	An individual responsible for helping identify, mitigate, and monitor a business' financial risks.
External	Partner	Regulator	An external authority responsible for ensuring compliance with legal statutes, treaties, accounting, or externally imposed rules.
Internal	Human Resource	Retail Clerk	An individual under full-time or part-time contract who is responsible for engaging with customers and completing the sale of various products.
Internal	Human Resource	Product Manager	An individual under full-time or part-time contract who is responsible for the development and performance of products that meet a market need.
Internal	Human Resource	Materials Manager	An individual under full-time or part-time contract who is responsible for optimizing parts and material availability for production.

Figure 2.8.3: Sample Populated Stakeholder Mapping Template

Figure 2.8.3 highlights certain considerations when articulating a stakeholder map. One aspect is the ability to provide refinements to capability-defined stakeholder categories. This level of refinement becomes important for targeting value stream participation and organizational

perspectives. A second aspect is the ability to differentiate between stakeholder types in terms of their overall function. For example, a stakeholder may be an internal auditor, external auditor, or an auditor from a regulatory agency. When fully qualified, a business can see where one auditor category participates in one value stream, but not in another. Finally, with each stakeholder having a clear description, references to those stakeholders in value streams and other areas become clearer, especially when the same stakeholder exists across multiple business units.

Stakeholder Relationship to the Capability and Information Map

While mapping stakeholder to value streams provides the majority of the previously identified benefits in this section, business architecture ensures continuity of stakeholder terms and definitions across the capability map, information map, and value streams. For example, the following capabilities are often defined within the capability map:

- Customer Management
- Partner Management
- Human Resource Management

Defining these concepts within the capability map means that stakeholder definition and mapping within the business architecture can simply leverage these definitions. The stakeholder category to capability relationship is typically straight forward as capability maps rationalize stakeholder concepts in very general terms.

The information map is used to further reflect the stakeholder types for each stakeholder category defined during stakeholder mapping. This approach provides continuity between the capability map, information map, and value streams — all of which refer to the same stakeholder terms and definitions. Figure 2.8.4 depicts the stakeholder touch points to value stream, value stream stage, capability, and information concept.

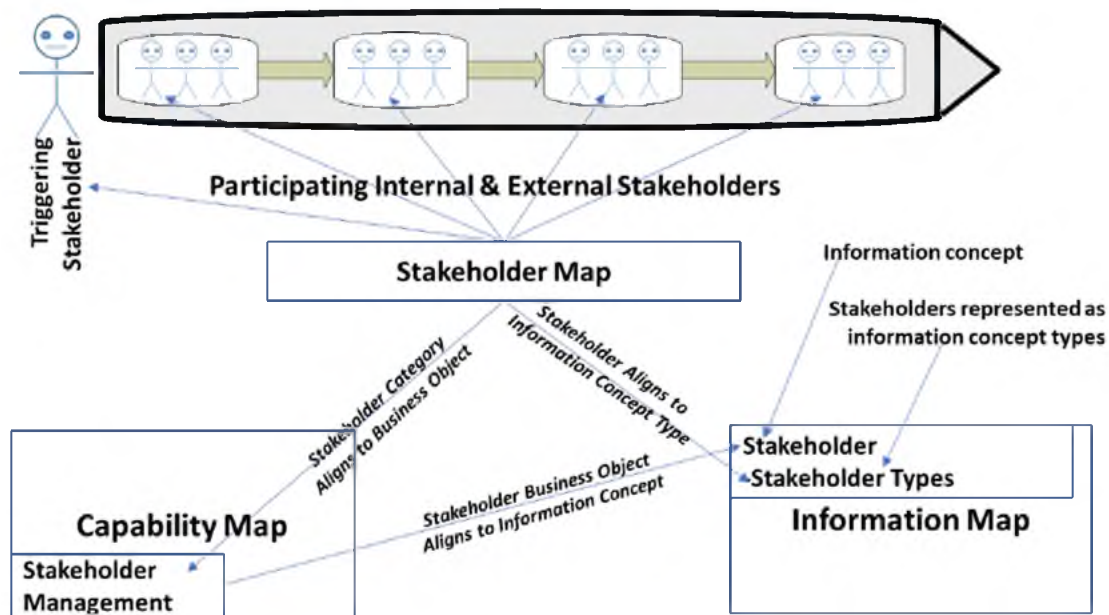


Figure 2.8.4: Stakeholder Context for Value Streams, Capabilities, and Information Concepts

The intent of the perspective in figure 2.8.4 is to show how the capability map defines the management of a business object called stakeholder, which includes the definition of the named object, in this case stakeholder. The information map adopts that stakeholder definition, but can expand upon it to include all stakeholders within a given category as defined during stakeholder mapping. For example, an organization may have the following stakeholder types defined within the information map.

- **Underwriter:** A financial professional who evaluates the risks of insuring a particular person or asset and uses that information to set premium pricing for insurance policies
- **Contract Officer:** An individual entrusted by the company with the authority to enter into, administer, renew, or terminate contracts
- **Agent:** An individual who acts on the behalf of the company in the capacity of securing business and administering agreements with customers

Each of these terms, which are defined in column three of the stakeholder map, may represent triggering and participating stakeholders within the value stream. The information map may draw these terms and definitions directly from the stakeholder map, which has consistently defined these terms across business units and third parties. The primary consideration is to ensure that the terms are defined and that the capability map, information map, stakeholder definition, and value stream mappings all align.

Stakeholder Usage Scenarios

Stakeholder usage within the business architecture can vary broadly. Consider the following scenarios where a stakeholder plays a role.

1. **Customer Relationship Management:** Value streams triggered by a customer seeking value from a business become focal points for strategic analysis, objective setting, initiative definition, and funding. The stakeholder map provides customer or consumer categories by decomposing the customer stakeholder category into lower-level stakeholders, such as individual shipper, individual recipient, corporate shipper, and so on. In doing so, it allows a practitioner to define a consumer segment as an important aspect of customer relationship management usage scenario.
2. **Revenue Improvement:** Identification of how to improve third-party generated revenue, from an agent or partner, for example, requires understanding the role these stakeholders play in triggering or participating in a value stream. These value streams may subsequently become a focal point for improvement and investment.
3. **Business Unit Consolidation:** When multiple businesses or business units merge or consolidate, there is a need to identify how each business unit and, in some cases, third parties align as a basis for consolidating work. Stakeholder to business unit and stakeholder to third-party relationships help identify where related or overlapping stakeholders may be synchronized to establish a more effective organizational structure. This scenario typically leverages capability to business unit analysis, but stakeholder mapping provides an added element to the overall analysis.
4. **Business Needs Analysis and Improvements:** Stakeholder definition ensures that key stakeholders to the business are not overlooked in requirements analysis, business performance management, and other related business disciplines. Identification of an agent stakeholder may signal the need to establish a value stream called Onboard Agent. Many organizations face challenges in this area and stakeholder mapping opens up opportunities for further analysis and focal points for investment.
5. **Case Management:** Stakeholder names and definitions inform case management and routing map definition, as defined in section 3.5. These terms should be defined in advance; however, new stakeholders may actually surface as routing maps are built.
6. **Process Management:** Associating rationalized views of participating stakeholders to value stream stages helps analysts identify where various processes align to value stream-defined value delivery. In doing so, rationalized stakeholder definitions can expedite

investments in process improvement across a business ecosystem.

Other scenarios continue to emerge to support the benefits of stakeholder mapping within business architecture.

Defining Stakeholder Within the Business Architecture Knowledgebase

The model shown in figure 2.8.5 represents relationships that are important to understanding the role of a stakeholder within context of the business ecosystem and business architecture.

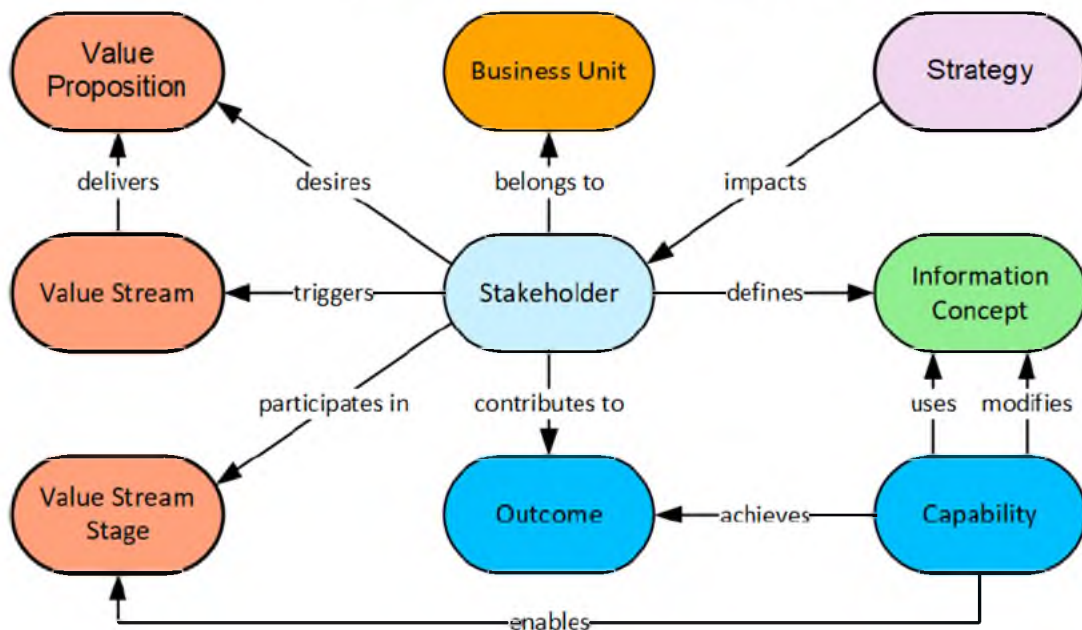


Figure 2.8.5: Stakeholder Knowledgebase Relationships

A summary of the figure 2.8.5 relationships is detailed as follows.

1. Stakeholder belongs to business unit, which may be a partner, provides stakeholder context, and highlights role commonalities or inconsistencies across an ecosystem.
2. Stakeholder desires a value proposition and triggers a value stream to achieve it.
3. Stakeholder participates in value stream stage, which highlights where stakeholders contribute to the value delivered by that stage.
4. Stakeholder contributes to a capability outcome, viewed in context of a value stream stage where capabilities and stakeholders intersect.
5. Stakeholder defines an information concept, where:

- A stakeholder's category in the stakeholder map must be represented as an information concept in the information map and as a business object in the capability map
 - A stakeholder may appear as an information concept type in the information map
6. Strategy impacts a stakeholder is a relationship that is particularly useful when an organization wants to target a customer, partner, or human resource as part of a strategy.

One key point to reiterate is that the stakeholder/capability relationship is context-specific based on value stream stage, which means that the capability/stakeholder relationship should be defined as dictated by the context of a value stream stage that a capability enables and in which a stakeholder participates. Mapping teams should evaluate the capability-to-stakeholder relationship on an ongoing basis as most capabilities require stakeholder involvement, even when instantiated as a capability automated by technology. However, managing the voluminous relationships between stakeholder and hundreds of capabilities can quickly devolve into a complex, low-return endeavor and should therefore be done selectively.

Summary

Stakeholder mapping is often overlooked or an afterthought, but it plays an important role in the overall business architecture. This section discussed the importance of stakeholder mapping within business architecture as well as related principles and mapping guidelines. In addition, it provided sample situations in which stakeholder mapping can influence value stream investments, which, in turn, initiates capability investments.

Stakeholder mapping and related definitions provide insights into targeting stakeholder value delivery and value contribution, information concept type definition, and clarity as to the types of stakeholders being managed in the capability map. In addition, stakeholder mapping provides insights into customer or consumer segment analysis, the role of third parties in an organization, requirements analysis, and operating model investments in case and process management.

SECTION 2.9: POLICY MAPPING

Section 2.9 formalizes the concept of “policy” within business architecture. Policy is a critical consideration for many businesses and has particularly high visibility in regulated public sectors and government agencies. For most organizations, policy plays an important role in strategy definition, portfolio planning, investment analysis, and crisis and risk management. Policy has a direct relationship to capabilities and business units, which is why policy is defined as an extended business architecture domain.

This section establishes policy mapping as an important business architecture domain and includes policy mapping benefits, principles, guidelines, and usage scenarios. As the importance of policy mapping’s role in corporate compliance, audits, risk analysis, and crisis management evolves, policy mapping practices will continue to evolve and be reflected in this section.

Policy Definition and Role in Business

One position on policy is stated as follows:

“A policy is a guiding principle used to set direction in an organization. It can be a course of action to guide and influence decisions. It should be used as a guide to decision-making under a given set of circumstances within the framework of objectives, goals, and management philosophies as determined by senior management.”¹

From this perspective, it is easy to see that associating policy to other aspects of the business is prudent. A policy is defined as:

“A course or principle of action adopted or proposed by a government, party, business, or individual.”²

The above definition says a policy can be proposed or adopted, but a policy is still a policy regardless of its state. In addition, a policy can have many sources or origins, including legal statutes, government regulations, industry agreements, treaties, and internal policy-making bodies. The remainder of this section formalizes policy’s role in business architecture and frames its usage from a practice perspective.

Policy Mapping Benefits

Understanding, communicating, and adhering to or enforcing policy is important to most businesses for a variety of reasons. Formally defining policy within the business architecture offers the following benefits:

- Policy mapping improves the sophistication and execution of compliance, crisis, and risk management practices
- Centralizing policy definition and tracking within business architecture increases the level of policy definition, dissemination, enforcement, and compliance maturity
- Policy mapping enables a business to demonstrate compliance to management, auditors, and regulators
- Regulators and auditors readily visualize policy compliance for organizations using policy mapping
- Formalizing the relationship between policy and strategic objectives helps frame strategy in a way that aligns to internal and external policies
- Linking policies to value streams and capabilities helps prioritize business investments and related initiatives
- Incorporating policy into formal business architecture facilitates creation of holistic business metrics and key performance indicators

Policy Mapping Principles

The following principles guide the role of policy mapping within business architecture.

1. Policy is a principle or rule to guide action.
2. Policy aids in decision making and strategy setting.
3. Policy can be adopted or proposed.
4. Policy is set internally and externally.
5. Policy is fluid and changes on a continual basis.
6. Policy is clearly articulated and readily accessible to impacted parties.
7. Policy compliance and conformance requires the ability to tie policy to a variety of business perspectives.
8. The relationship between policy and strategy, product, stakeholder, initiative, business unit, capability, value stream, and information is transparent to relevant and affected parties.
9. Policy impact is defined, measurable, and actionable.
10. Formally incorporating policy into the business architecture framework facilitates impact analysis of policy on change management and compliance.

Policy Mapping Guidelines

Policy mapping guidelines help formulate approaches to establishing and formalizing policy within business architecture as follows.

1. Concur on the organization's policy mapping value proposition and planned usage.

- Executives should concur on the business uses and justification for policy mapping as well as overall scope.
2. **Engage executives who own policy management and compliance.** These individuals help determine the business' current ability to implement, measure, and manage policy compliance and frame the business scenarios on which to focus.
 3. **Ensure that there is general agreement and clear distinction as to policy types.** Policy types include general proclamations, rules, statutes, treaties, and regulations. These categories and others should be defined accordingly.
 4. **Define policy as a formal part of the business architecture framework.** Policy mapping and related usage scenarios rely on the formal incorporation of policy as a business architecture domain within the business architecture framework and knowledgebase.
 5. **Centralize or align policy mapping governance.** All too often individual business units attempt to comply with policy dictates, including crisis and risk management, in individual silos, which is not conducive to compliance. Policy mapping should be centralized and formalized within context of business architecture as a focal point for coordinating compliance, risk, and crisis management teams.
 6. **Establish a policy mapping capability and governance structure.** Policy mapping should be accommodated, in part, under a Policy Management capability, which is where all aspects of establishing or otherwise managing policy reside. In addition, governance has to mature to the level dictated by the demands of policy management, compliance, conformance, regulatory adherence, and auditability.
 7. **Inventory, capture, and categorize business policies.** Policy mapping requires the identification and categorization of policies as a basis for leveraging policy mapping across a variety of business scenarios. Inventory efforts are likely to evolve over time based on business priorities and related usage scenarios and rely on previously discussed formalization and governance guidelines. A business should concur in advance on the level of mapping being pursued. A large organization may, for example, only reflect statutes, regulations, and treaties and top-level internal policies during the initial level of analysis.
 8. **Establish policy relationships to business units, third parties, and related stakeholders.** Associating policy with business units and stakeholders is an effective starting point for determining who is setting or driving, such as governing bodies and government agencies, as well as the business units and partners impacted by strategy.

9. **Establish policy relationships to capabilities.** Associating policies to capabilities provides an essential link to other business perspectives including value streams, information, products, initiatives, and IT architecture. The policy to capability relationship is a key aspect of policy mapping.
10. **Leverage management priorities to dictate policy mapping priorities.** Policy mapping may be done strategically and opportunistically. For example, management may be dealing with a mandate to ensure that all customer exchanges adhere to a given policy. In general, management's use of policy mapping will focus on compliance, auditability, risk management, and crisis management. This dictate may serve as a key focal point for policy mapping because it can be linked to executive demands and visible benefits in the near-term.
11. **Evolve policy mapping maturity in the business architecture knowledgebase.** As policies are identified, categorized, formalized, and associated with various business units, stakeholders, and capabilities, they should be incorporated into the business architecture knowledgebase. Over time, the knowledgebase will have established a robust baseline that becomes the go-to information for auditability, compliance, risk management, crisis management, strategic planning, and other business scenarios.

Drafting the Policy Map

Drafting the policy map is a matter of identifying, rationalizing, categorizing, and associating external and internal policies to business units and capabilities. The policy mapping example in figure 2.9.1 depicts the association between policies and capabilities, which are shown in an organization map. This figure does not depict the direct relationship to business unit.

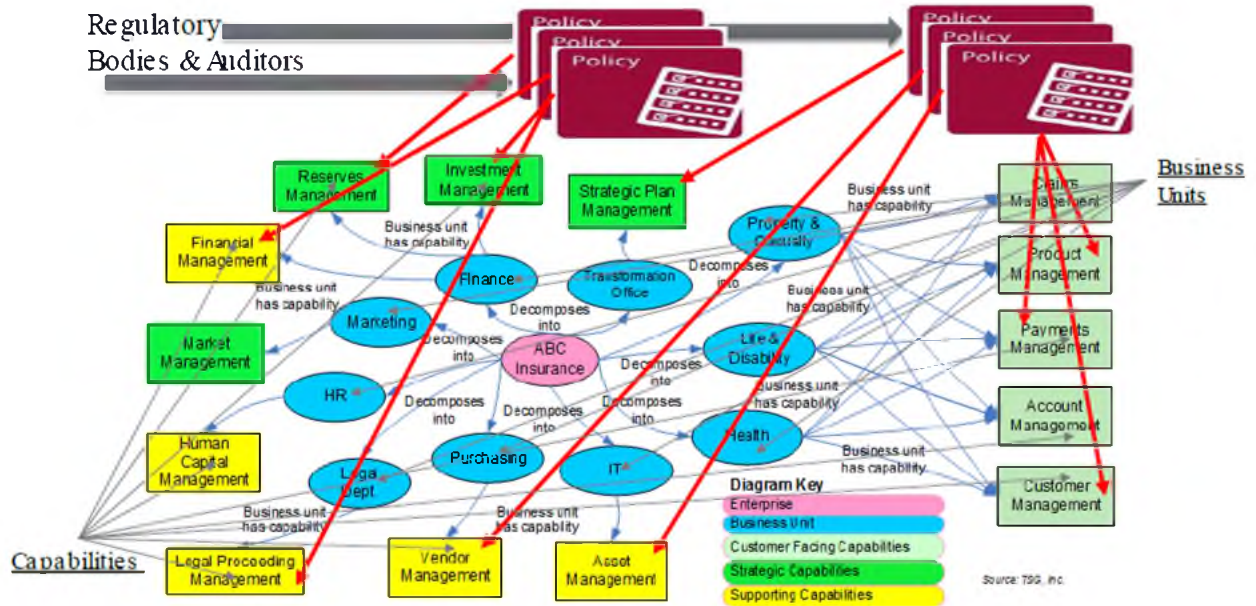


Figure 2.9.1: Policy to Capability Mapping

To provide more direct specifics on policy impact analysis, mapping teams may establish a direct association between policy and business unit and business partner. This direct association accommodates scenarios where policy is unique to a subset of business units or partners that may still share the same capabilities.

Figure 2.9.2 leverages this direct association between business unit and partner and also associates policies with initiatives, which are identified based on the shared relationship between a capability and a policy and a capability and an initiative. The perspective in figure 2.9.2, which leverages the Hoshin Kanri blueprint introduced in section 2.1, provides portfolio planning insights across business units and initiatives where shared policy impacts may require cross-initiative and cross-business unit collaboration.

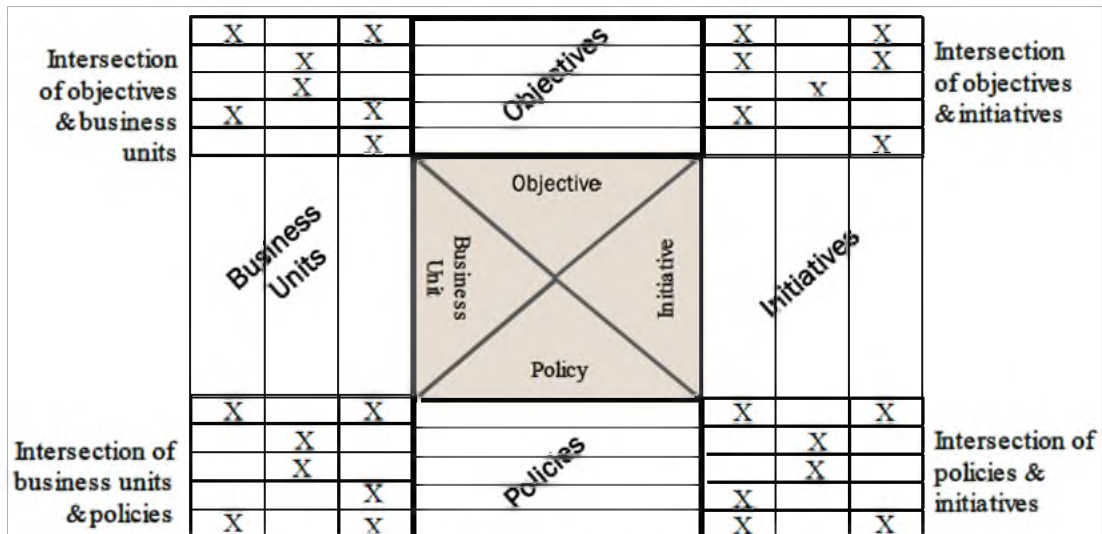


Figure 2.9.2: Policy, Initiative, and Business Unit Mapping

Figures 2.9.1 and 2.9.2 represent sample blueprints that depict policy relationships to other business perspectives. Other blueprints associate policy with the stakeholder and business unit or third party that sets or determines that policy, link policy to value delivery perspectives via capability to value stream cross-mapping, and trace policy to IT architecture deployments via capability-related mappings to application systems and software services. The particular policy mapping perspective that one uses is driven by the usage scenarios driving the analysis.

Policy Mapping Usage Scenarios

The following usage scenarios leverage policy mapping perspectives in practice. Note that these are simply sample scenarios and do not comprise the universe of policy mapping scenarios that a given organization may pursue.

- **Audit review:** Internal and external audit reviews require demonstrating, among other things, policy compliance. Organizations can demonstrate compliance through systematic traceability from formally defined policies to capabilities, business units, partners, and other aspects of the business.
- **Regulatory compliance:** Regulators often seek to determine if organizations are complying with certain regulations and those organizations that demonstrate regulatory compliance traceability are more likely to pass regulatory reviews.
- **Risk and crisis management:** When identifying risk and planning for or responding to a crisis, tracking policies to business units, partners, products, stakeholders, capabilities, and other perspectives is key to exposing those risks and responding to issues that arise.

- **Initiative investment planning:** Initiative investment analysis relies on understanding the scope and costs of policy-related impacts on capability-based investments. Traceability between policies and capabilities, and across the rest of the business via business architecture cross-mapping, provides scoping and costing insights to ensure policy coverage and conformance.

Other policy mapping usage scenarios will continue to emerge, but the bottom line is that policy mapping is important to many different business scenarios.

Defining Policy within the Business Architecture Knowledgebase

Policy has formal relationships with other business architecture domains. A list of these formal relationships is as follows.

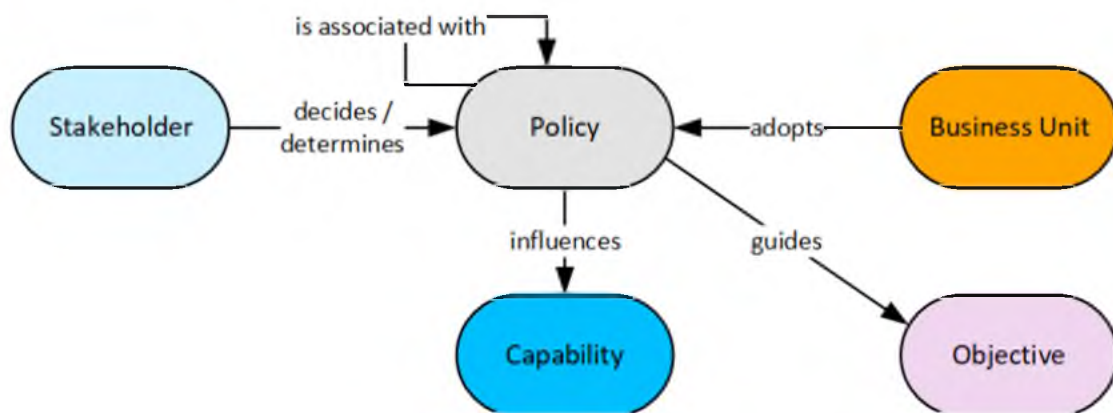


Figure 2.9.3: Policy Knowledgebase Relationships

The following summarizes the figure 2.9.3 relationships.

1. Policy is associated with policy connects related policies such as the example where a piece of legislation is reflected in an in-house rule or guideline.
2. Policy influences capability, where certain policies might trigger the need to change and correspondingly invest in capabilities that manage agreements, customers, products, assets, and other business objects.
3. Policy guides objective is an important relationship because policy provides important insights that may trigger one or more new business objectives.
4. Business unit adopts policy, whereby not every business unit may be affected by a policy but this relationship highlights where policy impacts are relevant.
5. Stakeholder decides/determines policy essentially establishes a policy owner where this is relevant.

Policies are associated with other policies in multiple ways. For example, an internal policy, defined as a rule or guideline, may be derived from a legal statute, regulation, or treaty. In this case, the association is derivative. Other associations may exist where two policies across business units have an interdependency.

Associating policy with capability is a key element of policy mapping and serves as the basis for visualizing policy impacts broadly across the organization. For example, understanding capability impacts enables a business to visualize policy impacts on value stream stages and value items via capability outcomes, initiatives, information, products, strategy, requirements, and IT architecture.

Another important association involves the relation between policy and business unit, which offers insights into policy adoption. In addition, a business may want to track policy decision makers back to the organization that has established and dictates that policy, with this association being accomplished through a decider/determiner association between a business unit and policy.

Summary

Policy mapping is an emerging yet critical component of business architecture, particularly for businesses that are highly policy-driven or regulated. Policy mapping will continue to mature to support this important business perspective, and this section will evolve in unison.

¹ Bizmanuals, Inc., “What is the Difference between Policies and Procedures?” 2014, www.bizmanualz.com/

² Oxford Dictionaries, Oxford University Press, s.v., “Policy.”

PART 3: BUSINESS ARCHITECTURE PRACTICE GUIDE

The practice of business architecture extends well beyond the work required to build the business architecture itself. In providing a guide to deploying, using, and governing business architecture, part 3 of the *BIZBOK® Guide* incorporates a variety of business architecture practice-based approaches. Topics include getting started, business architecture governance, aligning business architecture with related business disciplines, and the use of tooling options. Business discipline alignment topics include focus on aligning business architecture with business modeling, business process management, case management, and Lean Six Sigma.

The topics included in part 3 differ from part 2 insofar as being “practice based”. While part 2 focuses on building the business architecture, part 3 focuses on establishing, governing, leveraging, and applying the business architecture. For example, section 3.1 discusses how to get started while section 3.6 discusses how to best leverage business architecture within an organization that is also using Lean Six Sigma.

Part 3 – Section Overview

Section 3.1, Common Approaches for Getting Started, discusses how to get started with business architecture and outlines a typical timeline from business planning through deployment. Section 3.2, Business Architecture Governance, incorporates best practices for setting up and governing business architecture within an enterprise. Topics include team alignment, role definition, and collaborative governance across a business.

Section 3.3, Aligning Business Architecture with Business Model Frameworks, is an important section for any executive team using business models to improve planning efforts. A business model describes the rationale of how an organization creates, delivers, and captures value. Section 3.3 discusses how to use business architecture to turn business models into actionable results – an essential next step for any business adopting the concept of business models.

Section 3.4, Business Architecture and Business Process Modeling, discusses the relationship between business architecture and business process management. We note here that business process modeling is an important business analysis and design discipline and that business architecture provides a framework for leveraging this work from a top-down, strategic perspective.

Section 3.5, Business Architecture and Case Management, considers how to leverage business architecture on another important business design discipline. Case management is a growing business design concept and business architecture provides a framework for planning, scoping,

and delivering case management solutions. Section 3.6 focuses on Business Architecture and Lean Six Sigma – Lean Six Sigma is a widely used discipline for improving business performance and this section provides guidelines for aligning Lean Six Sigma to business architecture.

Business Performance reporting enables a business to measure and report on behaviors, results, and successes, and section 3.7 takes a first look at how business architecture relates to measuring and improving business performance. Section 3.8, Business Architecture and Requirements Alignment, discusses how requirements definition fits in the context of business architecture. The Business Architecture Maturity Model® is introduced in section 3.9, as a tool to help practitioners and key stakeholder groups assess the maturity of their organization's business architecture capability.

Section 3.10, The Role of the Business Architect, outlines key aspects of what a business architect does along with the ideal traits one should have in this role. Section 3.11, Business Architecture and Strategy Execution, places business architecture within a more transparent and holistic context and provides an overview of how it enables strategy.

The benefits of and approaches to aligning the operating model to business architecture are outlined in Section 3.12, Business Architecture and Operating Models. And, finally, section 3.13, Business Architecture and Customer Experience Design, discusses the relationship between business architecture and customer experience design and the important benefits of this alignment.

Using Part 3

In being a practice guide for business architecture, part 3 can be applied in a variety of ways. Important aspects of part 3 to consider if you are just getting started include sections 3.1 and 3.2, which address getting started and establishing your governance structure.

The business model framework alignment discussed in section 3.3 is particularly useful when executives have decided that they want to use a business model, such as the Osterwalder Canvas, to guide analysis and planning efforts. Business architecture provides the framework for leveraging work completed within the context of the business model canvas and driving it toward actionable results. This is particularly true if business/IT architecture alignment is envisioned as addressed in *BIZBOK® Guide* part 6.

The sections guiding business architecture / business discipline alignment, which include sections 3.3 through 3.8, are best applied based on need. For example, if your organization has adopted Lean Six Sigma, then section 3.6 would provide significant guidance for positioning these efforts under a business architecture framework that views the business from a top-down holistic perspective. This same is true for organizations that are using or considering using business

process management or case management. Experience has shown that business architecture provides an excellent umbrella concept for guiding the planning and deployment of these types of efforts.

Part 3 Summary

Part 3 plays an important role in helping organizations get started with business architecture. In addition, part 3 answers a number of questions for organizations that have already adopted various business modeling or design disciplines and are trying to determine where business architecture fits into the equation. Part 3 is one area where future expansion of the *BIZBOK® Guide* will continue as new business disciplines from planning through deployment emerge. This expansion will likely result in new sections along with the expansion of certain practice disciplines as more and more practitioners weigh in.

SECTION 3.1: COMMON APPROACHES FOR GETTING STARTED

Section 3.1 outlines how to implement business architecture from planning through deployment. It is important to note that there is not just one way to correctly initiate business architecture. Each organization is unique and different aspects will need to be addressed to successfully integrate business architecture into the fabric of the organization. Most organizations will require most or all of the following steps when getting started with business architecture:

- Define business architecture objectives
- Communicate business value
- Assess opportunities to leverage business architecture
- Establish business architecture governance structure
- Establish business architecture baseline
- Leverage business architecture in initiative planning
- Expand business architecture
- Refine business architecture governance and deployment

Organizations should adjust how and when they employ each of the above steps based on management goals, expectations, and the culture of a given business. The guidelines below expand upon these topics in practice.

Determine Business Architecture Objectives

Prior to establishing business architecture objectives, management must ask a couple of fundamental questions, including:

- Is the goal to leverage business architecture to facilitate strategic planning, address executive priorities, deliver customer value, leverage investments in major initiatives, and deploy horizontal solutions across business units?
- Or, is the goal to use business architecture as a way to address tactical business requirements?

The answers to these questions determine the degree of value to be derived from business architecture. Business architecture delivers profound and fundamentally new ways to view a business. And while there is substantial value associated with using business architecture to help address localized or project-centric requirements, limiting business architecture to this role undermines its value and potential. The strength of business architecture is in providing a

conceptual framework from which to view related issues and impacts across business unit and regional boundaries. The more that business architecture is boxed into a single business area or project view, the less value it delivers. Consider, for example, a project-based capability map. If the map is unique to a team, it would not have much meaning to any business group beyond that team.

On the other hand, if executives leverage business architecture to its true potential, extending it into new and far-reaching domains, tactical value will also be maximized to the greatest extent possible. In this case, business areas and project teams have a common framework for discussing shared business challenges and solutions. As a result, executives should seek to leverage business architecture to enable a broad range of strategies, issues, and challenges that could, for example, include:

- Addressing merger, acquisition, divestiture, or similar organizational streamlining or consolidation
- Managing holistic views of product and service delivery across business partners
- Streamlining policy management across disparate or partially autonomous divisions
- Comparing and evaluating core capabilities against competitors
- Creating a common, highly transparent view of customers and other stakeholders
- Increasing the consistency and integrity of operational and executive information
- Determining the impact of regulatory or related compliance across business units
- Recognizing, harvesting, and delivering improved innovation to customers

The above list of business challenges can vary dramatically from business to business, but, in all cases, the focus should be on achieving a wide range of goals that reach beyond isolated, tactical perspectives.

Communicate Business Value

At some point, someone within the organization is likely to offer the idea of introducing business architecture into the organization as a means of achieving various business goals. Whoever takes on this role will want to systematically build a business case for business architecture. Often, this effort requires identifying and documenting salient issues within the organization. The following examples are commonly found in many businesses:

- Executive issues not getting addressed due to inability to communicate requirements to solution teams
- Stakeholder/customer issues related to misalignment of concepts or terminology
- Multiple business units delivering conflicting information

- Inability to synchronize information due to conflicting vocabulary
- Multiple teams working at cross-purposes and delivering poorly synchronized results
- Failures related to miscommunication or inarticulate requirements
- Cost of developing business requirements that are not delivering results
- Issues related to executive reporting or synchronization of financial information

Documenting these and other challenges within the organization, which should include specifics that executives can easily understand, will begin to build the case for business architecture. When engaging business executives, the focus must remain on business value as it relates to their strategies and top priorities. For example:

- Focus on high-payback areas where costs or uncontrolled growth are spiraling
- Identify one or more customer-related opportunities that are high on the priority list
- Review governance issues impacting the organization's performance
- Empower teams to seek cross-disciplinary solutions where required to address issues

Ultimately, it will be up to the individual or team seeking to communicate the value of business architecture to the management team to be creative in selling the concept. The main roadblocks to introducing and benefiting from business architecture are culture and politics. Focus on business benefits, leverage industry success stories and case studies, and ensure that the audience has the ability to sponsor and enable business architecture deployment.

Assess Opportunities to Leverage Business Architecture

While the ultimate scope of business architecture is the full business, the scope of initial mapping efforts must be tempered by the need to demonstrate value early and often through business architecture. As a step to achieving early value, organizations should identify potential opportunities for applying business architecture. Consider, for example, the following:

- Investment and initiative planning that leverages value streams and capabilities as a way to clarify scope and focus
- Analysis of business value for projects based on capability and value-related improvements driven by business strategy
- Position and communicate business priorities using business architecture terminology and concepts

These examples provide a starting point for building executive visibility while establishing a baseline for subsequent use of business architecture on a broader scale. Opportunity analysis should additionally focus on high-visibility initiatives, particularly those efforts that cross business

unit boundaries. Such projects often include initiatives such as:

- Globalization efforts to realign the regionally focused enterprise
- Shifting to a customer-focused, versus product line or regionally focused, business model
- Business unit consolidation and realignment
- Establishment of a joint venture or business capability outsourcing

The bottom line is that as organizations consider business architecture opportunities, they should seek initiatives that have executive visibility, horizontal focus, and near-term applicability.

Establish Business Architecture Governance Structure

Appropriate governance is essential to ensure that an effective business architecture is established, utilized to the extent possible, and sustained long term. Governance should be put in place early and must be based on the premise of business ownership, business sponsorship, and representation from essential business areas. This means that if Human Resource Management is to be mapped, business representatives from the Human Resources department should participate. The issue of governance is addressed at greater length in the *BIZBOK® Guide* section 3.2. From an overall perspective, governance should be established prior to moving too quickly in subsequent stages of deployment.

Establish Business Architecture Baseline

Baselines vary when it comes to business architecture. A general rule of thumb is to establish a capability map as a foundation for the business architecture. A best practice is to parallel the building of the capability map with externally facing and priority internal value streams. There are several reasons for pursuing this dual approach, including:

- The capability map is the one foundational aspect of business architecture that readily maps to each of the other foundational aspects: organization, value, and information.
- Capability maps establish a common vocabulary upon which to base information maps.
- Capability maps take the most time to establish yet provide the most comprehensive view of what a business does at its core.
- Capabilities offer the most flexible mapping to the extended business architecture as well as IT application architecture.
- Value streams quickly highlight ways to improve stakeholder value delivery, focusing investments and initiatives on priority customers, partners, and executives.

- Value streams provide context to capability utilization by highlighting where key capabilities deliver value to customers, partners, and internal stakeholders.
- Value streams provide a “business friendly” entry point for engaging business professionals and management in the overall use and importance of business architecture.

It is rare for an organization to have the time or the inclination to fully complete a capability map prior to leveraging that map on various business priorities. Business architecture mapping teams should, therefore, focus capability decomposition efforts on a subset of capabilities that will provide the most value to the business in the near term. Many organizations focus on customer-facing capabilities such as Account Management and Customer Management. Other organizations may find that Product Management or Partner Management are areas that provide the most value. Alternative options include strategic or supporting capabilities. The important consideration is to ensure that business value can be gained early on.

While capability mapping as a first step offers significant advantages, it is not always a starting point for every organization. Other starting points have advantages as well. For example, organization mapping provides a view of complex, regionally distributed businesses that can offer insights into governance of the business architecture as well as who should participate in building it. Organization mapping can also provide insights into aspects of the capability map, providing a reality check to ensure that certain capabilities are not overlooked.

Another option is to establish value streams as an initial step in the business architecture. This measure is useful in pinpointing stakeholder focal points for which capabilities should be built out first. Value streams also enable an organization to establish project priorities; manage business process mapping from a top-down, business architecture perspective; and envision alternative business strategies and design options.

Information mapping is another place to start, but history suggests that engaging the business in information mapping as a standalone activity has yielded limited results. This time is better spent developing the capability map and deriving the information map from the definitions and viewpoints defined within that capability map.

Where an organization starts its business architecture journey varies based on its business needs. There are many considerations, but the default approach is to begin with capability mapping, unless other factors prevail.

Leverage Business Architecture in Initiative Planning

Organizations will want to begin leveraging the business architecture on selected initiatives. As previously stated, the business architecture does not need to be completed to be useful. On the contrary, aspects of the early or partial deployments of business architecture can be used to inform and initiate projects and deliver value to the business sooner. Such activities include:

- Identifying pressing business issues that leverage the business architecture
- Using the business architecture to establish the project scope for each of these initiatives
- Providing management with new options and insights based on the business architecture

In regards to the last point, one challenge project leaders have is the lack of enterprise visibility to issues that can sidetrack or derail a given project. For example, most organizations use vertical funding models to drive projects. These projects additionally tend to focus on current state IT assets, such as applications, as opposed to a more complete view of a given strategy driven by business priorities. Business architecture-enabled planning provides a more complete perspective on long-term strategies, identifying where missing aspects of critical value streams and capabilities have not been addressed within planning models.

If organizations can take steps toward addressing the inability to understand business impacts of multiple projects across complex organizational infrastructures, they will begin to see how business architecture can deliver real value. Section 2.7 addresses the ability to deliver this visibility across an enterprise through initiative mapping to core aspects of business architecture.

Expand Business Architecture

At this stage of deployment, a baseline business architecture has been established and additional work or refinements may be required to expand the breadth or depth of the business architecture. This often involves deeper decomposition of various business capabilities that were initially deferred, additional organization mapping, or the refinement of certain value streams.

Value stream analysis, in particular, tends to require refinement and additional analysis when those value streams are used in initiative planning and deployment. One example of this expanded value stream analysis involves refinement of stakeholder participation, identification and analysis of value stream implementations, and value/capability mapping.

Consider, for example, wholesale and retail divisions within a company that sought innovative approaches to improve end-to-end customer value. The retail division had previously performed

certain analysis in relation to this value stream and established related strategies and priorities. Executive discussions led to the conclusion that similar innovations could also improve wholesale value delivery.

Focusing on commonalities versus differences in value stream deployment options drove innovation across both retail and wholesale business units. Refinement in this example included additional drilldown into wholesale business strategy, value stream / process mapping, value stream stage / capability mapping, and alignment of strategy across wholesale and retail value stream deployments.

Business architecture expansion and refinement is likely to occur on an ongoing basis, which includes:

- Updating capability and value stream stage heat map ratings
- Adding increasingly detailed views to various maps
- Evolving the organization map
- Incorporating new information concepts
- Extending business architecture into other areas as required

Refine Business Architecture Governance and Deployment

The business architecture and its role in the organization will and should continually evolve. Once the foundational aspects of the business architecture are in place—including capability, value, organization, and information maps—an infinite set of business blueprint options are available to inform strategic planning, organizational alignment, business strategies and priorities, and the ability to derive the greatest value from capital investments, including investments in IT. Activities at this level include:

- Refinement of the business architecture to reflect ongoing business transformation and related changes
- Expanded or more detailed business architecture mapping based on emerging scenarios and transformation requirements
- Expanded or more detailed mappings of business architecture to IT architecture and other related disciplines including processes and requirements
- Use of business architecture on an increasingly broadening set of business transformation scenarios
- Expanded use of business architecture in strategy and roadmap creation, budgeting and funding, and partner and outsourcing alignment

An organization that reaches the refinement stage of business architecture has traveled far and

achieved a great deal.

Formalizing the Business Architecture Team

It is useful to summarize many of the initial decisions into a business architecture team charter. The purpose of the team charter is to communicate the definition and intent of the business architecture team. The charter is created by the business architecture team and approved by the business sponsor. The charter should minimally include the following:

- Definition of business architecture
- Purpose, value proposition, and measures of success for the business architecture team
- Scope of the business architecture team's responsibility
- Governance structure
- Principles of practice
- Engagement model (see section 3.2 for more information)

Business architecture teams should also establish an annually updated roadmap to communicate plans for building the business architecture baseline, applying business architecture to various business scenarios, and maturing other aspects of the practice in an intentional way. The roadmap activities are typically identified during an annual business architecture maturity assessment, which uncovers key gaps that need to be improved over the next year. See section 3.9 Business Architecture Maturity Model™ for more details on assessing maturity of the practice and related work product. The roadmap focuses team efforts, justifies resource needs, and aligns plans with other teams (e.g., IT architecture teams). Finally, the business architecture team would assess roadmap progress and report back to the business sponsor on a regular basis.

Summary

This section outlined the steps to start a new business architecture team and scale it up within an organization. The business architecture charter and roadmap are key deliverables to help formalize and communicate the team's activities. Each organization should adapt this approach in the way that best fits their goals, expectations, and culture.

SECTION 3.2: BUSINESS ARCHITECTURE GOVERNANCE

Business architecture governance requires business sponsorship, adherence to formal principles, a commitment to quality and standards, and an escalation framework that enables rapid decision making and the ability to stick to and adhere to those decisions. One of the main challenges facing organizations, particularly those that are larger and more geographically spread-out, is how to establish business architecture governance that encompasses these aspects of governance as well as effective participation and overall buy-in. This section outlines business architecture governance, including role definition, organization alignment, principle-oriented business governance, the role of standards in maintaining quality, and a framework for escalating decisions where appropriate. These concepts enable organizations of all sizes to establish business architecture programs that can scale as required.

Business Architecture Team: Role Definition

Ensuring the effective delivery of a viable, robust business architecture requires that certain roles are filled in addition to the business architecture practitioner role. These roles include sponsor, business leads, subject matter experts, mapping support, and, where applicable, mentoring expertise.

Business Architecture Roles and Competencies

Defining the role of a business architecture practitioner, which includes individuals who identify as business architects as well as other positions, and establishing the required competencies are fundamental to the successful, value-driven implementation of business architecture within an organization. Multiple levels may be defined for the business architecture practitioner, reflecting different responsibilities and providing a career path for advancement. Competencies provide the fundamental starting point from which a business architecture practice can orient and grow within an organization. Successful selection and optimization of business architecture team competencies is based on a sound understanding of the intended value and usage of business architecture within the organization, maturity of the organization, maturity of business architecture within the organization, and maturity of the individual practitioners with consideration for funding constraints, organizational risk, and other business pressures.

Competencies are grouped into knowledge, behavioral, and professional skill categories, articulated at the role level by type, sub-type, and related back to appendix B.2. The list in the appendix provides a summary of the competencies needed for the critical individuals delivering aspects of business architecture in the organization. The list, which is not exhaustive and will

continue to be developed, has been tied to the accompanying description to facilitate comprehension.

The following roles are important and stand out as required to ensure the success and continuity of a business architecture practice.

The Business Architect

Within the role titled business architect, there are often multiple subcategories of roles across core and virtual teams. This background sets the stage to quantify the attributes of the business architect. Basic skills for the business architect include:

- Ability to look beyond traditional business concepts and drill to the heart of a given concept
- The drive to introspectively challenge traditional terminology when it does not accurately depict an aspect of the business, is misleading, or inconsistent
- Communication skills to create and socialize the business architecture
- Business subject area expertise appropriate to the role and areas being mapped
- Basic understanding of blueprint structures necessary for capability, organization, value, and information mapping
- Patience to work collaboratively to ensure that the business architecture truly reflects the business

Beyond the aforementioned basic set of skills, specialty roles require additional expertise. Team leaders must have advanced mapping knowledge along with the ability to facilitate working sessions, collaborate with other teams and management, and communicate with executives. In many cases, team leaders become the face of the team and must have good overall communication skills.

Business unit-specific business architects must have even more extensive knowledge of certain subject areas within the business and the ability to identify and engage with an extended body of subject matter experts within a given business area. Business unit business architects must be credible and have strong working knowledge in subject matters unique to their business units or have direct access to those subject matter experts.

A business architecture mapping expert must have detailed, extensive skills in capability, organization, value, and information mapping. The mapping expert must also be able to incorporate capabilities, business unit, aspects of value maps, and information concepts into extended and customized blueprints as required by a given business scenario. This person would also have the ability to incorporate these maps into various tool representations as required.

There is no single set of attributes for a business architect. Rather, the role runs along a spectrum with the abilities to abstract and synthesize as well as communicate and collaborate across teams being overriding competencies for any business architect.

Business Sponsor

Sponsorship comes in a number of potential forms, and organizations must work diligently to build sponsorship for business architecture. Business architecture cannot be viewed as belonging to one business unit at the exclusion of others, which is especially true if that business unit is the IT organization. Since business architecture is owned by the business, sponsorship must be established within the business.

Building sponsorship is often done incrementally with one business executive coming on board and working to “sell” other colleagues on the concept. The ideal situation involves joint sponsorship across major segments of the business. For example, in a company that has a financial services line of business and an insurance line of business that share customers, both lines should be represented from a sponsorship perspective. If not, the business architecture will be skewed to one view of the business. When product lines or divisions are under-represented in a multi-line organization, the value of the business architecture is greatly diminished.

To sidestep the challenge of piecemeal or incomplete sponsorship, a team attempting to build executive support for business architecture could approach an executive steering committee, senior portfolio team, or a team of business executives that own the role of strategic planning and transformation. Having such a team sponsor a business architecture program can help avoid some of the potential challenges associated with business architecture being sponsored by a subset of business units. Oftentimes, a CIO can assist with the task of building sponsorship support within steering committees or transformation teams.

Business Architecture Team Leader

Creating robust, viable business architecture requires business knowledge and business credibility. When mapping efforts are led by or even facilitated by outsiders, whether these outsiders are IT architects or consultants, the process and the results both suffer. This means that a business architecture team should be led by business leaders with roots and reporting responsibility in the business.

Leaders may be appointed or the team can self-select leaders to facilitate the establishment and evolution of the business architecture. Leadership in this scenario does not imply that individuals dictate direction, content, or approach but rather facilitate, communicate, and motivate. It is recommended to use co-leadership roles to address practical challenges of timing, parallel commitments, and division of labor. If an organization finds it essential, a representative from IT

can take a co-leadership role on the team but only if required and only if there is co-leadership from various operational and managerial areas.

Business architecture team leadership can also be a rotational position or a team may wish to have leadership be split among more than two people. The options are based on team dynamics and should not be dictated by anyone outside the team if possible. However, executive steering committees or transformation teams often prefer a single focal point for business architecture and this typically results in a single team leader emerging as spokesperson. This executive communication role should be taken into consideration when selecting a team leader.

Business Architecture Team Subject Matter Expert

The business architecture team requires a core group of business professionals with knowledge of all major aspects of the business. In other words, mainstream business units should have representation for all essential aspects of major customer-facing capabilities and value streams. For example, a multi-line financial and insurance company should have representation from financial and insurance lines of the business. A manufacturing company, on the other hand, should have representation from areas such as sales, marketing, manufacturing, engineering, dealership management, financing, and other business areas.

This requirement is tempered by the reality that certain roles are highly focused and are of an executive nature. In these situations, full-time direct representation is impractical. For example, the vice president of capital planning or strategic planning is unlikely to sit on the team or provide a representative to sit on the team. Supporting capabilities may also not have an immediate seat at the table. To address these conditions, there are two kinds of business architecture team participants: “core” and “virtual”. Core participants are expected to participate in drafting level 1 and 2 capabilities and are also expected to be at each meeting that crosses into their subject area. Virtual team members are engaged as required. The team will determine the importance of certain representatives as core or virtual participants.

One test to see if a business unit should have core versus virtual participation is to determine what type of analysis gaps are created for customer-facing capabilities and externally focused value streams if these business units are excluded from certain mapping activities. This determination varies by industry type. Procurement Management at an insurance company or financial institution is likely to be considered a supporting capability and would likely not require core representation. A manufacturing firm, however, would want representation from the Purchasing team to participate as a core team member given the strategic nature of procurement at these companies.

A team does not have to be very large if core team members have access to a virtual team of subject matter expertise that can be engaged as required. This team dynamic is outlined in greater detail in figure 3.2.1, which demonstrates how virtual participants can coordinate as required with core team participants to ensure that the right degree of subject matter expertise is engaged.

Architecture Mapping Expert

Business architecture team leads and subject matter experts should focus their time and energy on establishing a robust business architecture that establishes a common business vocabulary that is recognized and leveraged across business units. These same individuals do not need to become business architecture mapping or tooling experts. This type of expertise is required, however, and typically comes from an enterprise architect with knowledge of both the techniques and tools.

The mapping and governance expert assembles and organizes analysis results into a formal knowledgebase and can develop the formal and ad hoc blueprints required to communicate and leverage business architecture with a wide variety of stakeholders. The person in this role should have expertise in standard capability, value, organization, and information mapping as well as the ability to expand these views so they align to various extended views of business architecture. Such an individual should also have tool expertise as appropriate to meeting blueprint mapping and knowledgebase governance.

Mentor

Many organizations lack in-house expertise in building, communicating, and leveraging business architecture and seek outside mentoring advice. This advice ensures that work stays on track but it does not have to involve extensive participation in the mapping effort. One area where mentoring is particularly important is in capability mapping. Creating a capability map is not an inherently natural skill for many in-house individuals who tend to gravitate to the path of least resistance when identifying capabilities.

Gravitating to the path of least resistance, often driven by a business line perspective, results in a capability map that resembles the organization structure, with capability names patterned after business unit names. These maps also suffer from redundancy, duplicating capabilities along product lines. A low level of mentorship can help keep these efforts on track at a critical time during business architecture creation. A capability map that does not actually represent capabilities of a business will destabilize a business architecture long term, creating redundancies and inconsistencies that will confuse a multitude of downstream analysis and planning activities.

The mentor is well-versed in capability mapping and business architecture in general, but the mentor does not facilitate business architecture working sessions. Business leaders and subject matter experts serve as facilitators in order to establish business ownership, accountability, and the expertise required to effectively deploy and leverage the business architecture long term. Rather, the mentor provides behind-the-scenes guidance related to team building, governance, mapping and blueprint creation, and integration into strategies, projects, and related architectures.

Organizational Alignment and Principle-Oriented Governance

While business architecture roles are important, the need for governance on a broader scale is equally significant. Business architecture governance requires a clear understanding of reporting and accountability, as well as escalation policies. Figure 3.2.1 depicts one governance option that aligns to the previously recommended role definitions for business architecture, including cross-functional sponsorship requirements.

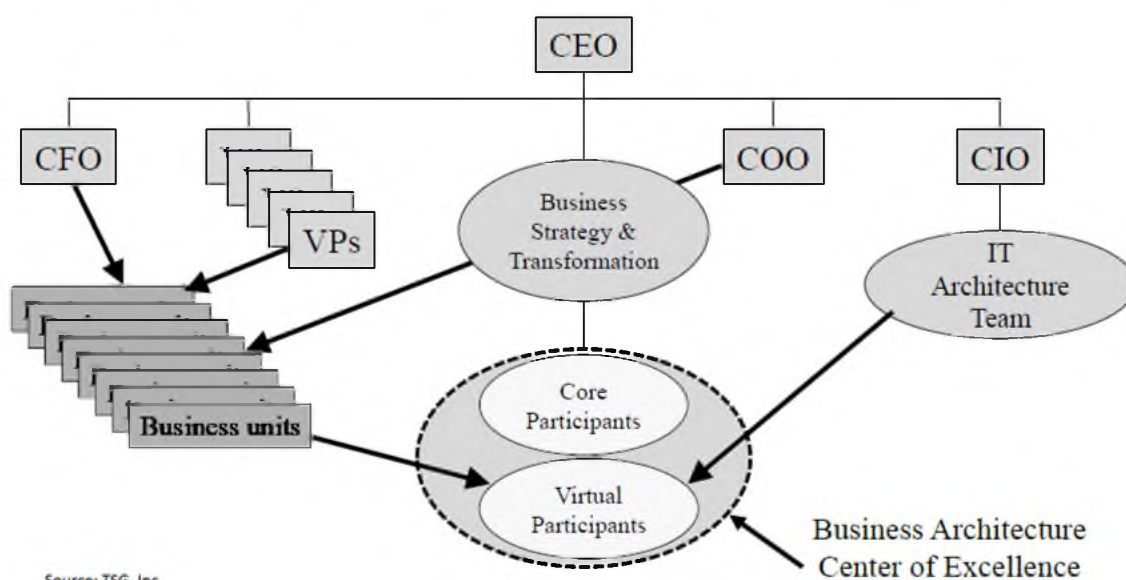


Figure 3.2.1: Sample Business Architecture Governance Structure

The figure depicts a sample governance structure for the business architecture team or “center of excellence”. In this example, the team reports to a Strategy and Transformation Team that represents a group of senior executives who set policy, define strategy, and prioritize business issues for funding purposes. Such a team provides the horizontal vision necessary to direct and benefit from business architecture and may be considered the primary customer of the business architecture team.

Creating the business architecture is one thing, but effectively leveraging business architecture requires executive level exposure and support. Whether choosing an organizing model that resembles the one pictured in figure 3.2.1 or selecting a different approach, access to executive planning teams is essential. Executive access provides the team with insight into complex horizontal business challenges and the ability to deliver value to the business.

The governance structure in figure 3.2.1 additionally highlights the relationship between the core team and virtual team participants. Virtual participants come from various business units (shown to the left) as well as IT (shown to the right). Virtual participants engage on an as needed basis with core team participants to establish and leverage the business architecture. The governance structure shown in figure 3.2.1 assumes that each business unit has business architecture representation.

Deploying a business architecture governance structure requires framing the center of excellence's role in context of other established teams and roles across the business. A challenge and an opportunity facing business architecture teams is how to systemically incorporate business architecture as a discipline across an ecosystem where other disciplines are already in place. For example, business architecture must demonstrate how it benefits and furthers customer experience, product management, portfolio management, business analysis, solution and data architecture, and other business disciplines. The first step to meet this challenge involves collaborating with other teams to establish, vet, and deploy an engagement model, which illustrates the inputs and outputs or value exchanged with each team. Figure 3.2.2 shows a sample engagement model.



Figure 3.2.2 Sample Business Architecture Team Engagement Model

Business architecture teams should establish an engagement model early in the lifecycle in order to streamline integration and alignment with other business practices and disciplines.

Purpose- and Principle-Oriented

In the *BIZBOK® Guide* part 1, it introduces the importance of applying principles in business architecture, and these principles are equally important when it comes to governance. Along with principles, the center of excellence should also establish a clear purpose for business architecture, often called the “elevator pitch”. In other words, in response to people asking what business architecture provides, participants should have a short, concise explanation that they can present in less than 30 seconds—the duration of most elevator rides. The following is a sample business architecture team purpose:

- Provide complete business visibility and transparency to further issue analysis, strategic planning, priority setting, investment analysis, and solution deployment

A purpose is just one step in defining governance and requires a set of principles that can provide an agreed upon set of truths to guide the team’s actions. Principles are essential because working on horizontal initiatives requires coordination across business units, geographic regions, and business disciplines with little shared history and no shared governance. Shared principles

streamline cross-functional collaboration, providing guidance that informs the business architect's actions and practice. Sample business architecture team principles include:

1. Participation in business mapping is appropriate to the breadth of topic areas being mapped.
2. Mapping efforts align by capability, value stream, information, or other views.
3. Mapping participants have firsthand knowledge of the portions of the business being mapped.
4. Blueprint structure and composition is appropriate to the audience of the blueprint.
5. Overriding driver is cross-business unit / cross-disciplinary collaboration.
6. Scope of the business architecture is defined by the scope of the business.
7. There is open exchange of information and ideas with all areas of the business.
8. Models, ideas, concepts, and plans are open to all participants unless it violates privacy, confidentiality, or security.

These sample principles are merely a starting point, but they provide a framework for establishing principle-oriented business architecture governance.

Escalation Model

All business architecture governance models require escalation policies and procedures. As a business architecture matures, there will be increasing pressure brought to bear on evolving and expanding the content to support more and more initiatives that vary widely across an ecosystem. Escalation policies are required, for example, in situations to:

- Settle basic content evolution disagreements around the mapping of core and extended domains
- Reprioritize work as needed to adjust to priority shifts across business units, programs, and projects
- Adjust practices based on skills, tooling, and other environmental factors
- Ensure that business architects do not get pulled too deeply into projects that distract from their ability to support a broader purpose and mission
- Adjust the overall roadmap for the business architecture and practice
- Ensure that scalability of the practice and the business architecture itself is appropriate to the needs of the organization

Scaling Up Business Architecture Efforts

It is recommended that the first task of a business architecture team involve establishing a governance structure that enables the team to meet management's mandate while further

allowing the team to scale up or down as appropriate. Business architecture becomes more challenging for larger, geographically distributed organizations. The sample governance structure shown in figure 3.2.1, along with principles and role definitions, provide a framework for scaling up the business architecture effort for larger, regionally distributed enterprises.

The success of the business architecture effort revolves around ensuring that the proper degree of representation is involved in build-out efforts. Principle No. 3 dictates that firsthand knowledge is required to establish a business architecture that embodies a true reflection of the business. This firsthand knowledge requires direct business participation as appropriate to the topics being mapped.

Ensuring that a representative business architecture is established and evolved requires that the virtual business architecture team incorporate business architects that work within and have ongoing contact with various business units. At large, diverse organizations, these roles must be established before significant mapping ensues. The importance of virtual business architects increases in direct proportion to the size and regional spread of the business. Large, geographically dispersed organizations will face a longer, more challenging roads to achieving business architecture maturity and adherence to basic governance principles become increasingly important in these situations.

The Business Architect Competency Model

Given the difficulty in selecting a single set of attributes that would satisfy the role of business architect in a given industry, state of maturity, or strategic context, a business architect competency model has been developed and will continue to evolve. The model creates a framework for determining the most relevant skills and competencies that need to be applied within a given business context by a business architect. The focus of the model is business architect *role outcomes*, which define the role of business architect. Outcomes provide the necessary link between the activities the business architect has to perform and the specific views of value within the business that are considered essential by executives.

The way to use the model (see appendix B.2) is to first understand the perceptions of value as described by the needs of executives and then to determine the consequent role outcomes that are required to satisfy these needs. Once these role outcomes have been established, the resultant business architect *role activities* required to deliver the business outcomes based on the business context can be established. It is important to note that business architect role activities are usually quite specific to a given business, industry, maturity, and strategic context, while the role outcomes will, to a large extent, remain the same. Once the business architect role activities are established, it is then possible to determine the necessary business architect competencies required to perform the activities that will drive the outcomes and consequently

deliver business value. The business architect competencies consist of three different categories of skills:

- Business knowledge & experience
- Emotional intelligence & behavioral skills
- Professional skills & qualifications

The Business Architect Competency Model foundation is described in the diagram shown in figure 3.2.3:

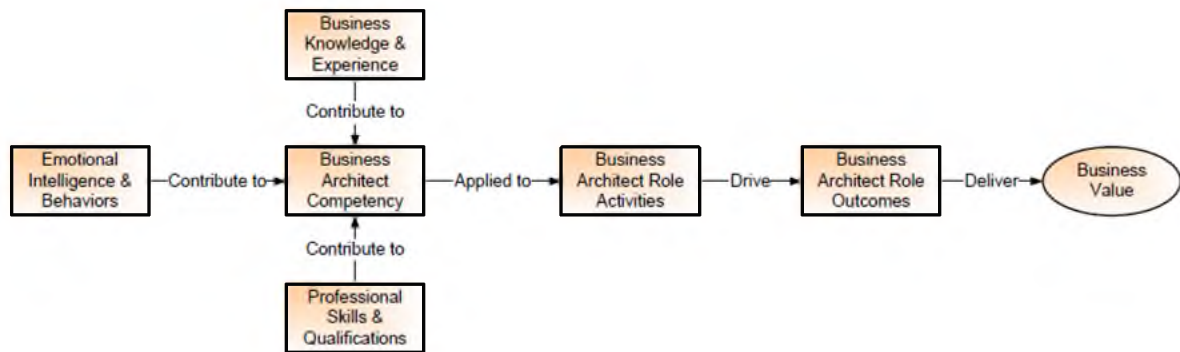


Figure 3.2.3: Business Architect Competency Model Relationships

The story of the model is stated thus: Business knowledge and experience, emotional intelligence & behaviors, and professional skills & qualifications contribute to business architect competency, which is applied to business architect role activities, which drive business architecture role outcomes that deliver business value.

The model is designed to ensure that the business architect role is always driving business value and doing so in a manner that has a natural and clear line of sight from business value to business architect competency. Several advantages ensue: It is easier to communicate the value of a business architect to executives (using terms executives use and understand), it is easier for a business architect to understand the expectations placed upon them, and it is easier to identify the relevance of training and development with respect to the role.

This model is applied in appendix B.2 Business Architecture Roles and Competencies, in the Business Architect Competency Model – Core Selection. In this model, the core outcomes are:

1. Decision Alignment – Executive decisions have to be aligned up and down the decision tree to be effective.
2. Strategic Business Alignment – The business has to be aligned to strategy.

3. **Business Transparency** – It should be possible to understand the causality within the business.
4. **Stakeholder Satisfaction** – Stakeholder buy-in needs to be achieved and maintained so that results can be achieved.

This model works as a foundation onto which extensions from a business architecture “competencies and skills palette” can be applied. Here, the industry, maturity and strategic context of the business need to be heavily factored in. The palette is listed in appendix B.2, under Business Architect Extended Competencies and Skills Palette.

It should be noted that the core skills and competencies are a foundation where meaning and interpretation need to be done within the context of the industry where business architects need to be deployed. Future iterations will seek to build out this model to add industry-specific variants.

Quality and Standards Adherence

Teams will find that there is a constant demand between perfecting the business architecture and applying it. As a rule, demands from various initiatives will drive the demand to improve and refine the architecture, which is the ideal. But teams must take care to not allow the depth and quality of the business architecture to slip behind the needs of various practices, disciplines, and teams. Therefore, teams will need to define the boundaries of high quality, which falls somewhere between perfection and “good enough”.

The second consideration around standards demands that someone on the team stay current with the evolution of maturity of the discipline as it evolves in the *BIZBOK® Guide*, work within the standards communities, and best practices. Doing so will ensure that a business architecture practice matures in accordance with the standards, models, tools, methods, and practices available in the market. Adhering to a defined degree of quality and continually monitoring industry standards are key to successful governance.

Summary

This section noted that many organizations face a common challenge in deciding how to establish business architecture governance that has appropriate sponsorship, participation, and buy-in. This section discussed business architecture governance including role definition, organization alignment, required competencies, guiding principles, escalation policies, quality, and standards. These principles are designed to enable an organization of any size to establish a business architecture program that has the ability to address the organization’s needs.

SECTION 3.3: BUSINESS ARCHITECTURE AND BUSINESS MODELS

As introduced in section 2.1 of the *BIZBOK® Guide*, a business model “describes the rationale of how an organization creates, delivers, and captures value”. Organizations are increasingly embracing business models to articulate vision and goals with a greater focus on customers and corresponding value propositions. Executives use business models to develop and communicate key business concepts centered on value creation and exchange.

The ability to describe business model concepts using a visual aid, like the Business Model Canvas¹ (described below), greatly facilitates innovation and design thinking. Management (and other stakeholders) gain a common set of perspectives on what they want to achieve and can establish a set of goals to ensure that the business model is deployed effectively. These are some of the key reasons that the formalization of the business model concept has grown in popularity over the years.

This section describes how business models can be used in conjunction with business architecture blueprints (discussed in detail in the *BIZBOK® Guide*, part 2) to drive innovation² and support targeted organizational outcomes. First, we introduce business model frameworks as a means to provide a common structure and language for defining, developing, innovating, and deploying business models within the enterprise. Then we discuss alignment of business model frameworks and business architecture frameworks to support common scenarios where these frameworks are used together. Lastly, we describe these common scenarios and provide guidance for the business architecture practitioner:

- Using business architecture blueprints to validate a business model
- Using business models to develop business architecture blueprints

Business models enable the practitioner to encapsulate and summarize the core logic of value creation and exchange. This provides a means to gather missing details and to validate assumptions with management and key stakeholders. Additionally, agreed-upon business model concepts offer a strong starting point for value-focused business architecture development.

Readers of this section should be familiar with foundational or core business architecture concepts and the extended or peripheral business architecture concepts as established in figure 1.1, *BIZBOK® Guide* part 1. The general understanding of these concepts is important in relation to using and experiencing the value and benefits that a business model can bring to your organization and stakeholders.

Business Model Frameworks

A business model framework allows a common shared language to be used consistently throughout the organization. A business model framework is defined as:

“A conceptual structure for organizing the elements, relationships, representations, and classifications of one or more business models.”³

A business model framework provides organizations with a way to organize business models into a formal, cohesive structure that facilitates the use of organized and repeatable methods. Management, planners, and business architecture practitioners leverage their business model framework in conjunction with other frameworks (e.g., business architecture) and tools to:

1. Outline the enterprise’s current and target state.
2. Improve cultural fluency.
3. Introduce a common perspective and structure to deliver an organization’s business model.

A business model framework elevates the level of innovative thinking and provides clarity and rigor to assess business potential from a variety of internal and external perspectives. Business architecture practitioners should be mindful that business models evolve with market dynamics - when they construct a business model, they should ensure all business model elements are designed to thrive in a state of change. While it might be a relatively easy task to conceive and implement a new business model, the long-term benefits will only be realized by the organization if executives and practitioners continuously reevaluate their business positions and redefine them based on the internal and external influences that are changing the markets in which the organization operates.

A variety of business model frameworks have been developed over the years to address the growing needs of organizations to develop and articulate innovative strategies. Some business model frameworks differ in terms of the viewpoints they address and the ways they are used. For example, some frameworks explore the customer side of the value proposition in more detail than others.

Examples of commonly used frameworks include:

1. The Four-Box Framework⁴, developed by Mark W. Johnson in 2010.
2. The Business Model Cube⁵, introduced by Peter Lindgren in 2013.
3. The Business Model Canvas⁶, developed by Alexander Osterwalder, Yves Pigneur, and a global collaboration team in 2010.

While the structure of each framework and the number of dimensions they describe differ, one critical area of commonality remains: they all seek to explain how value is created, delivered, and captured. In doing so, they describe (at differing levels of granularity) an organization's essential logic for value creation and exchange in a systematic, holistic way that encourages deeper understanding and facilitates deployment.

The Business Model Canvas

A well-known and widely used business model framework is the Business Model Canvas (see figure 3.3.1). It helps to map, discuss, design, and invent new business models through visual thinking, stimulating a holistic approach and storytelling. The Business Model Canvas provides a useful way to communicate its foundational elements and to align those elements with business architecture blueprints. For these reasons and because of its widespread use, this section uses the Business Model Canvas in its discussion and examples. Alignment to other business model frameworks follows a similar pattern and should be considered to have similar value, principles, and practices.



[Source: Strategyzer.com](https://www.strategyzer.com)

Figure 3.3.1: Business Model Canvas

The Business Model Canvas has nine basic building blocks. The right side of the canvas is the revenue side: the revenue streams along with the customer segments, channels, and the

customer relationships that create those revenues. The left side of the canvas is the cost side: the key resources, key activities, and key partnerships that are the main elements of any entity's cost structure. The organization's value proposition, at the heart of the canvas, straddles the revenue and cost sides. These building blocks are described in figure 3.3.2.

Business Model Canvas Building Block	Description
Customer Segments	Defines the different groups of people or organizations an enterprise aims to reach and serve
Value Propositions	The bundle of products and services that create value for a specific Customer Segment
Channels	Describes how a company communicates with and reaches its Customer Segments to deliver a Value Proposition
Customer Relationships	Describes the types of relationships a company establishes with specific Customer Segments
Revenue Streams	The cash a company generates from each Customer Segment (costs must be subtracted from revenues to create earnings)
Key Resources	Describes the most important assets required to make a business model work
Key Activities	Describes the most important things a company must do to make its business model work
Key Partnerships	Describes the network of suppliers and partners that make the business model work
Cost Structure	Describes all costs incurred to operate the business model

[Source: Strategyzer.com](https://www.strategyzer.com)

Figure 3.3.2: Business Model Canvas Building Blocks

As an example, an insurance company currently uses in-house agents as its only Channel. As part of its strategic planning process, it may consider adding independent agents to deliver its products to untapped markets (thus adding to both Key Partnerships and Channels). The company could analyze their proposed channel extensions, identifying required resources, technology impacts, costs of sales, market penetration, and forecasted revenue increases. Business architecture practitioners could drive this analysis through the use of the Business Model Canvas and business architecture blueprints to outline the current and target state business models, identify business capability gaps, and articulate the required improvements in order to realize the new business model.

Business Model and Business Architecture Framework Alignment

Business architecture practitioners using a business model framework (like the Business Model Canvas) and business architecture blueprints together to perform the analysis described above (or for other purposes) should align their business model and business architecture frameworks. This alignment will help the practitioner provide better outcomes, achieve consistent and repeatable results, and more skillfully explain the story of needed change to executives in a more cohesive way.

A practitioner's first consideration in aligning a business model framework with a business architecture framework is to understand each framework's perspectives and the intended use of the framework. Business model frameworks provide a structure that enables organizations to clearly describe and evaluate their business needs across a variety of parameters from value proposition and go-to-market customer care and channels, to changes in key partnerships. These can be used to support innovative thinking for change. Business architecture perspectives provide the foundation of the business, articulated using concise, agreed-upon views of the business. These perspectives enable the organization to define the necessary business transformation roadmaps in order to reach its goals and objectives.

When the business model framework and business architecture framework are aligned, the business architecture practitioner is able to use business models more effectively to articulate business needs of all kinds. This work enables management to prioritize and set funding so the practitioner and business planners can create actionable deployment plans, as depicted in figure 3.3.3.

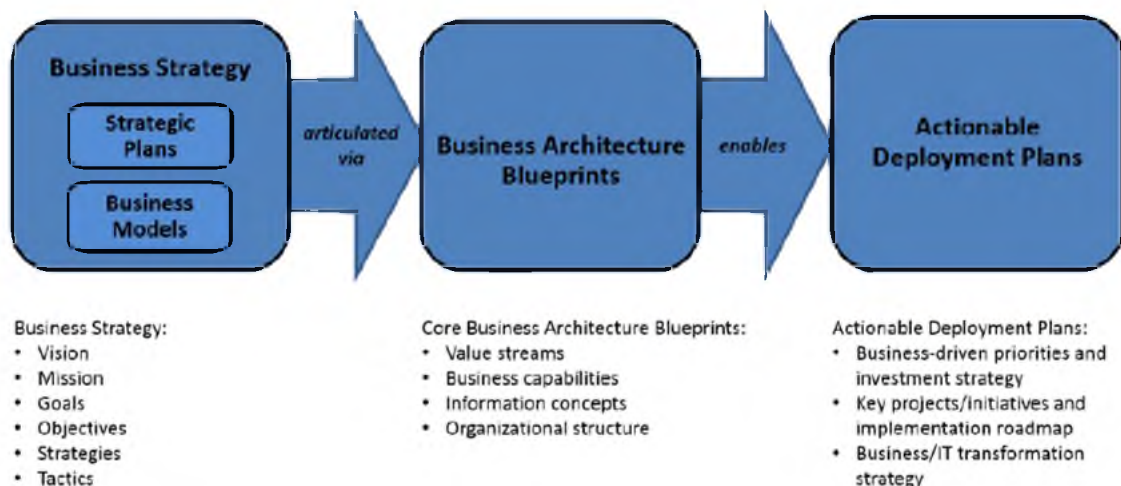


Figure 3.3.3: The Relationship between Business Strategy, Business Models, Business Architecture Blueprints, and Actionable Deployment Plans

Business architecture blueprints serve to realize a business model design, structured in a way to define and deliver the required business solutions to achieve the measurable outcomes. This is one of the important benefits of business architecture / business model framework alignment. Additional benefits include:

- Determining the cross-functional impacts of various strategies on the business
- Enabling rapid solution analysis that can be turned into initiatives
- Defining deployable projects and proposed critical path road maps
- Aligning projects and their funding to expected outcomes, traceable to business objectives, goals and strategies

Business Model/Business Architecture Framework Alignment and Mapping Principles

Business model framework and business architecture framework alignment entails coupling the disciplines of business modeling and business architecture to deliver business value in new and unique ways. A key activity in framework alignment is the mapping of the main concepts of each framework to the other. Concept mapping demonstrates how business model concepts (building blocks such as Customer Relationships) impact various aspects of the business architecture, including value streams, capabilities, information concepts, and organization, as well as extended domain concepts.

Business architecture practitioners should use the following set of guiding principles as the foundation to tailor an approach to align their business model and business architecture frameworks.

1. A business model framework describes end-state views of the business and should therefore be aligned with other frameworks that describe end-state views of the business, e.g., business strategy, business architecture, and enterprise architecture frameworks (see section 6.2).
2. Business models provide a key perspective on business strategy. Therefore, the mapping of the business model to business architecture blueprints must be consistent with related elements of strategy: business vision, mission, goals, objectives, and strategies (see section 2.1).
3. Business models should be constructed in such a way to facilitate concept mapping. Information captured within a given business model should not contain ambiguous statements that would restrict the ability to map the business model to necessary business architecture blueprints.
4. An optimal business model-to-business architecture mapping is bi-directional.

5. An optimal business model-to-business architecture mapping is explicit with direct (rather than indirect) mapping.

The example shown in figure 3.3.4 demonstrates how these principles help to define and deliver necessary outcomes. In this example, the Business Model Canvas building blocks are mapped to relevant business architecture concepts defined within the *BIZBOK® Guide* section 1, along with the related alignment considerations. These mappings are not all-inclusive, but represent a sample of the explicit mappings that exist between the Business Model Canvas building blocks and key business architecture concepts.

Business Model Canvas Building Block	Business Architecture Concepts	Selected Mapping & Alignment Considerations
Customer Segments	- Strategy - Stakeholder - Value Stream - Capability	- Customer needs influence strategy and trigger value streams - Customers are stakeholders - Capabilities enable value streams to create and deliver value to customers
Value Propositions	- Strategy - Products and Services - Value Stream - Capability	- The value delivered to each market is at the core of all external-facing strategy - New or changed value propositions drive initiatives and impact change - Capabilities enable value streams to create and deliver value to customers
Channels	- Strategy - Stakeholder - Value Stream - Capability	- Distribution channels are key aspects of go-to-market strategies - Partner channels are an aggregation of stakeholders - Channel-related value streams often call for partner leverage, which in turn typically calls for new value-add capabilities in technology and process
Customer Relationships	- Value Stream - Capability - Stakeholder	- Defining your organization's desired customer interactions and service is a critical success factor - Customer engagement and needed capabilities are fully articulated and refined via value streams - Customer relationships are relationships with and between stakeholders of the enterprise
Revenue Streams	- Business Unit - Value Stream - Capability	- Business units drive revenue, which are tied directly to value streams - Capabilities enable value streams to deliver and enhance revenue

Business Model Canvas Building Block	Business Architecture Concepts	Selected Mapping & Alignment Considerations
Key Resources	- Business Unit - Capability - Information	- Business units and functional organizations deliver a myriad of resources - Capabilities need resources (e.g., people, funding, technology, and other assets) to flourish - Information itself is a value asset of an enterprise
Key Activities	- Value Stream - Capability	- Value streams map end-to-end value-add activities - New or changed capabilities are articulated in these value streams
Key Partnerships	- Stakeholders - Value Stream - Capability	- Partners can be key resources and/or channels, and they are critically engaged to key activities - Partners are stakeholders - Partners participate in value streams and provide capabilities
Cost Structures	- Business Unit - Capability	- Business units and functional units are the nexus of cost as they provide the key resources and activities - Cost structures impact or target capability improvements

Figure 3.3.4: Sample Business Model Building Block / Business Architecture Mappings

Business Model / Business Architecture Mapping in Practice

The scenarios presented here represent examples of business architecture practitioners using business models and business architecture blueprints together, and using the mapping concepts discussed in the previous sections to support specific business outcomes. The business architecture blueprint and mapping techniques shown in these scenarios are for illustrative purposes only.

Scenario 1: A smartphone technology supplier strategizes to turn around a revenue decline

Scenario 1 involves a hypothetical company, Xanadu⁷, a developer of smartphone technology focused on business users who need the latest in mobile collaboration tools. Faced with slumping sales, the company leadership sought innovative change in its customer segments and business capabilities in order to increase customer satisfaction and return to revenue growth.

Figure 3.3.5 depicts Xanadu's target state business model. Business model items in black indicate current state items and items in blue italics designate revised/new items for the target state.

To address the executive demand, marketing and product experts worked with the business architecture practitioner to develop and enhance the customer and revenue elements of the business model (on the right-hand side of the canvas), then the functional and operational enabling elements (on the left-hand side of the canvas). This approach represents a natural flow from a focus on new market opportunities and channels on the right, to exploring the key activities and resources on the left, which in turn enable the realization of the value propositions in the middle.

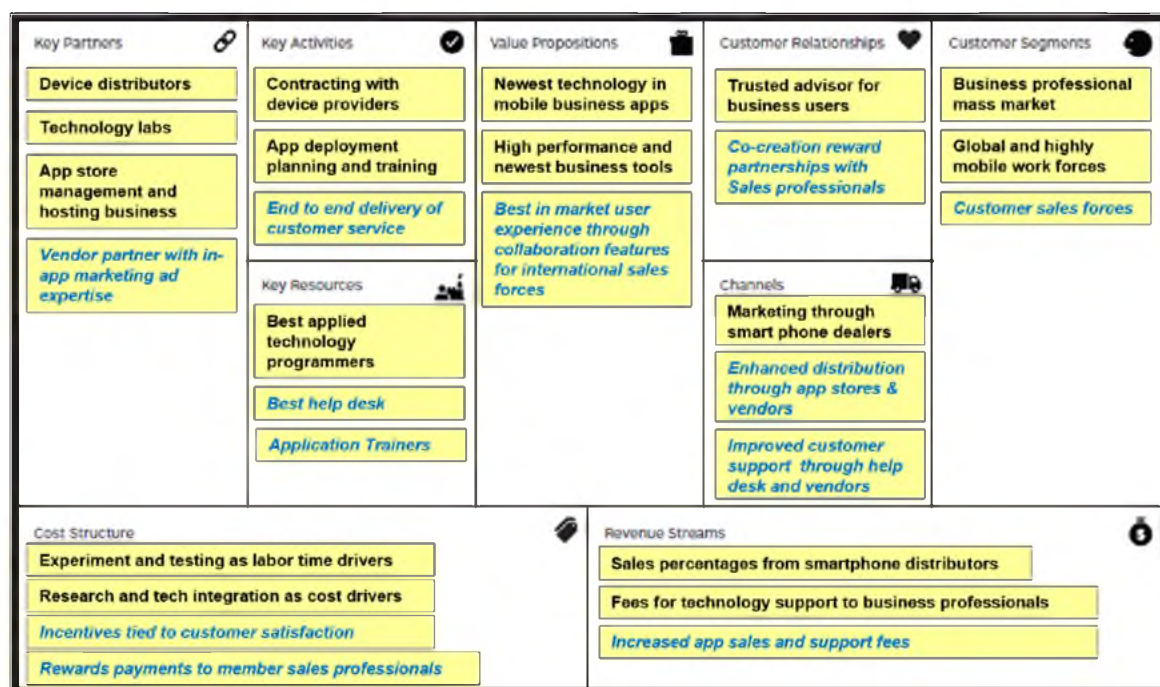


Figure 3.3.5: Scenario 1 – Target State Business Model

Assuming that the customer/revenue side of the model is reasonably well defined and understood, and that stakeholders have bought into the proposed enhancements to the current value proposition, the next step is to determine the roles, activities, teaming, cost structure, and other details on the business capabilities/cost side that are required to deliver that value proposition. Capability mapping, described in section 2.2 of the *BIZBOK® Guide*, is a particularly effective means to take stakeholders from the right-hand side of the Business Model Canvas into a more detailed gap analysis comparing different areas of the business, and prioritizing changes on the cost side of the model. There can be one or more value streams representing value items delivered to each customer segment and potentially different value streams based upon different channels. These value streams, described in section 2.4 of the *BIZBOK® Guide*, can represent the

delivery of products or services offered via help desks, vendor partners, etc. Any new channels such as help desks or vendor partners should be added to the target state Business Model Canvas.

Further analysis involves working with subject matter experts (SMEs) to examine each combination of customer segment and value proposition. The SMEs' understanding of the revenue side of the model forms the basis for an examination of the fundamental capabilities of the business. The business architecture practitioner leverages the capability map as the assessment tool to surface and assess gaps across the various business model elements. The capabilities should also be associated to value streams inherent in the business model. This helps to identify value stream stages with critical capability gaps, highlighting the need for new solutions or process changes in order to realize the expected value items in each of the value streams affiliated with the business model.

After completing the current and proposed target state capability map, management and planning teams can use heat mapping to surface business model gaps and related weaknesses and then determine the skills, roles, activities, investments, and other operational changes needed to close those gaps. Red (critical risk indication) may imply that sizable additional investment and/or significant changes to the organization in culture, people, technology, expense structure, partnerships, or channels may be needed, which would then lead to a cost/benefit analysis.

The result of Xanadu's capability gap analysis is shown in figure 3.3.6. Xanadu's red rating for their Customer Management capabilities reflects significant gaps in their ability to deliver consistent levels of customer service under their target business model. This gap will likely require significant investment and innovation in order to realize the leadership team's strategic objectives.



Figure 3.3.6: Scenario 1 – Capability Heat Map

Finally, the planning team drove out additional actions for new and enhanced value streams and required capabilities as shown in figure 3.3.7.

Business Capability Gap	Action Plan
Customer Management	• Develop customer service roles and activities to satisfy the new end-to-end customer service value stream required by the shift from hardware provider to solution-focused provider • Develop customer and partner escalation service model • Implement self-service collaboration model, including feedback survey capabilities (includes Marketing Management) • Develop engagement program for customers and vendor partners including surveys of satisfaction and needs (includes Marketing Management)
Marketing Management	• Develop tactics for customer sales forces with international travel • Develop programs for customer and vendor collaboration
Partner Management	• Revise partner agreements to expand partner roles in customer support • Locate partner with expertise for in-app marketing ads
Financial Resources Management	• Adjust investment evaluation criteria to include scores based upon customer survey results • Adjust chart of accounts to accommodate billing invoices from partners and incentive payouts to partners
Human Resources Management	• Hire and/or train existing staff to implement the new roles and activities required for enhanced collaboration and customer service
Knowledge Management	• Construct better help documents for training and to support dedicated service • Construct better survey mechanisms to understand customer satisfaction and needs • Tie vendor incentives and leadership incentives to survey results

Figure 3.3.7: Scenario 1 – Capability Gaps and Action Plan

In conclusion, the example above demonstrates how key business architecture blueprints such as capability maps and value streams are useful in validating target business models and

identifying capability gaps that need to be addressed in order to successfully realize the target business model.

Scenario 2: A publisher of auto repair maintenance manuals looks to diversify

This scenario uses a hypothetical company, Great Automotive Technology (GAT), as a simple example of how a business architecture practitioner would use a target business model as a starting point for business architecture mapping. GAT provides maintenance manuals to automobile repair shops. As part of its growth strategy, GAT decided to expand its product offering by adding a web-based automobile maintenance training service for maintenance technicians. The new training service will use maintenance knowledge contained in GAT's existing maintenance manuals. Figure 3.3.8 illustrates the new GAT business model with the new/revise features of the business model highlighted in blue italics.

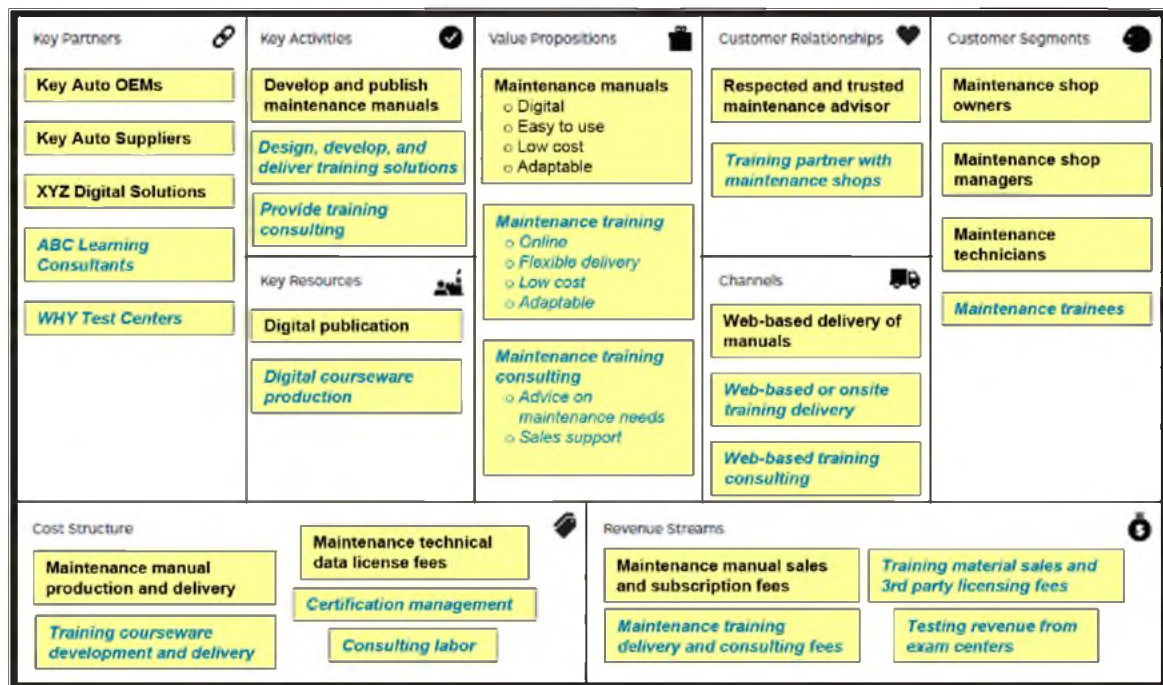


Figure 3.3.8: Scenario 2 – Target State Business Model

The process begins by examining the business goals and objectives associated with the target state business model, identifying the affected business model elements, and then describing the impact on the business architecture. Figure 3.3.9 describes the business architecture impacts identified for the business model elements affected by GAT's goal to "establish maintenance training with tier one and two maintenance shops".

Business Goal: - Establish maintenance training with tier 1 and 2 maintenance shops	
Business Objectives: - > 25% market share in maintenance training - > 95% positive training experience with maintenance managers and trainees	
Associated Business Model Building Block	Business Architecture Impact Analysis
Value Proposition - Maintenance training that is: online, flexible in delivery, low cost, adaptable - Maintenance training consulting to help customers with their training decisions and plans	- New maintenance training products and related consulting services identified in product map - New maintenance value items (positive training experience, training advice) identified in value map - New training information entities identified in information map, e.g., instructor guide, exam
Customer Segments	- New maintenance trainee in stakeholder map
Customer Relationships	- Improve the Marketing and Customer Engagement capabilities to establish customer training partnerships and positive training experiences
Channels - Web-based or onsite training delivery - Web-based training consulting	- New capabilities to deliver: 1) maintenance training via the web or on-site; and 2) web-based training consulting
Key Resources - Digital courseware production	- New capabilities to develop and deliver courseware - New information entities in information map to describe physical and digital forms of courseware, guides, and relationships to technical material found in existing maintenance manuals
Key Activities - Design, develop, and deliver training solutions - Provide training consulting	- New value stream to design, develop, and deliver training solution - New value items described in value map: courseware, instructor guides, and exams
Key Partners - ABC Learning Consultants - WHY Test Centers	- New third-party providers in organization map, e.g., WHY Test Centers - New stakeholders and value items in value map

Figure 3.3.9: Scenario 2 – Business Architecture Impact Analysis

The next step is to map the target business model elements to the business architecture blueprints based on the impacts described in figure 3.3.9. The business architect practitioner

starts with GAT's revised value proposition identifying products, value items, and customer segments. Suggested steps for mapping the target business model elements to the business architecture blueprints are as follows:

1. **Understand the context.** It's important to understand the full scope and intent of the business change before beginning the mapping effort. The target business models should be reviewed to understand their fundamental logic and how they interact with each other and with existing business models to realize the organization's goals and objectives.
2. **Map the customer perspective.** Starting with the customer's viewpoint, map the customer value proposition, customer segments, customer relationships, and channels to the related business architecture blueprints, e.g., value stream map, product map, stakeholder map, and information map.

Figure 3.3.10 provides an example of how products and services described in GAT's value proposition maps to products in the GAT product map (product mapping is discussed in section 2.7).

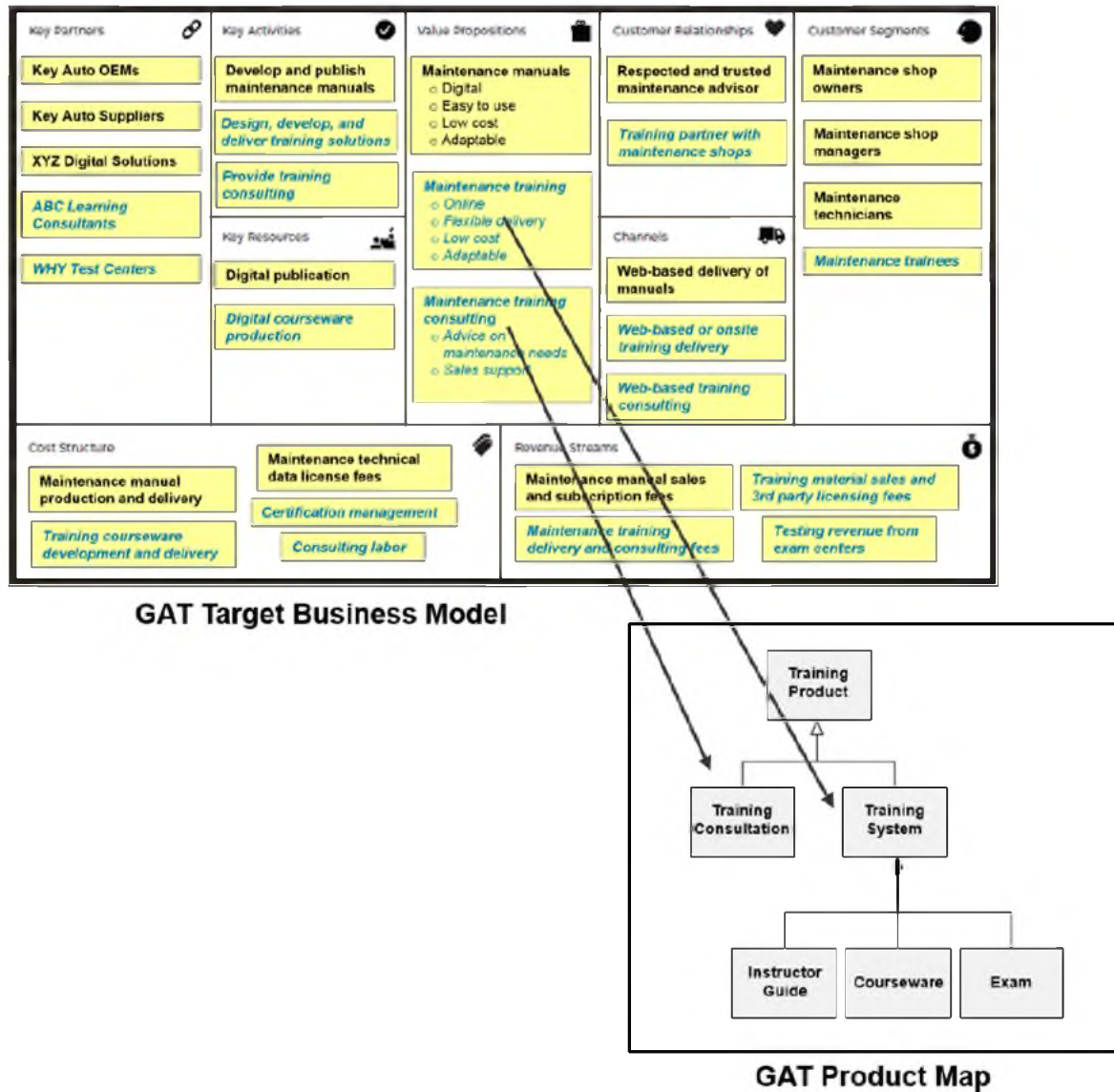


Figure 3.3.10: GAT Example Target Business Model Mapping to Product Map

3. **Map the operational (internal) perspective.** Map the key activities, key partners, key resources, and cost structure to the related business architecture blueprints, e.g., capability map, organization map, and information map.

Figure 3.3.11 depicts selected business model / business architecture blueprint mappings using the GAT example.

4. **Validate the mapping.** Review and validate the target state business architecture blueprints against the business goals, objectives, and the target state business model.

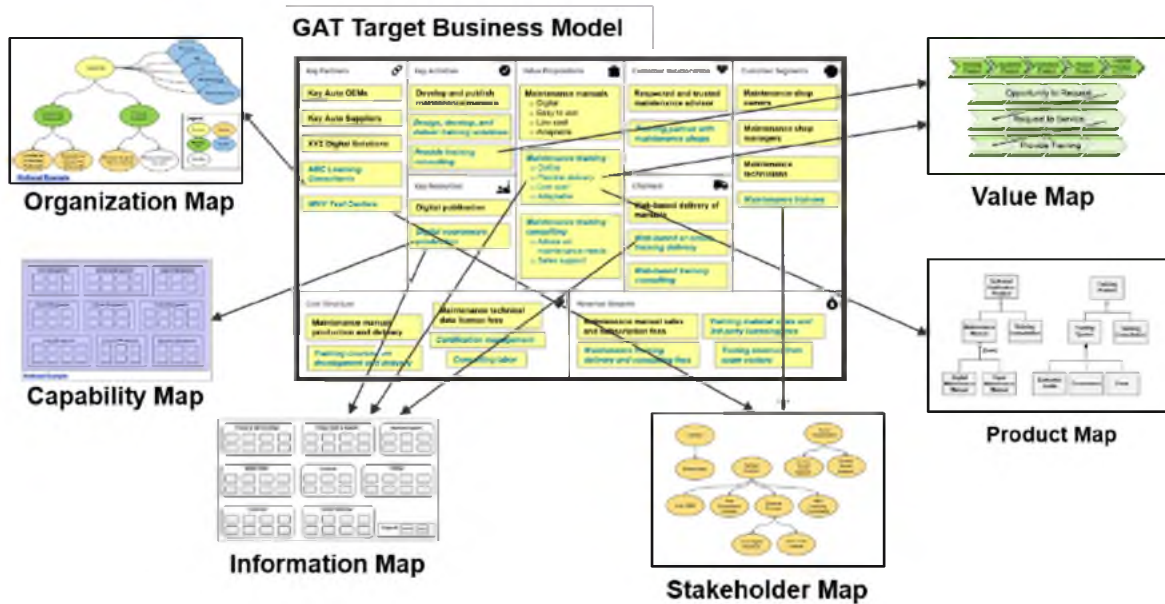


Figure 3.3.11: Scenario 2 – Target State Business Model Mappings to Business Architecture Blueprints

Once the architecture blueprint mapping has been completed, the business architecture practitioner can undertake a capability gap and performance analysis. In the GAT example, the ability to develop and deliver online course content is identified as a capability gap requiring new investment initiatives.

Finally, the business architect practitioner can formulate a target state vision based on the mappings of business goals/objectives and business models with business architecture concepts. The target state business architecture can then be used to drive IT architecture changes, detailed business process and solution design, and investment decisions.

Summary

Business models continue to gain in popularity and prominence as an effective way for organizations to describe how they do business and to explore innovative ways to create value. Business model frameworks provide a useful structure and method for defining a firm's business models and examining how the elements of those business models interrelate to capture and deliver that value. Whichever business model framework is used, the business architecture practitioner should be able to communicate a clear understanding of how each dimension of the business model maps to and aligns with business architecture concepts and ultimately business architecture blueprints. This is also true in reverse, as the business model should be based on a foundation of the enterprise's business architecture.

It is important for the business architecture practitioner to understand and establish how business models can be significant tools that increase the effectiveness and value of the business architecture practice. Business model innovation efforts that flow through a business architecture lens will, in turn, serve as an effective basis for framing, communicating, and funding business improvements via actionable solutions.

¹ Alexander Osterwalder and Yves Pigneur, *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers* (Hoboken, NJ: John Wiley & Sons 2010), 44.

² Steve DuPont, Karen Erwin, Bryan Lail, and Stephen Marshall, “Linking Business Models with Business Architecture to Drive Innovation”, *Business Architecture Guild*, August 2015, <https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/docs/linkingbusinessmodelsb.arch.pdf>.

³ Steve DuPont, “From Canvas to Blueprint: Aligning Business Models with Business Architecture”, *Business Architecture Guild*, 2013, <https://businessarchitectureguild.site-ym.com/resource/collection/3A59DA4B-9F94-4B63-85FB-E70971109B91/basig-13-03-11.pdf>.

⁴ Mark Johnson, *Seizing the White Space*, (Boston: Harvard Business School Publishing, 2010), 24.

⁵ Peter Lindgren, & Ole Horn Rasmussen, “The Business Model Cube”, *Journal of Multi Business Model Innovation and Technology*, 3rd ed., (2013), 156.

⁶ Alexander Osterwalder and Yves Pigneur, *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers* (Hoboken, NJ: John Wiley & Sons 2010), 44.

⁷ Steve DuPont, Karen Erwin, and Bryan Lail, “Business Architecture and Business Models”, Proceedings of the Business Architecture Innovation Workshop, Austin, TX. *Business Architecture Guild*, September 16, 2014. <https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/collection/7A90F5EA-39DB-49CB-BBBD-408100540A67/duPont.pdf>.

SECTION 3.4: BUSINESS ARCHITECTURE AND BUSINESS PROCESS MANAGEMENT

In section 2.4, the *BIZBOK® Guide* explored the relationship between value stream mapping and process mapping. This section focuses on the alignment between business architecture and business process architecture, which is the structural design of general process systems. Process architecture applies to process systems of varying degrees of complexity in fields such as computers, business processes, enterprise architecture, policy and procedures, logistics, and project management.¹

This section also discusses the principles and benefits of alignment, and includes practice guidelines, examples, a model-based view, and usage scenario.

Background on Business Architecture and Business Processes

A business process is a series of logically related activities or tasks (such as planning, production, or sales) performed together to produce a defined set of results.² Process modeling is the discipline of establishing diagrammatic abstractions of business processes in order to analyze how work is being done, improve the efficiency and effectiveness of that work, and (in certain cases) automate the work.

Representations of business processes and process models are found in abundance across most organizations, and there is a need to manage them accordingly. The discipline of Business Process Management (BPM) involves “any combination of modeling, automation, execution, control, measurement, and optimization of business activity flows in support of enterprise goals, spanning systems, employees, customers, and partners within and beyond the enterprise boundaries.”³

There are numerous ways to visualize process modeling at various levels of abstraction – at a high level, a very detailed level, and at various abstractions in between. The most widely accepted standard is the Business Process Model and Notation (BPMN v2.0).⁴ Visualization strengthens analysis, which can lead to improvements in how that process is defined and performed.

One of the challenges with business process modeling is that similar or overlapping processes are often defined in different ways across business units. This may result in duplication and/or multiple unnecessary variations, which leads to a deterioration in customer service, product consistency, and overall efficiency and effectiveness. Governing processes more effectively can reduce these potential downsides. Business architecture provides a framework for improving

process deployment, streamlining, consolidation, and measurement. Business architecture can also gain additional insights from business process definitions. Therefore, the two disciplines can benefit from having a more integrated perspective.

Aligning process architecture with business architecture provides a description of the high-level business processes that underlie the creation of value described in value streams. In a business transformation initiative, the business architecture can identify potential redundancies while the process architecture can improve the efficiency and effectiveness of business capabilities. At the operating level of business description, process architecture can help define capability implementations and behaviors, while business architecture can provide cross-process consistency and control of process variation.

Benefits of Aligning Process Architecture with Business Architecture

The following benefits are associated with the practice of aligning BPM with business architecture:

- **Business architecture:**
 - Provides process modeling teams with an aggregate perspective to envision where multiple, parallel workflows may need to be activated across the organization
 - Enables process management teams to quickly determine which capabilities may be improved at various points in the value delivery cycle
 - Delivers a top-down business perspective or framework for planning process-related work, changes, and improvements
 - Translates strategic objectives into common language that enables holistic, transformative process improvement efforts versus tactical incremental change
 - Highlights where processes require certain data using value stream-to-capability-to-information concept relationships, for processes associated with select value streams
- The stakeholder map provides a high-level perspective on process role definitions
- **Business architecture / process cross-mapping:**
 - Provides insight into process redundancy across the business ecosystem
 - Surfaces differences in overlapping or related processes
 - Enables teams to benefit from process improvements made by other teams
 - Delivers insights into business transformation as it relates to value delivery
 - Reveals opportunities to centralize processes or formalize dotted line relationships among federated common processes

- High-level business processes provide insights into how the organization works on a scale that crosses organizational boundaries
- Business processes offer nuanced insights into capability implementations, weaknesses, and limitations, particularly at lower levels of capability mapping

Principles of Aligning Process Architecture with Business Architecture

The following principles provide guidance for leveraging business architecture to further BPM efforts:

- Value streams provide a framework for envisioning end-to-end stakeholder value
- Processes implement some or all stages of stakeholder value delivery
- Value streams provide a holistic perspective that crosses business unit boundaries
- High-level business processes may correspond to an entire value stream, but not all steps and outcomes of a process are necessarily part of the value proposition delivered to the key stakeholders
- Mapping processes to value streams provides a basis for evaluating the implications of overlapping or redundant process definitions, and taking action where appropriate
- Processes aligned to value stream stages implement the capabilities that enable those stages
- Value streams provide a framework for determining which capabilities are implemented by certain processes
- Heat-mapped capabilities identify weaknesses and potential opportunities for process improvement
- Capabilities and processes identify the key information required to enable various aspects of a value stream
- Value stream stages provide a framework for scoping and focusing business process design

Business Architecture / Business Process Mapping

The following perspectives discuss the relationships between value streams, capabilities, and business processes, as well as secondary relationships with business units, information, and stakeholders. Different views offer different perspectives, and different stakeholders require different levels of mapping granularity. Business architecture and business process cross-mappings should accommodate these variations based on each individual scenario, planning versus execution context, and which stakeholder(s) requires the information.

Value Streams, Capabilities, and Business Processes: An Integrated Approach

Value streams, like processes, are often (but not always) represented in displayed order (e.g., left to right), sharing an end goal to deliver value to a stakeholder or set of stakeholders. Like value streams, business processes are business event-triggered, in addition to providing details of the work (logically related activities or tasks) contained within each business process.

BPM practitioners generally have a need to represent value creation delivered for the same set of stakeholders. Often, a BPM practitioner will need to create high-level (highly abstracted), end-to-end (from stakeholder back to stakeholder) business process models. These representations typically identify value outputs in addition to other outputs such as those required to be delivered to customers, e.g., regulatory reports.

Process professionals see the creation of business process models as reflecting the complete end-to-end identification of operational, managerial, and supporting activities conducted by the enterprise, resulting in the ultimate creation of value for stakeholders. Both business process and business architecture communities require models at the value creation level of detail. However, the business process community requires a set of detailed activities whereas the business architecture community leverages a cross-mapping of business capabilities to understand the overall business ecosystem.

Figure 3.4.1 depicts the three-way mappings between value stream and business process; value stream and capability; and capability and business process.

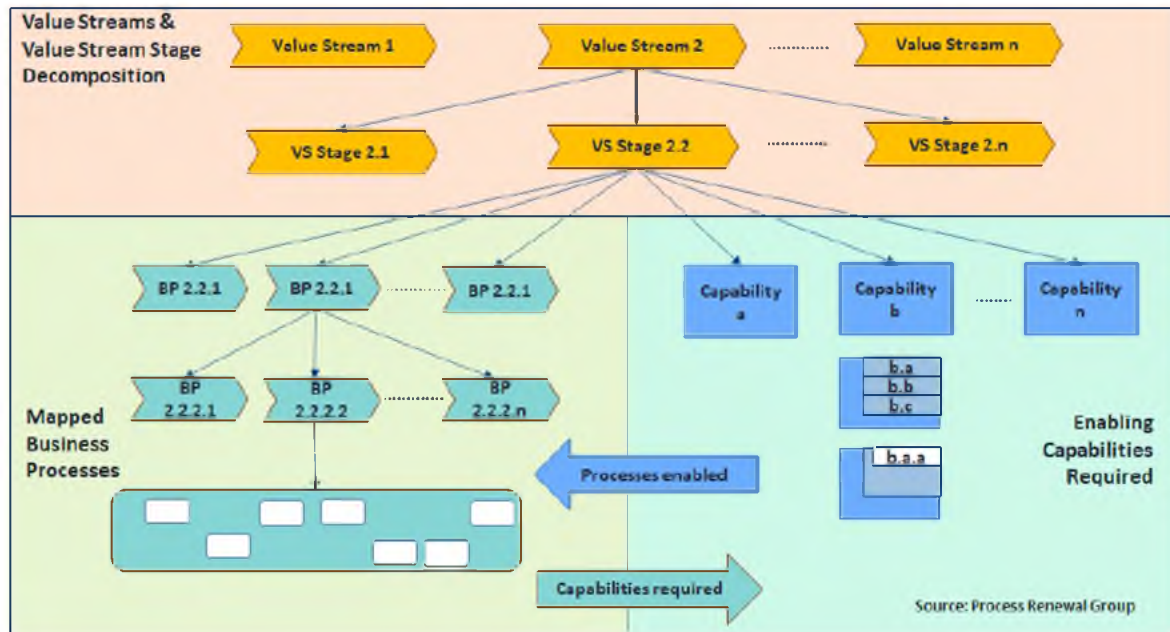


Figure 3.4.1: Integrated Value Stream, Capability, and Process Mapping Example⁵

The bottom-left section of figure 3.4.1 depicts a value stream stage (VS Stage 2.2) that has been mapped to multiple business processes and process decompositions. This represents the process modeler's view. The bottom-right section of figure 3.4.1 depicts the same value stream stage mapped to enabling capabilities. The third relationship, derived from the first two and shown as arrows along the bottom of the figure, depicts the link between business processes and capabilities. Connecting business processes to capabilities provides the following insights:

- Stakeholder value delivery improvements identified in a value stream may be traced to underperforming capabilities
- Underperforming capabilities mapped to business processes that operationally enact those capabilities provide insight into process improvement opportunities
- Where business processes map to more than one value stream stage, there may be opportunities to rationalize or standardize corresponding processes
- Relationships between business processes and capabilities, and those capabilities and technology deployments, can aid analysts, solution architects, and software designers who are seeking more insights about the processes being automated.

Formalizing Business Architecture and Business Process Mappings

Business processes (and process architecture) have multiple associations to business architecture in terms of relationships to value streams, value stream stages, capabilities, and corresponding outcomes. These relationships are shown in figure 3.4.2.

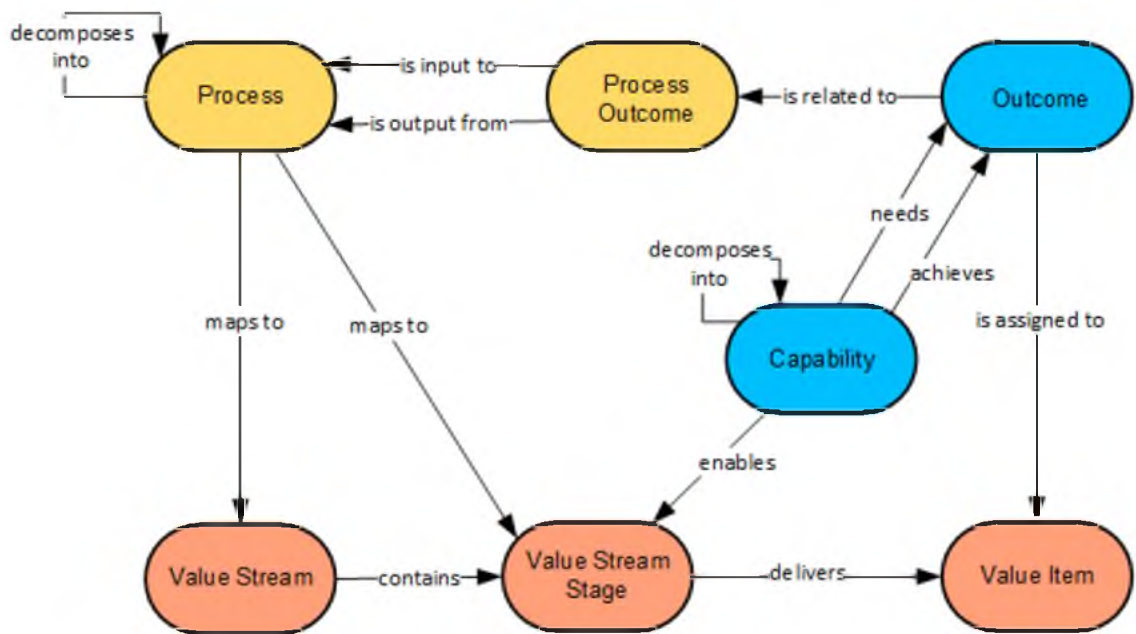


Figure 3.4.2: Business Architecture and Business Process Relationships

The unique relationships between business architecture and business processes are as follows:

- Process mappings to value stream and capability accommodate multiple process modeling schools of thought. For example, some methodologies apply the concept of a high-level process, which typically omits details associated with Supplier, Input, Process, Output, and Customer (SIPOC)-related granularity. High-level processes decompose into lower-level elements, such as Sub-Process or (atomic) Activity. The “process decomposes into process” relationship accommodates “process elaboration through decomposition”.

A high-level process, often viewed through a top-down perspective, may be associated with one or more value streams. From a bottom-up perspective, a process more specifically maps to one or more value stream stages. The relationships shown in figure 3.4.2 accommodate both high-level and low-level mapping practices, as well as those falling along a hierarchical spectrum. Any given process may have a many-to-many relationship to value streams and value stream stages as shown in the “maps to” relationship.

- Capability similarly accommodates “elaboration through decomposition”, where a given capability decomposes into more fine-grained capabilities. Capability principles, structure, and performance remain consistent at every level of hierarchical decomposition. As highlighted in section 2.2 of the *BIZBOK® Guide*, capability is characterized by capability behavior, which also characterizes the behavior of a capability instance, which in turn represents an implementation of that capability. The relationships shown in figure 3.4.2

connect the capability with the value stream stage that it enables and the outcome it produces. Lower-level capabilities enable increasingly fine-grained analyses and produce increasingly fine-grained outcomes. These outcomes contribute to or are “assigned to” value items associated with that value stream stage.

- Process outcome is a realized aspect of an outcome, achieved or needed by a capability, that corresponds to an input to or an output from a specific process. Process outcome is understandable only in relation to the process it refers to, within the context of a given capability outcome. For example, one can have definitions of structure, format, and state that provide more behavioral information, which aligns well with process-related inputs and outputs. Outcomes produced by a capability, however, endure without reliance on such context, relying instead on a given implementation of that capability instance and its related behavior to provide context. Figure 3.4.2 highlights this overall perspective by depicting a process outcome produced by a capability as being “related to” a process outcome, which provides context to a corresponding process.

For real-world context, figure 3.4.3 depicts the Take a Trip value stream along with relationships between value stream stages and corresponding processes. This multi-purpose value stream represents a person making a one-way or round-trip journey with multiple start and stop points. Processes are shown as yellow rectangles. As an example, a process called “Change Traveler Trip Arrangements”, maps to the Ensure Permission, Depart, and Arrive at Destination value stream stages. This process, along with a number of additional processes in logical sequence, maps to the Depart stage, providing a comprehensive association between the business process and value stream stages.

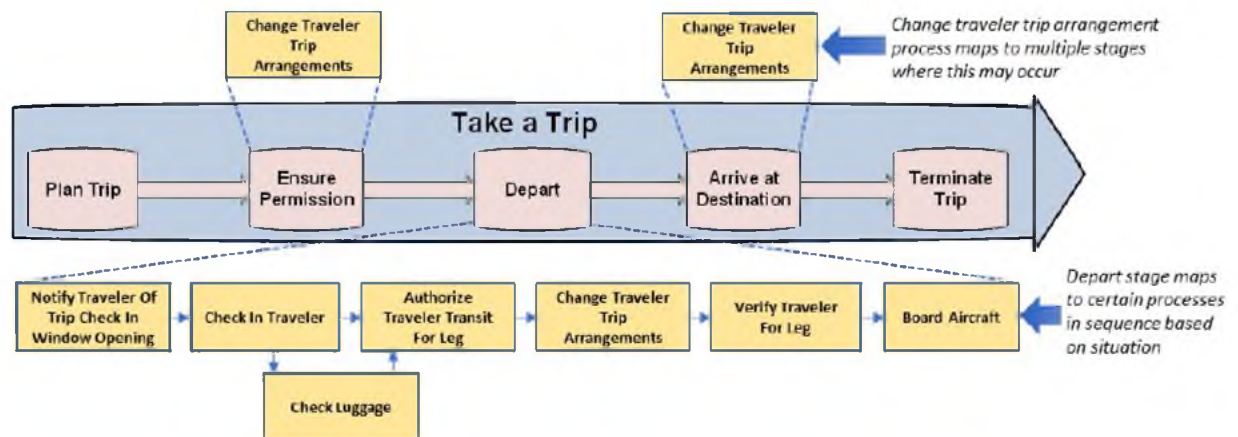


Figure 3.4.3: Transportation Example for Business Architecture / Business Process Alignment⁶

Using figure 3.4.2 as the model perspective and figure 3.4.3 as a high-level snapshot of a real-world situation, figure 3.4.4 provides an example of how to interpret the model and

corresponding real-world details in more depth. Figure 3.4.4 depicts the relationships using the model associations defined in figure 3.4.2, reflecting the value stream, stages, capabilities, and processes introduced in figure 3.4.3. Figure 3.4.4 applies lettered labels A-E to highlight specific details as summarized below:

- A process (A) called “Change Traveler Trip Arrangements” has a relationship (B) to the Take a Trip value stream and, more specifically, to the Depart value stream stage
- The process has a relationship to three value stream stages: Ensure Permission; Depart; and Arrive at Destination; but only one stage is shown in figure 3.4.4 for example purposes
- The Depart stage has an enabling capability (C) called Payment Amount Determination that enables this stage, in part, by producing an outcome (E) called Payment Amount
- The Payment Amount outcome is assigned to a value item (D) “Utility of Travel Documents”, which is delivered by the value stream Depart stage
- The Payment Amount outcome is, in turn, related to a process outcome (F) called “Itinerary Change Fee”, which shows as being “Paid”
- This change fee is then used as an input to and an output from the “Change Traveler Trip Arrangements” process (A)

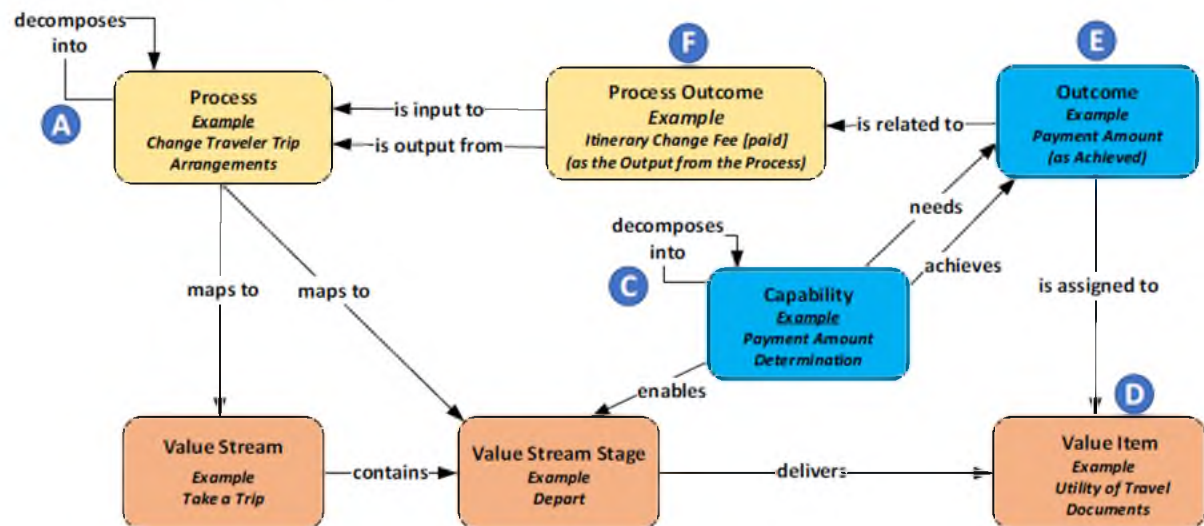


Figure 3.4.4: Transportation Example: Mapping Business Architecture to Business Process

Specific input and output relationships can be determined through a more detailed analysis of the role that a process plays in various situations. A practitioner’s perspective of the example shown in figures 3.4.3 and 3.4.4 is depicted in figure 3.4.5.

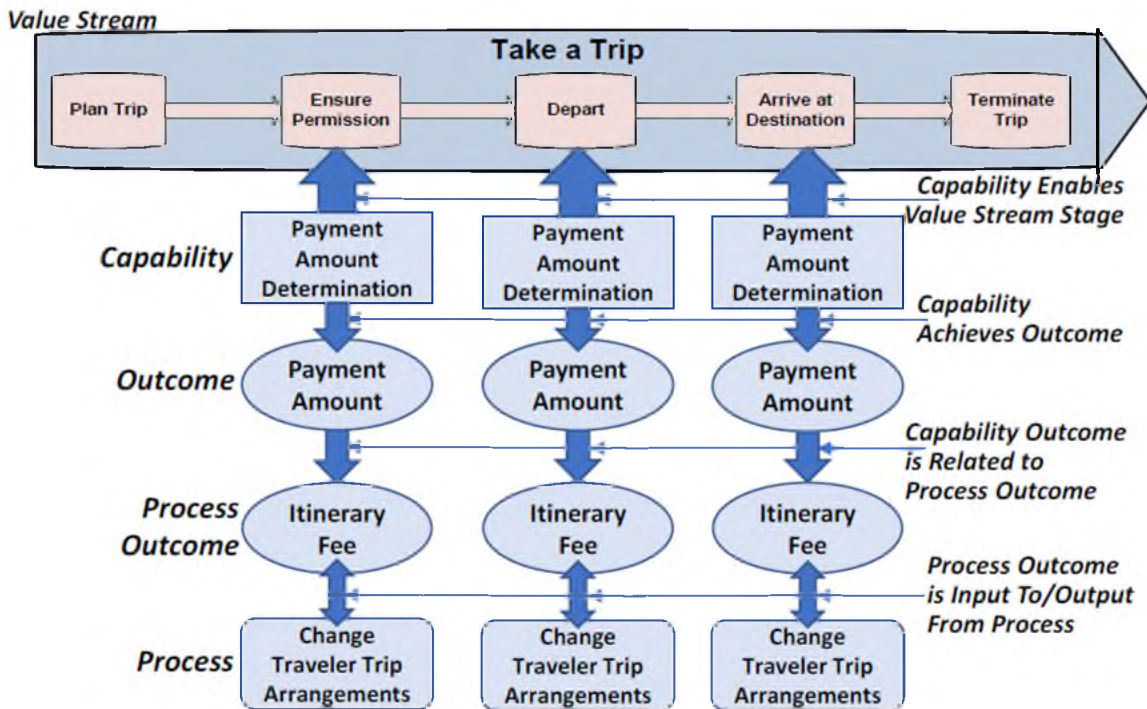


Figure 3.4.5: Take a Trip Value Stream, Stages, Enabling Capability, and Process Relationships

In practical terms, a team would work from a high-level perspective and drill down to the more granular relationships shown herein. For example, it may satisfy impact analysis or planning needs to simply associate the processes previously shown in figure 3.4.3 with related value streams and corresponding stages. However, a business requirement or an implementation team may find it opportunistic to map enabling capabilities and outcomes to corresponding process outcomes and related processes. The degree of granularity specified and corresponding effort needed to produce these mappings should be driven by the needs of those engaged in working with these artifacts.

Business Architecture / Business Process Analysis Techniques

Business process improvement efforts have served organizations well in terms of operational streamlining, but going beyond efficiency improvements demands a more holistic, architectural perspective. Value streams offer a way to view processes, unconstrained by product line, business unit or partner boundaries, process complexities, or technologies. Value streams can be used to assess the current state of a business from a process perspective because they offer an aggregate, cross-business unit, end-to-end view of how value is created for a given stakeholder. Value streams also offer a top-down, holistic approach to process mapping across product lines, business units, and business partners.

Two concepts are central to the ability to understand where processes align or overlap with related techniques: business process linking and dependency analysis; and process aggregation and decomposition. These two approaches are discussed below.

Business Process Linking and Dependency Analysis

Understanding how value streams are implemented today and how they can be improved can leverage value stream / business process mapping to determine linkages and interdependencies among those processes. Creating a more comprehensive view of how processes support a value stream from an end-to-end perspective involves linking interdependent processes to value streams and value stream stages.

The figure 3.4.3 example depicted a mapping of several business processes that are collectively used to implement activities associated with the Depart stage of the Take a Trip value stream, in which that stage represents all activities associated with and leading up to the actual departure. This value stream stage involves many internal and external stakeholders across various business units and partners, as well as the customer. As a result, linking interdependent processes facilitates efforts to streamline end-to-end value delivery and helps identify where different business units may need to collaborate to optimize multiple related or dependent business processes.

Linking capabilities to processes, as depicted in figures 3.4.4 and 3.4.5, additionally offers teams that are working on technology-related investments insight into how automation may be applied to improve that set of business processes. Linking, however, provides only one dimension of the multidimensional business alignment challenge. A complete view also requires the ability to aggregate and decompose business processes.

Business Process Aggregation and Decomposition

Process aggregation and decomposition provides another dimension to analyzing current-state business processes. Decomposition allows an analyst to look at a value stream and determine how many overlapping processes implement that value stream, along with the business units that use those processes. Aggregation allows a business unit that relies on a particular process to determine where that process fits within a given value stream, and if there are existing processes that also map to the same stage or stages of that value stream that may serve as the basis for establishing and automating a common approach, oftentimes with different stakeholders.

Decomposition and aggregation can take the form of a tree structure. For example, a given value stream stage may map to multiple business processes as shown in figure 3.4.3. A process such as Check in Traveler may decompose into lower-level processes, uniquely defining differences or discrepancies in terms of how the work is performed. This decomposition creates a tiered

structure which an analyst can use to trace back to the value stream stage to assess discrepancies, similarities, and other considerations when aligning work across business units associated with a given value stream stage. That value stream stage may routinely engage multiple participating stakeholders from a cross-section of business units. The check-in process, for example, may involve gate agents as well as phone agents.

Collectively, process aggregation and decomposition provide executives, analysts, and planning teams with the ability to zoom in and zoom out of a process across shared stakeholder value perspectives. This offers complete visibility into enterprise process deployments at the desired level of detail. The zoom in / zoom out ability offers insights into the complexity, conflicts, and similarities among different and seemingly unrelated processes across business units or even partner boundaries. From a strategic and tactical perspective, this enables a wide range of improvements and transformation options.

Business Architecture / Business Process Usage Scenarios

The following business scenario highlights how an organization might apply the business architecture / business process mapping approaches previously discussed.

Issue Analysis and Resolution Scenario

Identifying where process-related improvements can be made on an ecosystem-wide basis is a challenge when no holistic perspective is in place to indicate what needs to be improved within the context of stakeholder value delivery.

Consider the Take a Trip value stream introduced in figure 3.4.3. During the Depart stage, there may be an issue with changing the traveler's trip arrangements. As depicted in that figure, the change falls after the check-in and authorization to travel. One might imagine a situation where the flight is delayed by weather, meaning the traveler will miss their connection. Changing a trip at this stage may involve more complexities than changing it prior to check-in or on the day of the flight.

Knowing that there is an issue with the process within this stage leads to the question of why this is happening. Viewing the issue from a business architecture perspective enables analysts to spot capability weaknesses, where, for example, the information is not available to calculate or to waive the change fee. The capabilities and information limitations then point analysts and software teams towards the software and data dependencies that undermine the ability to calculate or waive the change fee. Correcting the capability issues may require more than updating the software and fixing the data issues; the process may also require refinements. The consideration here is that the use of business architecture provides a holistic approach to

resolving the issue, in which software, data, and process are considered collectively based on one's ability to quickly see the root cause of the issue and resolve them through a holistic lens.

Summary

Business processes implement various aspects of a business architecture and have a symbiotic relationship with value streams and capabilities. By visualizing business process complexities through value streams and capabilities, organizations can better plan, position, and govern business initiatives for which the focus is on improving stakeholder value delivery. Processes provide the detailed perspective on improving, aligning, standardizing, and automating work to improve issues identified by the business architecture. The two disciplines not only coexist but can thrive, ensuring that investments in business processes are framed strategically and leveraged holistically across a business ecosystem.

¹ Dawis, E. P., J. F. Dawis, Wei-Pin Koo (2001). Architecture of Computer-based Systems using Dualistic Petri Nets. Systems, Man, and Cybernetics, 2001 IEEE International Conference on Volume 3, 2001 Page(s):1554 - 1558 vol.3.

² "Integrating Business Processes to Improve Transportation System Performance", U.S. Dept. of Transportation, Federal Highway Administration, December 2017, <https://ops.fhwa.dot.gov/publications/fhwahop17053/index.htm>.

³ "One Common Definition for BPM", Collaborative Planning and Social Business, January 27, 2014, <http://socialbiz.org/2014/01/27/one-common-definition-for-bpm/> – This definition is based on discussions on or with *Linked-In's BPM Guru Group*, *BPM.COM's Forum*, *Workflow Management Coalition (WfMC) Members*, and the *Association of BPM Professionals (ABPMP) Forum*.

⁴ "Business Process Model and Notation 2.0", Object Management Group, January 2011, <http://www.omg.org/spec/BPMN/2.0/>.

⁵ *ibid.*

⁶ Source: Value Streams & Business Processes: The Business Architecture Perspective, Business Architecture Guild, Public Resources, https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/public_resources/bpm_paper_final_dec2019.pdf

SECTION 3.5: BUSINESS ARCHITECTURE, CASE MANAGEMENT, AND DYNAMIC RULES-BASED ROUTING

Case management is a business design concept that provides a means of envisioning business solutions in complex, multidimensional, unpredictable, and often in-parallel work environments. Case management is defined as “A method or practice of coordinating work by organizing all of the relevant pieces into one place – called a case”.¹ Dynamic rules-based routing (DRBR) is the primary means of implementing case management solutions.

Business architecture provides the basis for defining a case via the concept of a “binding object”, which is defined in *BIZBOK® Guide* section 2.4. The binding object is the main business object transitioning through a value stream that binds related business objects that collectively form the basis for delivering stakeholder value. For example, an agreement in the state of “in-force”, a claim in the state of “settled”, or a trip in the state of “completed” represent states that correspond to stakeholder-requested value propositions. A binding object establishes and maintains associations to related objects bound by real-world necessity. Agreement, for example, connects customers to the product or products they acquire, initial and subsequent customer inquiries, engaged partners, the financial accounts and related financial objects needed to manage payments, customer complaints and responses, and other business objects as situations demand.

A primary vehicle for implementing case management is a discipline called “dynamic rules-based routing” (DRBR). Business architecture delivers a framework for designing, evolving, and deploying dynamic rules-based routing as a means of formalizing and automating case management in the context of capability-enabled, stakeholder value delivery. This section discusses how business architecture may be used to expose opportunities and strategies for formalizing and optimizing case management solutions with a focus on architecturally aligned, highly scalable workflow design and deployment.

Case management demands a factual, holistic, and structured view of all business objects that represent and are associated with a case. Consider a business scenario where a case includes business objects associated with an agreement between an organization and a customer. The agreement object serves as the focal point, established in the early stages of a value stream, and associated with corresponding business objects via matching capabilities. Capabilities build business object associations and information concept relationships and then formalize these associations in the information map. An agreement in such a scenario would be matched to a customer, product, policy, financial account, payment, decision, time, and any number of other

business objects based on situational context. These relationships are embodied in the information map, which defines the information concepts that represent the universe of business objects in the business ecosystem.

A case is by no means restricted to agreements. A motor vehicle department would center a case on a license, a hospital would center a case on a healthcare case², an insurance company would center a claim settlement on a claim, a telecommunications support center would center a case on a dispute requiring resolution, and a court system would center a case on a legal proceeding. All of these scenarios share the concept of having a central business object serve as the centerpiece for a case, connected to other business objects essential to value delivery.

Case management demands a high degree of discipline, agility, and transparency. Because case management is a business discipline first and foremost, business architecture serves as an overarching framework from which to design and deploy robust case management solutions.

A case should not be confused with the practice of opening a case for a customer inquiry or dispute. In most Business Architecture Guild® reference models, an inquiry, and to a lesser degree a dispute, would serve as the binding object established and connected to a customer, an agreement with a customer, a claim, or other business object based on the situation. Adding a case business object into these scenarios adds complexity to capability matching demands, information concept relationships, and corresponding data deployments and software services. Inserting spurious and extraneous business objects into a business architecture creates operating model and software system complexities that increase costs, drive up risk, and undermine business agility.

The section provides a discussion of case management and how business architecture provides a framework for scoping, designing, and deploying case management solutions by applying DRBR. It also provides case management examples that leverage business architecture to deliver clearly defined, scalable business solutions in complex environments. The section also provides a detailed approach to DRBR definition, the state-based approach for managing, tracking, and routing work within and across value streams. Finally, this section outlines how business architecture, and by extension DRBR, provides a formal framework for designing and automating scalable business solutions.

Defining Case Management

Case management has historically been associated with a subset of industries, such as court systems and healthcare. The concept has become more generalized across numerous industries as a means of improving and optimizing organization design and effectiveness, stakeholder value, tracking and reporting, auditability, and overall quality. Managing every aspect associated with establishing, structuring, finalizing, fulfilling, modifying, and analyzing capability-enabled

stakeholder value delivery requires an unambiguous and comprehensive, yet consumable, business perspective, which business architecture delivers.

For example, case management, as defined using DRBR maps, enables work to transition seamlessly across a value stream based on object state changes, that may be impacted by related object state changes in parallel active value streams, which is common in complex business environments. Business environments that benefit the most from employing case management are typified by a large number of knowledge workers, complex business scenarios, and a degree of unpredictability that cannot be accommodated through traditional process modeling techniques.³

Designing work management solutions using DRBR offers a unique design and automation perspective that:

- Frees knowledge workers from being locked into fixed, rigid workflows inherent in entrenched business process models, allowing those workers to dynamically route work based on the task at hand and conditions at the time
- Routes work dynamically based on business rules that rely on event triggers, business object states, and business rules
- Provides high degrees of workflow transparency running in parallel across business unit and partner environments as work navigates fluidly across one or more value streams
- Relies on robust data architecture and data management that are based on business architecture information concepts and related capabilities that collectively are not confined by business unit silos
- Can be automated to deliver dramatically improved business solutions, where business-defined, state-based event models are delivered to software designers and development teams

Case management solutions apply to insurance and financial firms, government agencies, manufacturing, transportation, telecommunications, high-tech, and any other industry seeking holistic workflow flexibility, optimization, and automation. Note that case management and DRBR do not rely on traditional process paradigms outlined in *BIZBOK® Guide* section 3.4, but are rather based on a data-oriented foundation that implements the aforementioned object state transitions, making work available to stakeholders as required to transition a series of business objects to an end state.

Aligning Dynamic Rules-Based Routing and Business Architecture

Leveraging business architecture to enable the design and deployment of case management solutions is a natural step in aligning these powerful disciplines. Value streams establish an end-to-end view of how to deliver stakeholder value. One requirement for delivering stakeholder value is to ensure case file availability at each stage of each value stream involved in delivering stakeholder value. Business capabilities enable case file management and availability at key points across these value streams. Business architecture / case management alignment principles and guidelines provide a basis for leveraging business architecture to enable case management.

Dynamic Rules-Based Routing and Business Architecture Alignment Principles

The following principles establish the basis for business architecture and case management alignment.

1. Case management provides a robust business framework for managing all aspects of work associated with stakeholder value delivery in complex business environments.
2. Case management is a business design and deployment discipline that is industry and technology independent.
3. Business architecture provides a robust business framework on which to base case management solutions.
4. Value streams allow businesses to visualize workflow from a stakeholder-oriented, value-based perspective.
5. Value streams enable planners, designers, and business analysts to visualize object state-based transitions across one or more value streams.
6. Business architecture information concepts provide a foundation for data architecture design and management.
7. Value streams frame dynamic rules-based routing maps to provide a framework for stakeholder work exchange, tracking, analytics, business rule definition, and reporting.
8. Capabilities enable Event Management, Decision Management, Work Item Management, Work Queue Management, Time Management, and object-related State Management, leveraging formally defined information concepts for each business object.

Case Management, DRBR, and Business Architecture Alignment Guidelines

The following guidelines provide a foundation for business architecture and case management alignment in practice. They offer a general approach to case management that requires customization based on a variety of business considerations.

1. **Determine applicability of case management to the business environment.** Business environments conducive to benefit from case management are typified by a lack of workflow predictability, multiple business units and stakeholders working concurrently in a shared environment on shared business objects, situations where knowledge worker decisions route work in unpredictable ways, and a binding object such as an agreement, legal proceeding, license, patent, or claim is a common focal point.
2. **Prioritize value streams to be targeted as a foundation for case management.** Value streams are the starting point for mapping out case behavior analysis. Mapping teams should prioritize customer-triggered value streams, which include, for example, Establish Financial Account, Acquire Product, Settle Claim, Issue License, Admit Patient, and similar end-to-end value delivery perspectives. Eventually, the collective body of work being performed across the suite of customer, partner, and internally triggered value streams may be pursued for case management solution deployment.
3. **Formalize DRBR-focused capabilities needed to enable priority value streams.** Examples of capabilities essential to designing, deploying, and automating DRBR include decision, event, work item, work queue, event, time, submission, message, stakeholder, and information (object state) management.
4. **Formalize information concepts and relationships.** This step defines the information concepts and related finite set of states for all relevant business objects. It ensures that the information concepts that define related business objects formalize and articulate information concept states, types, and relationships upon which DRBR relies.
5. **Align business vision and requirements to value streams and capabilities to establish case management deployment priorities.** This step involves establishing an aggregate business perspective for how work should move across various value streams. This will enable roadmap definition across various value streams based on business vision and related priorities using value streams as the basis for deployment planning. For example, how should work move through each value stream or how should multiple parallel active value streams be addressed? See *BIZBOK® Guide* section 2.4 for more on multiple, parallel value streams.
6. **Incorporate value stream stakeholder mappings, value stream stage entry and exit points, and other value stream-related attributes to frame DRBR scope based on value stream priorities.** Value stream mapping defines the states that enable work to enter and leave a value stream stage, which allows work to move end-to-end across a given value stream. Stakeholder mapping (see *BIZBOK® Guide* section 2.8) ensures that each value stream stage as a clearly defined, universally rationalized list of internal and external business stakeholders.

7. **Define stakeholders and related work queues within each value stream stage.** Value streams/stakeholder mappings, along with entrance and exit criteria, provide the basis for stakeholder work queue definition and insights into the business object state settings that permit entry into and exit from each value stream stage. Mapping teams should establish a work queue for each stakeholder within each stage.
8. **Formalize the DRBR maps for each stage of prioritized value streams.** DRBR mapping defines events, stakeholder work queues, and work transitions triggered by business events that can occur at an explicit location, under certain conditions, and at a given point in a declarative workflow. This step formalizes the DRBR diagrammatic perspective and includes all internal and external stakeholders in the targeted value stream stage as well as ways into and out of that stage.
9. **Formalize DRBR map worksheets for each stage of prioritized value streams.** Routing map worksheets, as detailed later in this section, provide the underlying details for events, work queue transitions, and object state changes. While the routing maps themselves are useful for planning and deploying solutions across a value stream, the detailed worksheets are essential to fully formalizing and automating those solutions.
10. **Based on business priorities, continue design, development, and deployment solutions.** Work definition evolves incrementally, not all at once, and is always driven by a specific set of business priorities tied to business strategy and business performance analysis⁴.

It is important to note that the above guidelines do not spell out approaches for information technology deployment. Information design related aspects of a case management strategy should be referenced in the *BIZBOK® Guide* part 6. This section touches on some automation-related recommendations near the end.

Case Management and Business Architecture in Practice

Exploring actual case management deployment scenarios and examples provides practical guidance for interpretation of the case management / business architecture alignment principles and guidelines.

Value Stream / Case Management Mapping

The example scenario used to demonstrate business architecture and case management in practice extends the discussion on the loan business example. Note that the loan terminology used here would be generalized for a full-service financial firm. The scenario involves a business that has been struggling to manage loan modifications concurrently with a large number of loan defaults. Both the loan holder and the loan company want to avoid defaults because no one comes out as a winner in that scenario.

Figure 3.5.1 depicts a way to envision the top-level relationship between a case management environment and the Acquire Loan value stream. Figure 3.5.1 provides a value stream oriented, architectural perspective of how a customer would request and receive a loan (i.e., the case in this example). Work traverses through various value stream stages, based on a series of event and state transitions, until the state of the loan is “issued” and the value stream terminates.



Figure 3.5.1: Visualizing Case Management Across a Value Stream

Practitioners should align value stream perspectives with a business design that incorporates a formal case management perspective, shown along the bottom of figure 3.5.1. At this top level, one can begin to envision movement of work across work queues within value stream stages along with stakeholder access engagement and the routing of work to those stakeholders.

Value stream and stakeholder mapping defines the basis for case management that includes participating stakeholders, state-based entrance criteria, and state-based exit criteria for each stage. Related details specify the state of a case that dictates movement across the value stream and the need for workflow within and between stages.

The figure 3.5.1 value stream diagram does not define the work routing, work queue, and related actions that are based on a series of pre-conditions, state transitions, and business rules. These are defined later using DRBR maps. This conceptual view is aimed at building executive and business unit consensus on an overall approach and discussing deployment options from a common, high-level perspective. Analysts, planning teams, and business architecture practitioners then take these concepts and define more detailed approaches for deployment. This situation is highlighted in figure 3.5.2.

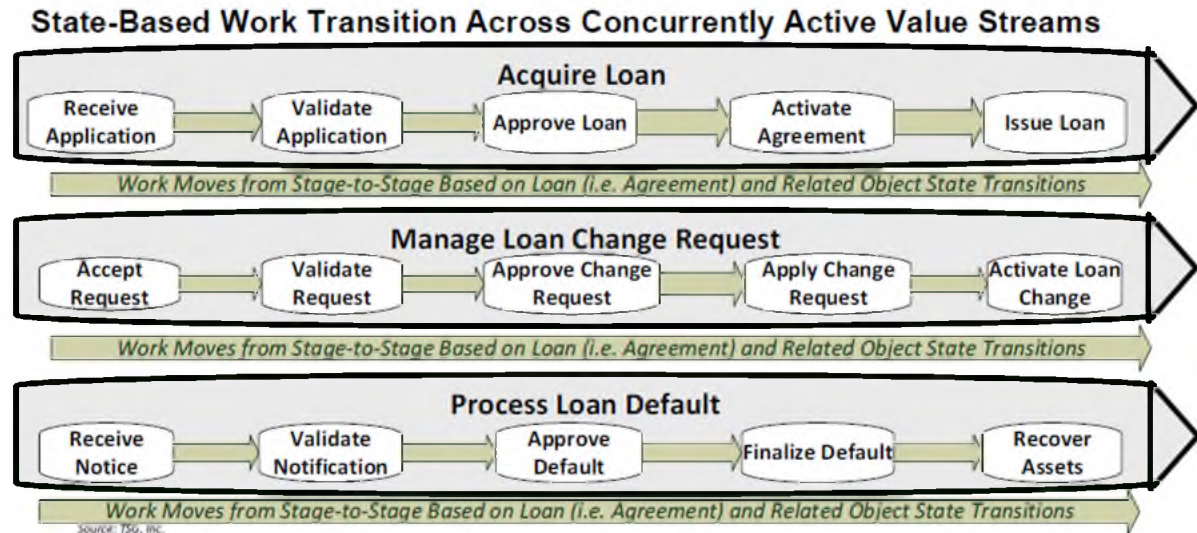


Figure 3.5.2: Visualizing State-Based Work Transitions Across Parallel Value Streams

Consider that a loan may be targeted for termination, even while the holder of that same loan is attempting to restructure the loan agreement. This is an example of the same business object being actively impacted across multiple value streams that are active in parallel. For example, a loan holder may miss multiple payments and initially ignores late payment notifications. The holder then contacts their financial institution to request a restructuring of the loan where the holder is seeking to resolve the issue in one way or another.

Unbeknown to the loan holder and the loan officer handling the loan restructuring, the loan default continues moving forward, triggering a notice to vacate the premises along with movement to begin asset reclamation against the holder of the loan. This real-world situation repeats itself over and over again in multiple industries and is not good for customers and not good for business in general. The reason behind this is because the loan, which in business architecture terminology would be represented by an agreement object, is in multiple states concurrently; in the state of “defaulting” in the Process Loan Default value stream and in the state of “being restructured” in the Manage Loan Change Request value stream.

Poor visibility into business objects being in conflicting states at the same time presents major challenges in healthcare, finance, insurance, manufacturing, government, transportation, and other fields. Siloed deployments of processes, technologies, business units, and business partners shield customers and internal stakeholders from information they need to know to ensure that stakeholder satisfaction and financial performance are optimized and not compromised.

The above business scenario is often handled by creating a single, highly complex business process view with many decision points. This approach drives up workflow and system

implementation complexities, and invariably misses exception cases. The result grows more and more complex as practitioners seek to address additional exception handling. This is the consequence of using predefined, rigid business process models to frame complex situations they were never meant to address.

Tying case management to values streams, as depicted in figure 3.5.2, enables work to be presented in a complete fashion, with a high degree of cross-functional transparency of work being done and object states. This transparency, in turn, enables identification of shared case scenarios. The shared case contains constraints and actions that are available at any point, and impinge on all the processes that access the case. The triggering of a Manage Loan Change Request value stream would modify the state of the case in such a way as to cause the Process Loan Default value stream to freeze defaulting work until the Manage Loan Change Request value stream is completed or terminates and the state of the loan is reset. The loan may be switched back to active, causing the default stream to halt the defaulting effort and terminate based on the state of the loan being reset.

Dynamic Rules-Based Routing: Essential Capabilities

Essential capabilities required to deploy case management involve what a business requires to establish and manage a case and enable transition of work across and among value streams. Note that Agreement Management is used in this example only because it defines the loan in the prior example. If the focal point was on a claim, customer, trip, or other business object, those capabilities would be required as well. Important capabilities in this context include:

- **State Management:** Ability to determine, modify, and interpret the status of an agreement.
- **Event Management:** Ability to identify and react to a situation or an occurrence based on a time, stakeholder, or otherwise initiated or triggered situation, happening, occurrence, or scenario.
- **Decision Management:** Ability to define, reach, formalize, document, record, and disseminate a conclusion or resolution reached after considering alternative options.
- **Work Item Management:** Ability to define, track, route, prioritize, determine the state of, fulfill, and assess the performance of a defined, well-bounded task that may be assigned to a stakeholder or corresponding asset.
- **Work Queue Management:** Ability to establish, identify, and assign a container to hold, sequence, filter, structure, and present a set of work items.
- **Time Management:** Ability to define, establish, articulate, and monitor a point or duration in the past, present, or future.

While many other capabilities are required to deploy a complete case management solution, the above capabilities ensure that reusable capabilities are in place for managing a case file across complex processing environments. Capabilities additionally define the business objects tied to a case that undergo state transitions as work moves across a value stream. As noted previously, if the focal point of a value stream was on a claim, trip, order, or other business object, corresponding capabilities would be required in a capability map to lay the foundation for a case management solution.

Dynamic Rules-Based Routing Maps

One of the challenges facing organizations is that “repeatable, routine processes (the ones that can be modeled) cover only about 20-40% of processes in modern organizations”.⁵ A second challenge is the degree of predictability that process modeling concepts such as BPMN⁶ require. It is difficult to fully determine all potential paths that a case may take in real world scenarios, particularly when it involves complex case transitions among groups of knowledge workers where there is essentially no “happy path”.

DRBR provides an alternative means of visualizing case workflow that is event- and state-based, and descriptive rather than predictive. In other words, the approach offers flexibility to determine where a case can go next based on business rules and the state of the case, which in turn can handle complex, unpredictable sets of case transitions.

DRBR supports scenarios where multiple stakeholders concurrently require access to a case, either in a given sequence, concurrently, or in some cases as a group. DRBR is based on value stream stage decomposition and recognizes scenarios where business objects tied to a case may be active in parallel value streams. Figure 3.5.3 shows a simple example of a dynamic rules-based routing map for the value stream stage called Approve Loan.

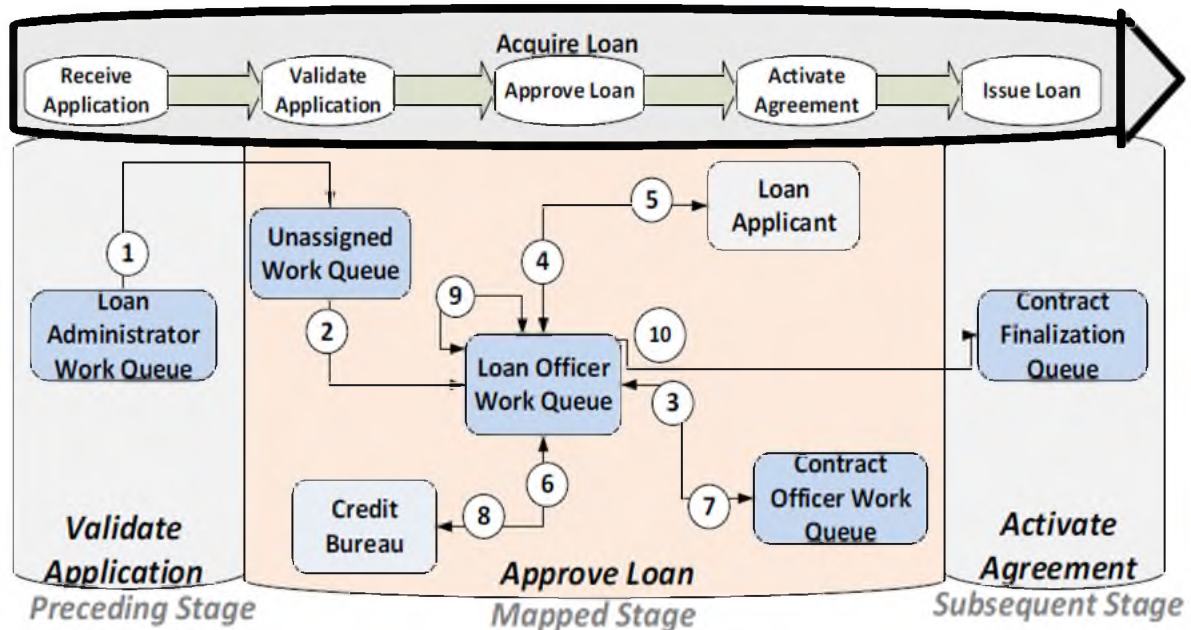


Figure 3.5.3: Dynamic Rules-Based Routing Map Example

In order to frame what is happening in figure 3.5.3, one begins with the value stream. This figure, enlarged in appendix B.5, represents a workflow decomposition of the Approve Loan stage of the Acquire Loan value stream, buffeted on either side by the preceding and succeeding value stream stages. The depicted case transitions and related events are from this particular stage's perspective.

Routing maps depict two general types of case transitions:

- Intra-stage transition, where work on a case (or portion of a case) moves from one work queue / stakeholder to another within a stage
- Inter-stage transition, where work moves from its current stage to another stage within the value stream

Work Queues

The first work transition concept involves the work queue, which represents the location of work related to a case and linked to a given stakeholder or group of stakeholders. The Loan Officer work queue represents a stakeholder within the routing map that works on a loan assignment. The Unassigned work queue, on the other hand, represents a business unit work queue where work awaits loan officer assignment. This map does not include a collaboration queue example, but multiple stakeholder queues are also valid based on the business design approach selected.

External stakeholders as well as internal stakeholders are included in this routing map example.

Representing external stakeholders in a routing map provides a clear perspective of customer engagement touchpoints and enables detailing the “customer journey” at a granular level. In the figure 3.5.3 example, external stakeholder work queues are linked to the Loan Applicant and Credit Bureau. One might argue that these may not always technically be work queues, but they do represent a location to which work items and other information may be sent to or received from, ensuring that external stakeholder interactions are fully represented in a business architecture.

Transition Indicators

A second case transition concept involves arrows going from one work queue or location to another. Consider the arrow moving from the Loan Officer queue to the Contract Officer queue. The arrow includes at least one case transition indicator, which is a number representing a transfer of some work or information from one queue or location to another. The transition indicator closest to the transferring work queue, in this example #3, represents transition out of that queue. The transition indicator is used to provide the details associated with this transition, as shown in the worksheet in figure 3.5.4. In this case, the arrow is bidirectional, enabling case transition back from the Contract Review Officer via transition indicator #7. These are both considered intra-stage transitions.

The transition is associated with a work item that has been crafted and routed to a given stakeholder’s work queue. For example, the work item sent to the Credit Bureau may be an inquiry requesting a credit rating. A work item sent to the Loan Applicant may be to supply additional information on the type of loan. One important aspect of DRBR versus traditional process modeling is that the sequence of requests from the Loan Officer is completely irrelevant and purely at the Loan Officer’s discretion. Concurrently active work items in multiple work queues reflect a reality that is easily accommodated by DRBR maps.

A second type of intra-stage transition is demonstrated using transition indicator #9. In this example, the case stays within the Loan Officer’s work queue, but one or more events have occurred that are of significance even though the case has not moved from this queue. One such event would be completion of a credit check for a loan candidate resulting in the state changing from “Risk Analysis Pending” to “Risk Analysis Completed”.

Inter-stage transitions in and out of a stage serve multiple purposes. They include work that moves in and out of adjacent stages as shown by transition indicators #1 and #10. These transitions would be defined in routing maps for the adjacent stages or other stages within the value stream. While parallel value streams may impact related business objects, work transitions always remain in the value stream where that transition is involved, whether within a stage, to an adjacent stage, or to another stage within that value stream.

Figure 3.5.4 shows a summary of the active elements in a DRBR map within a stage and across multiple stages of the Acquire Loan value stream.

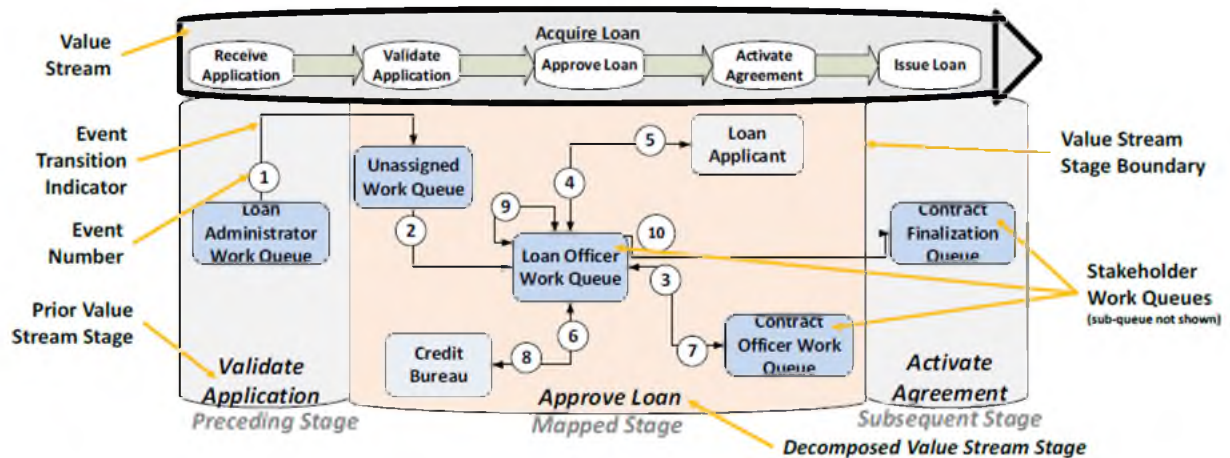


Figure 3.5.4: Annotated Dynamic Rules-Based Routing Map

Figure 3.5.4 highlights the value stream and stage details, event number of transition indicator, stakeholder work queues, and stage boundaries and transitions. The worksheet discussion that follows further details each of these mappings, but even if teams do not fully articulate the details in a DRBR map worksheet, the visual map offers significant insights into work that is engaged within a given value stream stage and the transitions between those stages.

Dynamic Rules-Based Routing Map Worksheets

Figure 3.5.5 represents the topic categories depicted in the routing map worksheet. The worksheet represents the underlying business rules associated with a routing map diagram.

Event Information			Work Transition Sending Source			
Event #	Triggering Event	Action to be Taken	Value Stream	Stage	Work Queue or Source	Work Queue Filter View

Work Transition Receiving Source				State Transition		Pre- and Post-Conditions		
Value Stream	Stage	Work Queue or Target	Work Queue Filter View	Current State	Next State	Pre-Condition	Post-Condition	Requirement #

Figure 3.5.5: Routing Map Worksheet Category Definitions

Routing map worksheets represent event information, action to be taken, work transitions, resulting state changes, pre- and post-conditions, and reference to a given business requirement. One item to note in figure 3.5.5 and the discussion that follows is that a work queue may decompose into sub-queues or filtered views of a work queue. This level of decomposition is not always used in practice but provides another level of detail if a team finds it appropriate.

This information in figure 3.5.5 is detailed as follows.

- Event Information: Event ID (using transition number from routing map appended for multiple events per transition), the event trigger that initiates the event, and the action to be taken. The event numbering convention is flexible, but for example purposes, the figures herein use the transition number and a lettering scheme.
- Work Transition Sending Source: This location category is a collective representation of the case's current value stream, stage, work queue, and work queue filter as a vehicle to indicate exactly what work is in which location related to a given case. The sending source represents the starting point for a case during a given event. Note that "work queue filter", sometimes identified as a "sub-queue", is not typically shown in a routing map diagram as it introduces an unwieldy level of detail.
- Work Transition Receiving Source: This location category is a collective representation of the resulting value stream, stage, work queue, and work queue filter destination. This is the resulting destination for a case or business objects tied to a case.
- State Transition: The state transition represents the existing state of a business objective in question (e.g., loan, payment, application) and the resulting state (if a state change occurs as a result of a given event). States should ideally be tied to transition of work and business object linked to a case. For example, an application for a loan would transition from under review to validated during a value stream workflow.

One important point on states and state transitions involves work on defining entrance and exit criteria. A well-articulated value stream stage will have clearly defined, object-specific states that enable entering and exiting a given stage. The clearer these are defined during value stream articulation, the more readily one can define a routing map.

- Pre- and Post-Conditions: Pre- and post-conditions represent the collective set of things that would be true for this event to occur and the collective set of things that would be true once the event has occurred.

Requirement #: Number of the user requirement that articulates details related to this event – for example, an agile user story number. Note that requirements also map to business capabilities. This multi-mapping perspective of a requirement to capability, stakeholder, and event is discussed further in *BIZBOK® Guide* section 3.8.

Figure 3.5.6, enlarged in appendix B.5, depicts a routing map worksheet that corresponds to the routing map shown in figure 3.5.3.

Event Information		Work Transition Sending Source					Work Transition Receiving Source					State Transition		Pre- and Post-Conditions		Requirement #
Event #	Triggering Event	Action to be Taken	Value Stream	Stage	Work Queue	Filter View	Value Stream	Stage	Work Queue	Filter View	Current State	Next State	Pre-Condition	Post-Condition		
1	Loan request (i.e., inquiry) validated	Move loan request to Unassigned loan queue	Acquire Loan	Validate Application	Loan Administrator	Under Review	Acquire Loan	Approve Loan	Unassigned	Awaiting Assignment	Inquiry under review	Inquiry validated	Inquiry reviewed	Inquiry validated		1010
2a	Superior assigns loan to loan officer	Assign loan to loan officer, Move to Work in Progress queue	Acquire Loan	Approve Loan	Unassigned	Awaiting Assignment	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Inquiry unassigned	Inquiry assigned	Inquiry validated	Loan assigned to loan officer		1011
2b	Loan officer pulls loan to work on	Assign loan to loan officer, Move to Work in Progress queue	Acquire Loan	Approve Loan	Unassigned	Awaiting Assignment	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Inquiry unassigned	Inquiry assigned	Inquiry validated	Loan assigned to loan officer		1012
3	Loan officer requests contract review	Send loan and inquiry to contract officer	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Contract Officer	Review Request	Loan under review	Contract review	Loan officer reviewed application	Contract officer has pending loan agreement		1013
4	Loan officer sends applicant inquiry for information	Generate notice to applicant, Move loan to Awaiting Response queue	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Awaiting Applicant Response	Loan under review	Awaiting response	Loan under review	Request sent to applicant		1014
5	Loan applicant replies to inquiry	Post response, Move case to Work in Progress queue	Acquire Loan	Approve Loan	Loan Officer	Awaiting Applicant Request	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Awaiting response	Loan under review	Response requested	Response received		1015
6	Loan officer requests credit verification	Send credit check to credit bureau, Move loan to Awaiting Credit Check queue	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Awaiting Credit Check	Loan under review	Awaiting response	Loan under review	Credit check inquiry sent to credit bureau		1016
7	Contract officer approves contract	Move loan to Loan Officer Work in Progress queue	Acquire Loan	Approve Loan	Contract Officer	Review Request	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Contract review pending	Contract review complete	Loan sent to contract officer	Contract officer completes review		1017
8	Credit bureau responds to inquiry	Post response, Move case to Work in Progress queue	Acquire Loan	Approve Loan	Loan Officer	Awaiting Credit Check	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Awaiting credit response	Credit response received	Request sent to credit bureau	Response received from credit bureau		1018
9a	Loan officer completes credit review	Update credit risk rating	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Credit review pending	Credit review completed	Credit information in hand	Credit check completed, Risk rating updated		1019
9b	Loan request rejected	Reject loan, terminate review, move to rejected state	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Rejected Loan	Loan under review	Loan rejected	Loan officer review pending	Loan rejected, value stream terminated		1020
10	Loan request accepted	Move case to loan supervisor	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Issue Second Approval	Loan Supervisor	Work in Progress	Loan review pending	Loan review completed	Loan officer review pending	Loan moved to supervisor for review		1021

Figure 3.5.6: Dynamic Rules-Based Routing Map Worksheet Example

Transition indicators in the routing map correspond to one or more event IDs in the routing map worksheet. For example, event number 2a in figure 3.5.6 represents the assignment of a loan to a loan officer. Additional information associated with event 2a shows the case moving from the Unassigned work queue to the Loan Officer work queue, a state change to the loan now being assigned, pre- and post-conditions, and a corresponding user story. For example, agile user stories provide the prose associated with each event in a story format. Oftentimes, a given event aligns closely with a given user story.

The DRBR map and related DRBR map worksheet provide a formal approach for tracking a case, specifying work to be done, and managing complex work exchanges. A single routing map with a dozen or more transition indicators have the capacity to define hundreds of workflow paths via the business rules in the DRBR map worksheet. Yet these paths are not predefined but rather open to workflow routing defined by the rules, states, and pre- and post-conditions active at a given point in time. And, most importantly, knowledge workers associated with various work queues can decide where to route work at any given point in time, as long as it does not violate the rules as established.

The DRBR map worksheet provides a business perspective for populating business rules into a hierarchical finite state machine⁷, a facility that often serves as the underlying case management

implementation technology. In addition, it integrates well with agile and other types of requirements analysis while providing the business with transparency and flexibility in specifying the overall business design.

Tracking Work-in-Progress Using Dynamic Rules-Based Routing Maps

One important aspect of case management is being able to find, track, and report on all work associated with a given case at any point in time. This includes the ability to produce management dashboards on work in progress as well as enabling customer self-service for tracking orders, applications, and other submitted requests. Any work in a given business can be tracked using a globally applied business architecture / case management framework. The scheme for tracking work leverages the routing map structure as an extension of the business architecture by applying a cascading, 4-stage numbering scheme as follows:

- 1. Value Stream**

- 1.1. Value Stream Stage**

- 1.1.1. Work Queue**

- 1.1.1.1. Filtered View (Sub-Queue)**

Applying this hierarchy to the routing map example in figures 3.5.3, 3.5.4, and 3.5.6 would result in a location where a case would be located in the “Acquire Loan” value stream, in the “Approve Loan” stage, within the “Loan Officer” work queue, in the “Work in Progress” filtered view. The example in this instance would appear as follows.

- 1. Value Stream (Acquire Loan)**

- 1.4. Value Stream Stage (Approve Loan)**

- 1.4.1. Work Queue (Loan Officer)**

- 1.4.1.1. Filtered View or Sub-Queue**

The above numbering schemes are for example purposes, but in practice, each value stream, value stream stage, work queue, and filtered view would be assigned a number. There is a finite set of these in any business, although in practice they would add up to a large number of discrete locations. Note that a work queue and filter are unique to a given stage, even though any given stakeholder has the capacity to work across many value streams and stages.

The approach enables tracking of parallel or asynchronous work on the same case. For example, a Loan undergoing restructuring while a default was being processed would involve a case being “frozen” in one work queue / filter while active in another work queue / filter in a different value stream. Connecting the actual stakeholder to this scheme, as would be the case in any mature business architecture, provides a sophisticated, non-redundant, and non-ambiguous scheme for

creating dashboards of all work in a given environment.

In summary, dynamic rules-based routing maps are essentially a framework extension of the value stream and provide:

- Views of all internal and external stakeholders involved in a given stage, including customers and business partners
- Complete views as to how a case transitions in, out, and within a stage
- Insights into state changes associated with business events
- User interface design planning insights
- An overall framework for detailed workflow analysis and requirements analysis
- A framework that can tie business analysis directly to transactions and state transitions within existing software systems

DRBR maps play an important role in business analysis and planning. It is often found that the stakeholders identified in a given stage have little or no automation, and have been left out of formal process definitions that are used for defining system requirements. With these maps as a basis for a case management framework, business analysis and design efforts have a much better baseline from which to evolve.

The Role of Industry Standards in Case Management

The OMG's Case Management Modeling and Notation (CMMN) provides an alternative way to define a common metamodel and notation for modeling and graphically expressing a case, as well as an interchange format for exchanging case models among different tools. The CMMN standard states the following.

Case Management Model and Notation™ (CMMN™) defines a common metamodel and notation for modeling and graphically expressing a case as well as an interchange format for exchanging case models among different tools. CMMN is intended to capture the common elements that case management products use, while also taking into account current research contributions on case management. Known as an adaptive case management, CMMN aids in the decision-making process through suggestions, yet keeps humans firmly in the driver's seat. CMMN is centered around living information and relationships, while traditional business processes are centered around a-priori defined activity sequences.⁸

CMMN can be broadly viewed as sharing certain concepts with business architecture value streams and DRBR maps. Specifically, CMMN takes a middle ground, being more defined and less abstract than a value stream, but not as prescriptive or as comprehensive as DRBR maps. For example, one could roughly equate a CMMN case plan model with a value stream, but a case plan model attempts to describe executable paths for the working of a case in declarative ways, while a value stream by its nature must accommodate many scenarios across an entire business ecosystem. Additional shared concepts include a stage, entrance criterion (i.e., entrance criteria), exit criterion (i.e., exit criteria), and task (i.e., work item), though in CMMN these pertain to the case being worked rather than to the generation of value at the heart of a value stream in business architecture.

A major difference, on the other hand, between DRBR and CMMN is that CMMN lacks a formally defined, ecosystem-wide business perspective, which is left to the implementor. DRBR is fully dependent on a formally defined business architecture as the basis for its existence. A second difference is that the DRBR mapping mirrors what is happening from a business perspective within a value stream stage, where states are naturally constrained by value stream stages and work queues. CMMN, on the other hand, is a technical specification for describing the executable paths for the working of a case.

Industry adoption of CMMN has been admittedly limited. One paper indicated that this was due in part to what some organizations have described as CMMN complexity and shortcomings.⁹ What is useful from a CMMN perspective, is that an industry standards organization's membership and vendor community saw the need for a standard to address the unpredictable. CMMN has many useful notions that architects may want to explore further as they seek to deploy case management solutions. If a CMMN solution is pursued, however, it should be done so under a formal business architecture as a backdrop to which the case plan models align.

¹ Keith D. Swenson and Nathaniel Palmer, *Taming the Unpredictable: Real World Adaptive Case Management: Case Studies and Practical Guidance* (Lighthouse Point, FL: Future Strategies, 2011), 214.

² Healthcare Case: an identifiable instance of a condition or conditions, associated with a specific patient, within a defined timeframe, Source: Healthcare Reference Model v2.0.

³ Keith D. Swenson, "Chapter Two", *Mastering the Unpredictable: How Adaptive Case Management Will Revolutionize the Way That Knowledge Workers Get Things Done* (Tampa, FL: MK Press, 2010).

⁴ See *BIZBOK® Guide* section 3.7 for details on performance analysis and performance management.

⁵ Keith D. Swenson, "Chapter Two", *Mastering the Unpredictable: How Adaptive Case Management Will Revolutionize the Way That Knowledge Workers Get Things Done* (Tampa, FL: MK Press, 2010).

⁶ Business Process Model and Notation (BPMN) provides businesses with a standard way of representing internal business procedures in a graphical notation that can be modeled and then automated using certain tools.

⁷ Miro Samek & Madhukar Anand, “Hierarchical State Machines - a Fundamentally Important Way of Design”, 2003, <http://www.cis.upenn.edu/~lee/06cse480/lec-HSM.pdf>.

⁸ Case Management Model and Notation, <https://www.omg.org/cmmn/>.

⁹ How CMMN Never Lived Up to Its Potential, Niall Deehan, August 20, 2020, <https://camunda.com/blog/2020/08/how-cmmn-never-lived-up-to-its-potential/>.

SECTION 3.6: BUSINESS ARCHITECTURE AND LEAN SIX SIGMA

This section of the *BIZBOK® Guide* provides background on and guidance for aligning the practice of Lean Six Sigma to business architecture. Lean Six Sigma is a commonly practiced business discipline used to improve business process and overall business performance. The relationship between business architecture and Lean Six Sigma focuses on the Lean Value Stream, a well-defined intersection point between business architecture and Lean Six Sigma. This section contains an overview of Lean Six Sigma and discusses the importance of business architecture / Lean Six Sigma alignment and mapping.

Why Align Business Architecture and Lean Six Sigma?

Business architecture, as outlined in prior sections of the *BIZBOK® Guide*, provides an overall framework in which to visualize, plan, scope, assess, and manage business alignment and transformation initiatives. Once initiatives are identified, Lean Six Sigma is a methodology that can be used to understand and analyze the problem or opportunity at a more detailed level and implement a solution. Conversely, Lean Six Sigma projects often surface areas of concern where a broader evaluation of impacts to determine upstream, downstream, or related work could be beneficial. Aligning these two disciplines will enhance the benefits gained by the organizations using them.

What is Lean Six Sigma?

Six Sigma is a business management strategy originally developed at Motorola in the 1980s and used at General Electric as part of their business strategy in the mid-1990s. Six Sigma is a registered service mark and trade mark of Motorola, who has achieved \$16 billion in savings by applying it to their processes. Although originally focused on manufacturing, today many industry sectors have adopted Six Sigma as a way of doing business and gained from the experience.

Six Sigma uses a set of quality management methods that include statistical analysis and employs a group of people within the organization (Black Belts, Green Belts, etc.) who are experts in these methods and techniques. Each Six Sigma project carried out within an organization follows a defined methodology and has quantified financial targets (cost reduction and/or profit increase).

Lean Six Sigma started in the late 1990s when AlliedSignal and Maytag started training staff in a combination of Six Sigma and another technique known as Lean. Lean addresses process flows and waste issues; Six Sigma focuses on variation and design. The two complement each other.

Both are aimed at business and operational excellence. Figure 3.6.1 compares and contrasts Lean and Six Sigma through a view of goals, methods, and uses.

	Six Sigma	Lean
Goal	<u>Error Reduction and Efficiency</u> To eliminate process variation and make improvements based on the customer's definition of quality, measuring process performance, and effects of process change.	<u>Speed & Efficiency</u> To eliminate waste from a process and improve process speed by understanding what customers consider quality and working back from that.
Method	Main methodology is the DMAIC process. The process has 5 phases: 1. Define the problem 2. Measure current state 3. Analyze root cause 4. Improve the process 5. Control the process to maintain improvements Another methodology, DFSS (Design for Lean Six Sigma), is used for new products or when complete process redesign is required.	Main technique is value stream mapping to understand the customer base, identifying process steps, determining which steps add value, and reengineering the process so value-add steps flow without interruption.
Use	Existing process does not meet customer requirements or business objectives. The problem is not well understood, so analysis and a longer time frame are required.	Process is not efficient and contains wasteful activities and short-term gains are desired.

Figure 3.6.1: Alignment of Lean and Six Sigma Goals, Methods & Uses

Analyzing the comparison between Lean and Six Sigma in figure 3.6.1, we see one concept referenced repeatedly – process improvement. Both disciplines have a process-centric point of view that collectively looks at efficiency and performance as well as design and customer alignment. Combining Lean and Six Sigma broadens the toolset that can be applied for process improvement and establishes Lean Six Sigma (LSS) as a useful and popular business discipline.

The key to a successful Lean Six Sigma program is the support of executive leadership, including the CEO and senior management team. They must set up the vision for the Lean Six Sigma implementation and empower teams to explore ideas for breakthrough improvements. Champions must be identified who will integrate the Lean Six Sigma implementation across the organization and support the teams. Champions are usually selected from upper management.

Other key roles in the Lean Six Sigma methodology include Master Black Belts, Black Belts, and Green Belts, Process Owners, Project Sponsors, Project Team Members, and Subject Matter Experts. Lean Six Sigma helps answer the questions: “What does the organization need to achieve? And, what is it currently capable of delivering?”

It should be noted that Lean Six Sigma is not the solution for everything, but it is an effective way to streamline processes with a focus on variation and design.

Business Architecture / Lean Six Sigma Alignment

This subsection outlines how business architecture and Lean Six Sigma align in respect to their objectives and applied principles. Alignment is the broader concept of establishing explicit relationships between certain business architecture and LSS concepts or artifacts, and determining how to gain mutual benefit from them.

Alignment Objectives

Business architecture provides a framework in which to plan, launch, scope, evaluate, or otherwise position LSS (and other transformational) initiatives. Conversely, LSS provides a means to understand and analyze business process problems or opportunities at a more detailed level. LSS may also surface issues that require a broader view of transformation that business architecture supports.

For example, if an LSS effort has focused on streamlining and redesigning work for a given insurance product line, other similar insurance product lines may have very similar requirements. In this case, business architecture would provide visibility across product lines and business units because end-to-end value streams used in business architecture are product line and business unit agnostic, and are defined to encompass views of the entire enterprise.

As this example demonstrates, business architecture and LSS are complementary not competing approaches, aimed at exposing different types of problems and finding different types of solutions. Just as business capability cross-mapping to value streams provides a much more complete view of the business, simply having a Lean Value Stream or process focus without understanding the overall business context in which they co-exist with other Lean Value Streams and processes can lead to fragmented solutions. A worst cases scenario is to have business architecture value streams and Lean Value Streams working at cross-purposes within the organization.

Aligning business architecture and LSS allows organizations to:

- Leverage business architecture to provide an end-to-end, value driven, and

stakeholder centric framework for identifying a full range of stakeholder, scope, and cost/complexity factors for LSS initiatives.

- Identify potential overlaps and interactions between LSS initiatives across business units. This is useful for aligning initiative outcomes from a business strategy perspective and for enabling a business-wide view of resource pulls and change management impacts on individual business units when multiple LSS initiatives are concurrently planned or underway. (See Initiative Mapping in section 2.6.)
- Apply LSS improvements of one business unit to other business units that share common processes within the context of one or more value streams.
- Alternatively, avoid lean efforts of a particular business unit process when a more aligned enterprise solution may be to rationalize business units that are delivering the same outcome, rather than create a series of really lean but siloed business processes.
- Leverage LSS work into a business architecture inventory of processes.
- Determine upstream, downstream, and cross-functional relationships and impacts of LSS efforts on an end-to-end value stream. This provides a framework for validating that value produced by process improvements in one area aligns with desired higher level, end-to-end value stream objectives across multiple areas, and that elimination of waste in the context of one process is not inappropriately or inadvertently redistributing work onto another process or business unit.
- Identify opportunities for LSS initiative improvements using capability performance assessments or heat-mapping exercises.
- Identify opportunities for LSS initiatives to address improvements in performance or to address various other weaknesses cited in one or more value stream stages.

Alignment Principles

In general, business architecture provides a consistent framework within which to build an understanding and positioning of various types of transformational initiatives. This involves applying one or more views of the business – alone and collectively – that include business capabilities, stakeholder value delivery concepts and approaches through value streams, information, organization, and by extension a cross-mapping between business architecture and IT architecture.

This collective set of views enables a business to see itself as a whole from a wide variety of perspectives. In other words, business architecture provides a means of diagnostic positioning of transformational initiatives within the organization, whereas LSS is a means of refining and acting

on diagnostic insights where process improvements are an identified remedy.

Alignment principles provide a descriptive approach to achieving optimal interaction between the methodologies, by delineating their respective purposes to ensure that neither is used to do something it is not designed to do. The following principles generally guide this work, and in some cases restate principles found in other sections of the *BIZBOK® Guide*.

1. Business architecture brings visibility into the scope, upstream and downstream business impacts, and cross-functional views of Lean Six Sigma improvements.
2. Business architecture provides context for driving capability, value stream or other business improvements.
3. Business capabilities describe *what* a business does to generate value for its stakeholders in a consistent business vocabulary, not *who* or *how*.
4. Business architecture value streams provide an end-to-end view of how to achieve value for external and internal stakeholders.
5. Lean Six Sigma focuses on process and therefore addresses *who* and *how* value is generated and delivered to end value recipients.
6. Lean Value Streams are by nature overlapping, fast-moving and reflect business unit operations.
7. Capabilities are by nature mutually-exclusive, slow-moving and reflect enterprise operations.
8. Organizational flexibility, agility, and effectiveness are achieved by letting processes be processes but aligning them to consistent anchors in the form of capabilities to ensure processes are producing consistent enterprise-level outcomes.
9. Transformational complexity is managed by understanding how a multiplicity of Lean Value Streams map to stable business capabilities and vice versa, not by imposing a 1:1 correlation between them.
10. Simplifying transformational complexity is achieved by seeing how Lean Value Streams map to business architecture, end-to-end value streams.

Business Architecture / Lean Six Sigma Alignment Mapping

This subsection discusses the approach, benefits and guidelines for aligning or mapping business architecture and Lean Six Sigma. The Lean Value Stream is the point where business architecture and Lean Six Sigma meet, so alignment is critical.

A Lean Value Stream is a process flow depicting every step required to produce a product or provide a service to a customer. Process steps are identified as value-added and non-value-added. Non-value-added steps represent waste or are steps the customer does not want and would not pay for.

In some organizations, the Lean Value Stream is then taken to a higher-level aggregation by removing the lower-level lean notations and retaining the process boxes. These aggregated Lean Value Streams are then aligned to the business architecture value streams as depicted in figure 3.6.2.

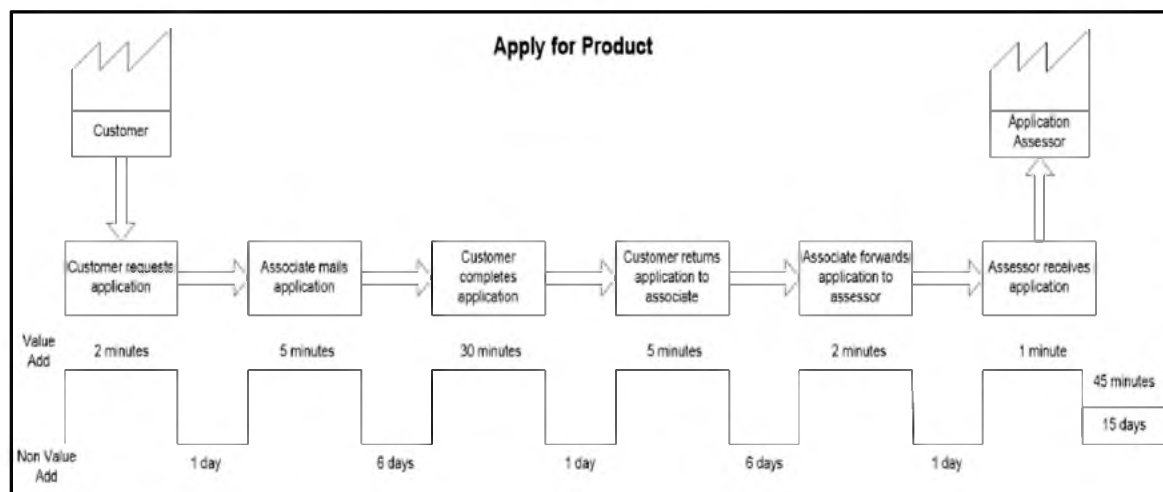


Figure 3.6.2: Example of a Lean Value Stream

The Lean Value Stream has a direct and significant relationship to the business architecture value stream. Understanding and being able to communicate these relationships, as discussed in this section, provides value to LSS teams and to consumers of the business architecture as a whole.

Mapping Approach

There is no single way to approach alignment. If the organization has both LSS and business architecture artifacts, start from either place to overlay or map the artifacts across both disciplines. It all depends on the problem management is trying to solve and the level of maturity of respective competencies in the business architecture and LSS. This flexibility of interaction is what makes combining business architecture and LSS such a powerful problem-solver.

Because business architecture exists at the architectural rather than the implementation or project level, this mapping discussion focuses on mapping the Lean Value Stream to business architecture. Within the context of this discussion, the term “value stream” refers to an end-to-end, business architecture value stream as defined in the *BIZBOK® Guide* section 2.4. The concept

of Lean Value Streams that define the scope of LSS analysis applied to performance or other improvements will be collectively referred to as a “Lean Value Stream”.

Related and secondary mapping discussions include mapping Lean Value Stream to capability, strategy, and business unit. These would be considered derivative mappings as the business architecture value stream provides a relationship link between the Lean Value Stream, capability and strategy. Business unit mapping to Lean Value Stream is useful but often not performed as most lean efforts have a one-to-one relationship to a business unit. This one-to-one relationship is why it is helpful to associate Lean Value Streams with enterprise end-to-end value streams. It allows visibility into all business units performing comparable processes, which are then candidates to benefit from improvements made to any one of them individually.

Mapping Benefits

Lean Value Stream Mapping is a technique used to analyze and/or design the flow of materials and/or information required to bring a product or service to a consumer. It defines all the steps, both value-added and non-value-added, required to take a product or service from its raw materials state and get it to the customer.

Business architecture value streams are always internally and/or externally stakeholder-triggered, present an end-to-end view of how value is achieved for that stakeholder, and offer an aggregate business wide view of the value delivered in the context of that stream. In providing a cross-mapping between Lean Value Streams and business architecture value streams, organizations benefit in a number of ways.

1. Value stream / Lean Value Stream mapping provides a context for replicating and reusing LSS work across business units and product lines. Alternatively, it provides a context for determining that business unit rationalization/consolidation rather than Lean replication/reuse may be more appropriate in the circumstances.
2. A value stream perspective ensures that upstream and downstream activities, stakeholders, and other factors are incorporated into lean work.
3. Value stream views deliver a framework for LSS projects, benefits analysis, and collaboration across business areas.
4. LSS offers an implementation context for recommendations related to a given business architecture value stream.
5. LSS deployments leverage capability mappings to identify reusable concepts and, optionally, technology requirements needed to fully "lean" a Lean Value Stream.

Mapping Guidelines

It is important to determine where existing or planned Lean Value Streams map to business architecture value streams by assessing commonality between work being done, outcomes being achieved, and stakeholders involved in the streams/processes. Capabilities, which are non-redundantly defined for an enterprise, offer a pathway to mapping Lean Value Streams to business units, resource requirements, and current and future technology deployments, and can therefore be used to identify commonality.

The steps to complete a value stream to Lean Value Stream mapping are as follows.

1. Lay out the Lean Value Stream beneath or alongside the business architecture value stream, beginning with the first stage of the value stream that overlaps with the Lean Value Streams through the last stage that overlaps with the process.
2. Repeat step one for each Lean Value Stream that maps to that value stream, using the same technique.
3. Repeat steps 1&2 for additional business architecture value streams, remembering that it may be possible for a single Lean Value Stream to map to multiple business architecture value streams.
4. For each stage of a value stream where a Lean Value Stream has been mapped out in more detail, map that detail to the value stream stage.
5. Follow a product workflow path from beginning to end in a Lean Value Stream to provide the requisite amount of detail for a given value stream stage.
6. Repeat step 4 for each value stream stage that has been laid out in more detail using a Lean Value Stream.

The above mapping approach establishes the main linkage between LSS and business architecture.

Additional examples of the Lean Value Stream to business architecture value stream mapping approach are provided in the subsection entitled “Lean Six Sigma and Value Stream / Capability Mapping Examples”.

In addition, a secondary mapping may be established to leverage a business architecture cross-mapping concept called value stream / capability cross-mapping, introduced in the *BIZBOK® Guide* section 2.4. A snapshot of the value stream / capability cross-mapping concept is shown in figure 3.6.3.

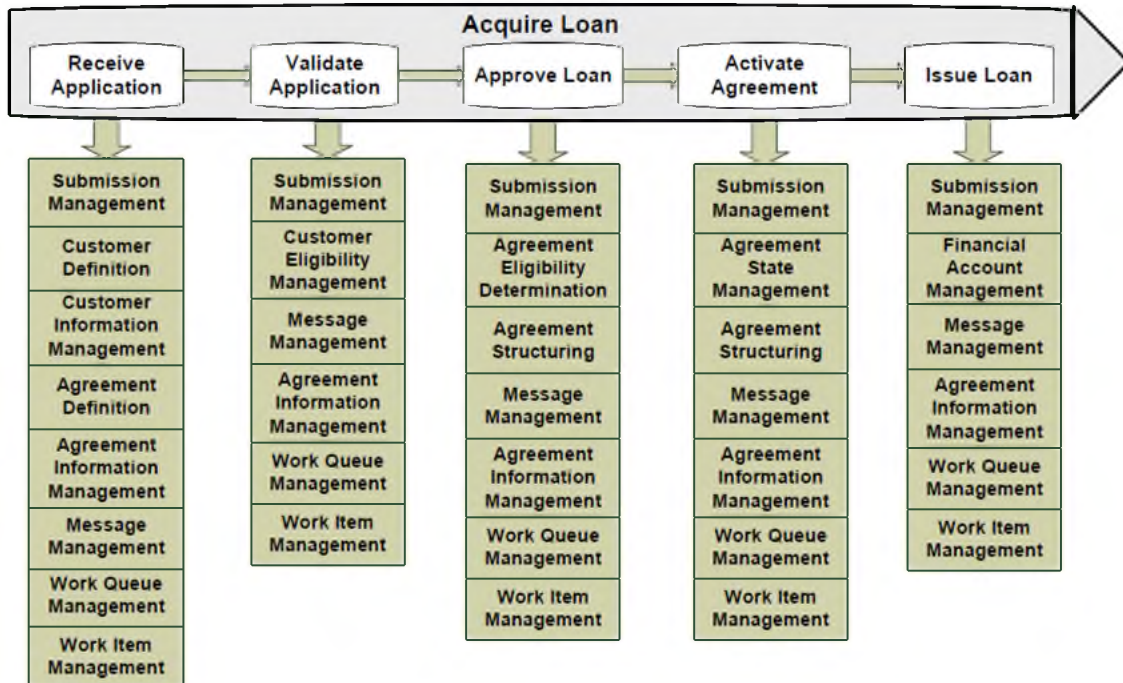


Figure 3.6.3: Sample Value Stream / Capability Cross-Mapping

As shown in figure 3.6.3, certain capabilities have been aligned under each value stream stage to enable that stage. This concept can be used in mapping Lean Value Streams to capabilities. The steps for mapping Lean Value Streams to capabilities are as follows:

1. Obtain the Lean Value Stream / business architecture value stream mapping established in the previous set of mapping steps.
2. Obtain a value stream / capability cross-mapping as shown in figure 3.6.3.
3. Examine the breadth of Lean Value Stream coverage for each value stream stage that that Lean Value Stream represents.
4. Leverage the value stream / capability cross-mapping to identify which capabilities implement or should implement a given Lean Value Stream.
5. Where multiple Lean Value Streams are mapped to the same capabilities, determine options for reusability of technology, information, or other resources across the Lean Value Streams. Alternatively, this can indicate an opportunity for business unit rationalization.

Mapping business units and strategies to Lean Value Streams are additional advanced techniques that may be pursued but are not discussed in this version of the *BIZBOK® Guide*. Of course, strategy mapping and organizational mapping are discussed in relation to business architecture

capabilities and value streams in sections 2.2 and 2.4. These sections provide additional insights into the use of these concepts within business architecture.

Lean Six Sigma and Value Stream / Capability Mapping Examples

To achieve the deliverables associated with business architecture and LSS, both disciplines share skills and techniques that include stakeholder identification and management, communication, scoping and planning, generating solution ideas, and cost benefit analysis. But they work in different dimensions, supplementing each other with insights that one technique or the other technique is not designed or intended to achieve.

For example, LSS may produce process improvements within a specific Lean Value Stream. It may not be apparent, however, from that work that other business units execute similar processes in their own Lean Value Streams and could in fact benefit from the same improvements. It may similarly not be clear as to how improvements in one Lean Value Stream could help rationalize different information sets and technology related solutions within the organization that serve the same stakeholder, using the very same solutions. Mapping Lean Value Streams to business architecture value streams and, secondarily, capabilities, is a way to provide the context needed to bring these hidden considerations to light.

A common starting point is to catalogue the main enterprise-level end-to-end value streams executed by the organization. As described in section 2.4 of the *BIZBOK® Guide*, this is a preliminary step in developing business architecture. If there is not a full catalogue of enterprise value streams, LSS initiatives can be leveraged to build one.

Figure 3.6.4 depicts several externally facing, end-to-end business architecture value streams. From this baseline any LSS initiative within the enterprise level catalogue of value streams can be positioned. Note that the stages or sub-processes of any given enterprise value stream will decompose into a multiplicity of other processes, some of which will remain within the boundaries of that value stream while others will often cross-functionally interact between value streams. The purpose of mapping an LSS initiative to an enterprise-level value stream is not to constrain the scope of the initiative, but to fully understand it. Meanwhile LSS is uniquely positioned to tease out those interactions at a much lower level than business architecture is designed to do.

This alignment becomes especially useful in situations where multiple lines of business are executing the same enterprise-level value stream. Process terminology and flows may legitimately vary between respective lines of business, masking an underlying commonality across process outputs and supporting architectural structures. In these cases, these variations are highlighted through the Lean Value Stream / business architecture value stream cross-

mapping. Aligning LSS initiatives to enterprise-level value streams avoids misperceptions of non-commonality while retaining the line of business-specific terminology that may be better suited to the specific context.

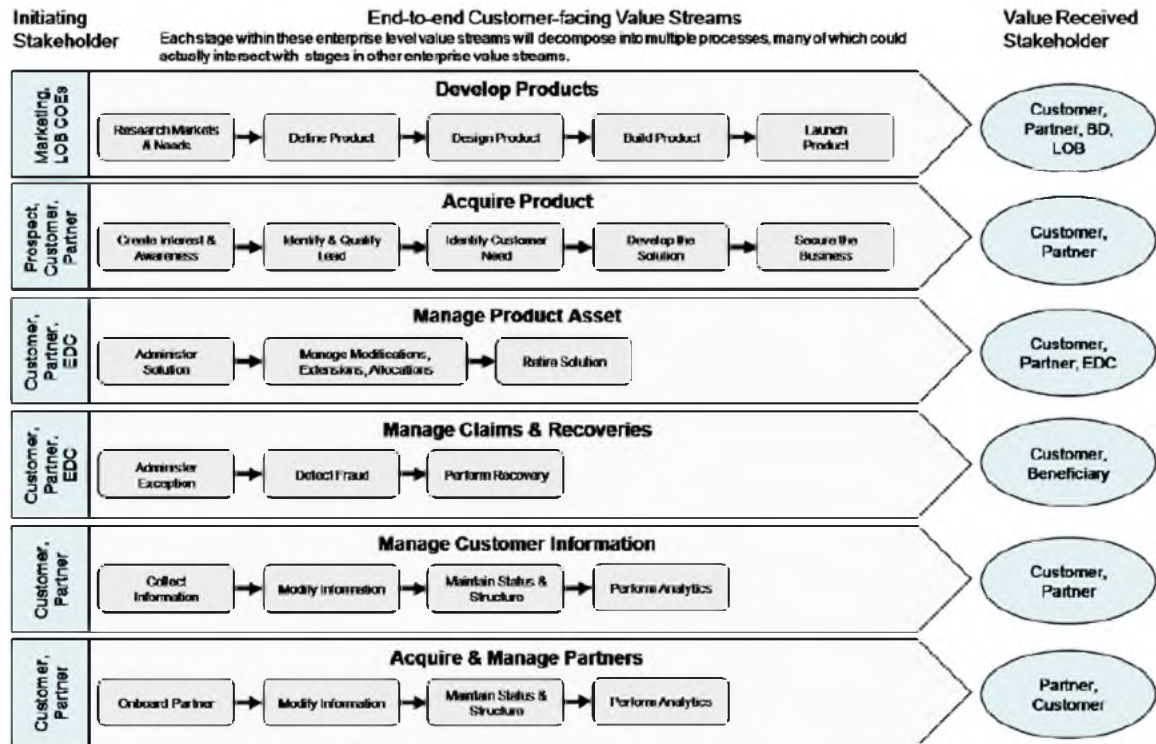


Figure 3.6.4: Sample Catalogue of Enterprise Level End-To-End Value Streams

At the same time, it is the mapping of a stable, robust set of business capabilities to comparably stable, robust, and universally applied enterprise-level value streams that enables alignment of LSS initiatives to the anchoring components of the business architecture without compromising the integrity of the detailed LSS approach. This is an example of enacting the Mapping Principle of "letting processes be processes" as described previously in this section.

Figure 3.6.5 depicts the mapping of an end-to-end value stream called Acquire Product that is mapped to four Lean Value Streams for Loans, Guarantees, Insurance, and Credit Granting. Consider the overlap in work being performed across multiple Lean Value Streams that aligns to the same business architecture value stream stages across the top. This overlap across Lean Value Streams, and in turn business units, demonstrates commonality of work performed across these business units. Investments in improving these Lean Value Streams should be viewed from an aggregate perspective to strategically leverage, fund, and capitalize on the collective efforts. This view will likely save time and effort required to improve these Lean Value Streams and improve related information and automation concepts required to deliver these improvements.

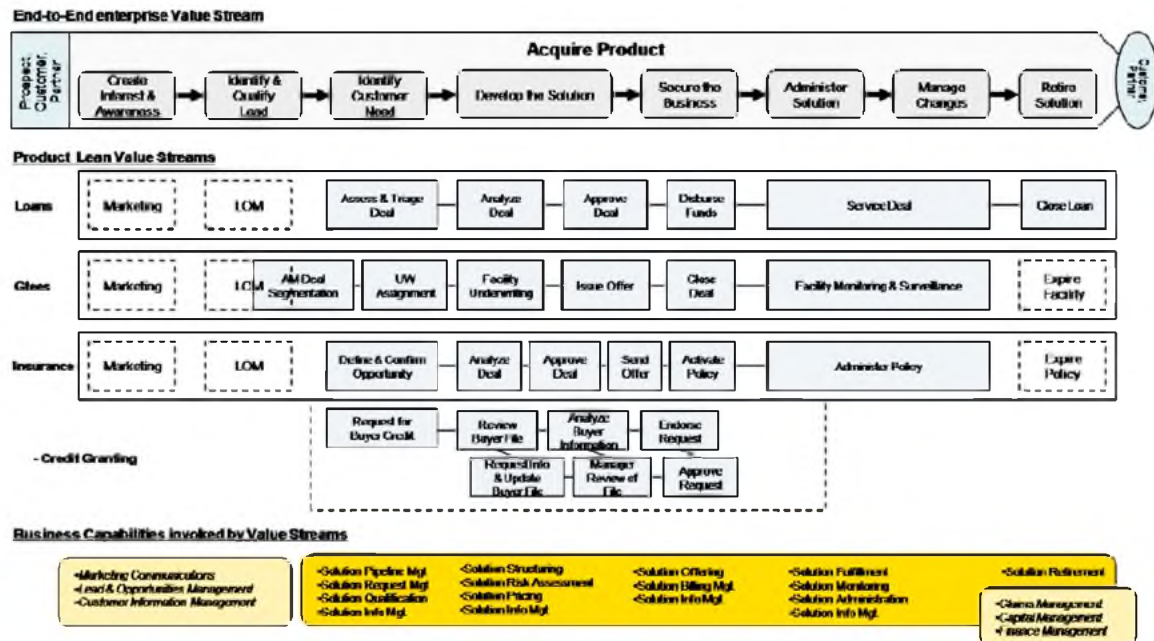


Figure 3.6.5: Mapping Lean Value Streams to Business Architecture Value Streams & Capabilities Example

The capabilities along the bottom of figure 3.6.5 are the result of the extended mapping approach where Lean Value Streams are mapped to a value stream and the capabilities that enable each value stream stage, which in turn enable underlying Lean Value Streams.

Capability mapping provides concise focal points for investments, automation, and resource analysis that become reusable across the Lean Value Streams. This addresses a major issue with LSS. Oftentimes a series of LSS projects results in driving multiple technological change requests into backend application systems, proliferating redundancy, confusion, and inconsistency in information architecture models and application architecture deployments.

Capabilities provide a concise, non-redundant view of what abilities enable value streams and, in turn, Lean Value Streams. As a result, automation funding, requirements, and overall strategy may be viewed through the clarity of stable, non-redundantly defined business capabilities – often automated in the form of equally stable, non-redundantly defined services. This aspect of LSS / business architecture mapping and alignment delivers real value to organizations that have adopted LSS.

Aligning LSS to the business architecture means aligning LSS process work to standard architectural components of enterprise-level value streams and the business capabilities they

invoke, which LSS initiatives can then leverage to provide the consistent framework of stakeholder, scope and cost/complexity factors at a broader organizational level.

Another perspective on business architecture / LSS alignment considers the value brought to business architecture-initiated work that triggers further analysis and project work. Business initiatives often rely on value stream / capability-based assessments where strategies are articulated in terms of vision, impacts, and requirements tied to a value stream or value stream stage and related set of enabling capabilities.

Figure 3.6.6 depicts the Acquire Product value stream with the value stream stages called Receive Request and Validate Application mapped to a Lean Value Stream. These value stream stages offer a dramatically expanded, implementation-level view of how organizations can leverage LSS to perform process improvements where a business architecture-based assessment indicates the opportunity for such improvements.

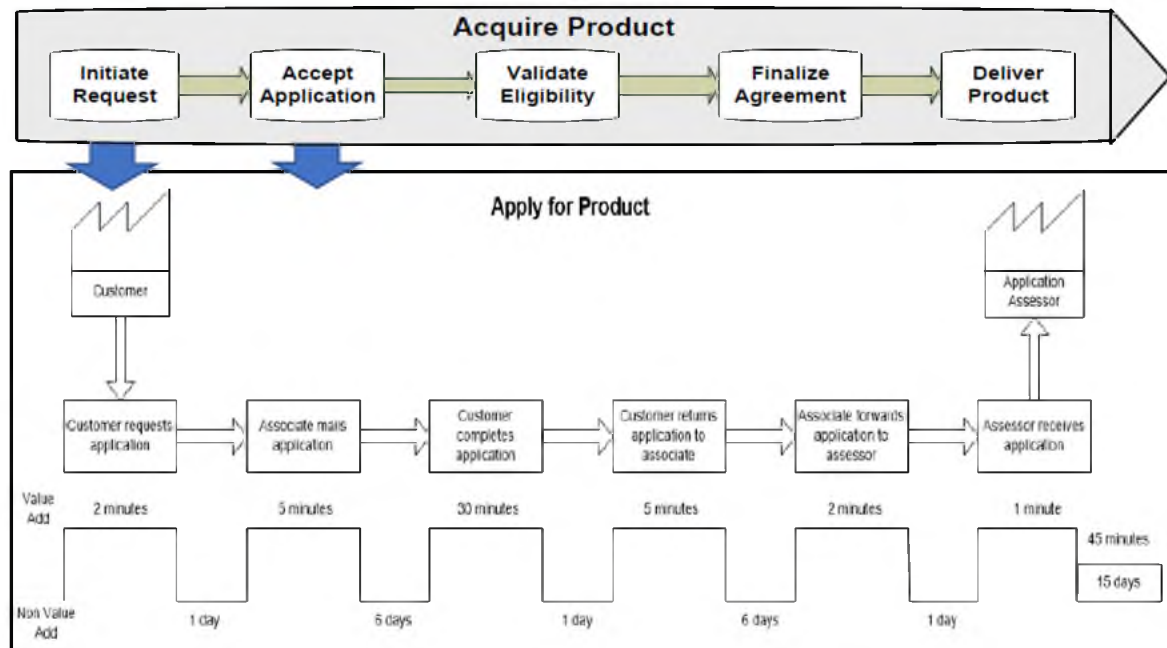


Figure 3.6.6: Value Stream Stage to Lean Value Stream Mapping Example

Collectively, the mapping examples in figures within this section demonstrate the approaches and benefits in mapping value streams and capabilities to Lean Value Streams. These examples demonstrate how business architecture and LSS can be combined to drive improvements from a business architecture perspective into more detail using LSS and leveraging LSS improvements through holistic, aggregate business views provided by business architecture.

Deploying Complementary Views of Business Architecture and Lean Six Sigma

Organizations have typically adopted business architecture, LSS, or both disciplines into use within the business community. The ability to introduce these disciplines as complementary concepts relies on which one was introduced first and involves terminology, practice, and results.

Introducing business architecture to LSS practitioners has proved sensitive in many cases. A good part of this stems from a lack of common terminology. For example, there is currently no universally-adopted best practice use of the value stream term. So, the important thing, as in all aspects of business architecture, is to find a common vocabulary and consistently apply it. Using the terminology balance introduced in this section of the *BIZBOK® Guide* has worked for organizations where the term “Lean Value Stream” applies to LSS concepts and the term “value stream” is used to describe the end-to-end, stakeholder-triggered view of how value is achieved in the context of business architecture.

The second major point to emphasize is that LSS and business architecture are complementary, not competing or rival methodologies. In best case scenarios, they are used in the same organization to supplement each other to get at insights, decisions, and problem-solving approaches that neither on its own is intended to address.

Business capabilities within a business architecture can provide a very useful framework that enable LSS to identify the full range of stakeholder, impact, and cost/complexity factors as they scope out their initiatives, as well as providing insight into cross-functional rationalization opportunities that LSS on its own may not uncover.

Likewise, LSS provides a very useful approach to optimizing aspects of the business architecture in support of achieving business strategies that business capabilities on their own are not suited to deliver. In fact, business capabilities mapping is incomplete without alignment to the processes that invoke them at a detailed level, which LSS is uniquely positioned to provide.

Where business architecture is mature and is used in a diagnostic capacity to identify areas of strategic organizational weakness needing improvement, this can provide the basis for an LSS initiative pipeline preconfigured to business strategic priority. Similarly, where LSS is mature and is already engaged in a series of continuous improvement engagements, business architecture can provide a means for coordinating impact mitigation and ensuring that initiatives are in alignment with overall business strategy.

In short, for organizations where certain levels of maturity have been attained in both disciplines, the combination can provide a very powerful solution toolset. Adoption of one approach does not provide valid rationale for not growing competency in the other at the same time.

Summary

Section 3.6 provided an overview of Lean Six Sigma. It then outlined the alignment benefits between business architecture and Lean Six Sigma, and discussed various mapping principles that enable alignment. Several examples were given to demonstrate how these disciplines work in complementary fashion, and, finally, the chapter highlighted how to introduce these disciplines into organizations in a way that enables businesses to leverage them in a complementary way.

SECTION 3.7: BUSINESS ARCHITECTURE AND BUSINESS PERFORMANCE MANAGEMENT

This section introduces the practice of business performance management as it relates to business architecture, including discussion of the “balanced scorecard”. Future releases of the *BIZBOK® Guide* will continue to expand this section.

Why does Business Performance Management Matter to Business Architecture and Strategy?

Business architecture, as outlined in prior sections of the *BIZBOK® Guide*, provides an overall framework in which to visualize, plan, scope, assess, and manage business alignment and transformation initiatives. Business performance management is the means by which an organization’s behaviors, results, and success are measured, reported, and achieved.

A robust set of organizational metrics allows executives to monitor a company’s performance and health. A manageable number of metrics is needed: measurement that strikes the balance among the different areas of the business and is linked directly to whatever drives its value. Companies should identify the few organizational and performance metrics most important to them. A vast assortment of metrics is self-defeating and counter-productive.

Benefits of Business Performance Measurement

What is business performance management really about? Ultimately it’s about business success: creating the transparency and providing the information to make the decisions that increase that success, now and into the future. Performance management must be aligned and linked throughout the purpose and intention of the organization. Business performance management is concerned with the following things:

- **Enabling management to monitor progress toward the objectives outlined in the business strategy.** For example, if one of those outcomes is to increase customer loyalty, then it’s about monitoring customer buying as time goes by (what is the average number of orders per customer per quarter), and comparing this actual level of customer loyalty with the level established as a target (say 20 orders per existing customer per quarter).
- **Providing insight into which initiatives are working and which ones are not working to drive and enable those outcomes.** If there is an initiative to develop a customer relationship management system to improve customer loyalty, then one would expect to

see customer loyalty increasing the more the customer relationship management system is assimilated. If this change in customer loyalty is not apparent, despite implementing a customer relationship management, then the business intention to increase loyalty is not being achieved.

- **Surfacing why things are working well or not well so that alternative approaches can be chosen or the path being followed can be corrected.** Perhaps the advance of the customer relationship management system isn't positively affecting customer loyalty as expected because customers are already happy with the relationship, but the actual problem is that the products or services aren't meeting their needs, for example.
- **Delivering metrics that show how effectively and how quickly an organization is progressing toward its operational targets.** Regular checking and sharing how the business is performing in terms of moving toward stated targets provides adaptability, enabling the power to influence the end result or change course. In addition, the ability to see how quickly operational targets are being achieved further allows management to fine tune approaches to expedite progress toward achieving them.
- **Creating a basis for determining the unintended consequences of actions being taken to pursue an objective.** Chaos theory, the "butterfly effect", and "systems thinking" predict with certainty that there will be some kind of flow-on effect from our actions. How we prepare for, react to, and recover from these flow-on effects are often determinants for business success or failure. By measuring and analyzing information about outcomes and comparing these with the work done to pursue an organization's objectives, we can gain new insight into unexpected outcomes and feedback of initiatives to perform rapid course adjustments.
- **Offering insights into root cause analysis.** Understanding the reason a given action item produced a particular result is essential if an organization is going to be able to repeat successes and eliminate failures at the operational level. While issues can sometimes have simple underlying root causes, other cases can be extremely difficult to diagnose without systematic data that allows for statistical analysis to be performed.
- **Enabling predictive determination of future actions based on quantitative analysis of past results.** Predictive information is some of the most valuable in business. While no information can really give us a crystal ball, a solid understanding of drivers (or lead indicators) can surely give us confidence in certain results occurring, allowing us to prepare for the most likely outcomes before they happen.

Scorecards are a favorite approach of many companies to create a view of the organizational

health and financial performance of near and long-term considerations for the company. Often, however, organizations create and monitor too many, disconnected metrics that confuse the organization and lack any real impact. Business architecture enables the systemic understanding of how to manage intentions and activities coherently, across the whole organization, to underpin healthy growth.

Business Performance Measurement Principles

Business performance measurement principles provide basic guidance for organizations that want to determine how well their business is performing in certain areas. These principles are as follows:

1. Business performance is a measurable state of how well a business is performing against objectives.
2. Business performance measurement measures levels of success or failure of business objectives.
3. Business performance measurement determines degrees of success of strategic and tactical action items associated with business objectives.
4. Performance measurement is based on thresholds against which quality, effectiveness, and other quantifiable attributes may be established.
5. Performance threshold settings are established by the business.
6. Performance measurement reflects simple and complex measurements assessing scales of success or failure for a given objective.
7. The absence of quantifiable performance measurement signals an inability of a business to determine how well it is performing against objectives.
8. Business performance measure may be applied to specific business scenarios, initiatives, or to a broader perspective on the business.

Note that these principles do not constrain or otherwise limit the creativity of the measurement analysis. Performance measurement may manifest itself as simple metrics or in more formal terms using tools such as the balanced scorecard. The balanced scorecard translates a company's vision and strategy into a coherent set of performance measures¹.

Balanced Scorecard

The balanced scorecard (BSC) is a strategic performance management framework that allows organizations to manage and measure the delivery of their strategy. The concept was initially introduced by Robert Kaplan and David Norton in a *Harvard Business Review* article in 1992 and has since then been voted one of the most influential business ideas of the past 75 years.

The balanced scorecard is discussed in section 2.1 with a focus on how balanced scorecards support strategy. However, one of the appeals of the balanced scorecard technique is that it has broader applicability than many other techniques that support strategy. In particular, the scorecard aspect of the technique involves identifying and capturing metrics that directly support the achievement of the strategy. The metric portion of the balanced scorecard technique typically falls into two relatively distinct categories:

1. Metrics that directly flow into a numeric organizational goal (must typically a financial target but others operational metrics are also used)
2. Metrics that are indirect indicators that some objective within an organization's strategy is being obtained.

From an operational standpoint, some organizations decompose top level financial targets into their subcomponents and then assign balanced scorecards at a lower level where the measures captured at these levels feed directly into the computations at the higher level. For example, some manufacturing organizations have gone so far as to provide screens within major production areas that show live feeds of that area's balanced scorecard and how that group's performance is impacting the higher level scorecards.

This kind of operational decomposition can be extremely effective in helping organizations align around the balanced scorecard's "internal perspective". However many components of an organization's strategy are much more difficult to decompose into measures where the linkage between scorecards at different levels can be so easily tied together.

The human capital side of an organization is a good example of where this direct linkage becomes much more difficult to find. Because the impact of adding new employees is a lagging impact for all but the most menial of positions, the relationship between achieving hiring goals does not immediately translate into top-level financial goals. In fact, given the cost incurred in bringing new employees onboard and making them effective, the new hiring often has a negative impact in the near term.

The impact of human resource decisions, however, is more than simply a time-shift. In most large organizations, employees tend to stay for many years making the impact of good hiring a long-tail impact. Further, the investment in organizational learning that is required for most individuals to become highly productive within a large complex organization means that the pool of qualified individuals typically becomes smaller as the level of organization-specific skills becomes greater. An organization's internal people skills can become either a competitive advantage or a constraint, and is something that often cannot be rapidly changed.

While achieving operational objectives is essential to an organization's ongoing well-being,

strategic investments are typically what determine whether an organization will survive and thrive in longer time-frames. Because these strategic metrics do not translate directly into immediate operational benefits, it is common for organizations to fail to fully develop a framework for measuring them. Such a framework must account for the fact that these non-operational metrics have an “imperfect” relationship with each other. This imperfect relationship is the result of strategic goals being more conceptual and therefore more difficult to directly measure.

This difficulty in measurement causes organizations to resort to metrics that are proxies for the strategic goal. For example, effectively measuring customer satisfaction is a common challenge for many organizations. If an organization’s strategic goal is to be perceived as the top firm in terms of customer satisfaction in its marketplace, then management will need to develop ways of measuring customer satisfaction. Asking customers directly is a common approach but this tactic has a number of drawbacks that include:

- Self-selection bias in the responses
- Lack of honesty in the responses based on fear of expressing their opinion
- Attempts at “gaming” the survey

In addition, issues of how to quantify the measure of customer loyalty must be addressed. The Net Promoter Score² is a commonly used concept that segregates customer loyalty into Detractors, Supporters and Passives in an attempt to define a metric that accurately captures the “loyalty factor”. However, this approach has attracted criticism on a number of fronts and determining the appropriate point to measure satisfaction has proven difficult. The loyalty factor is an example of the kind of conceptual organizational goal that is so difficult to directly measure yet has clear value to an organization.

Balanced Scorecard Creation Guidelines

The balanced scorecard technique provides guidance for how an organization should approach the problem of developing a representative set of measures that support its organizational objectives. The four perspectives of the technique (i.e., Customer, Financial, Internal, and Growth and Learning) provide a general heuristic for organizations to use to begin to assess the key areas within an organization that contribute to the achievement of the overall organizational goals. Figure 3.7.1 depicts a balanced scorecard example with goals and measures for these four perspectives.



Source: Neal McWhorter

Figure 3.7.1: Linking Metrics to Objectives using the Balanced Scorecard

In practice, most organizations find that they need to customize the set of perspectives to represent their particular industry and organization. The development of the set of measures that support the attainment of the organizational goals is a complex process. Most organizations find that in many areas there is not sufficient data to define with confidence the key performance indicators across all areas of their organization. Closing this gap involves the close ongoing monitoring of measures, and development and refinement of new measures as initial measures prove not to be predictive.

Balanced Scorecard Usage Guidelines

Defining and linking these measures to predict the success an organization will have in achieving its strategy is a complex exercise. This effort must be ongoing for an organization to succeed, and requires a degree of trial and error to develop. While financial measures are often the easiest to focus initial efforts on, they also tend to focus the organization on operational goals. Developing metrics for more strategic goals should follow a fact-based approach that defines candidate metrics and then works to validate if the metrics are predictive.

As these metrics are developed, it becomes possible to establish similar metrics at lower levels to enable the creation of unique sub-scorecards for business units to help bring similar alignment throughout the organization. Each succeeding level increases the complexity. In addition, because the tendency to “work the metric” is common in organizations, it is essential that metrics be fully vetted and be closely monitored as they are rolled out. Detailed lower-level metrics that are poorly monitored can lead to organizational decisions that have unexpected and detrimental implications.

Business Architecture and Business Performance Measurement

Business architecture and business performance management are complementary, not competing or rival notions. In general, business architecture provides a consistent framework upon which to build an understanding of the need for transformational initiatives, as well as to position the need for those initiatives. Business performance management sets expectations for the organization and holds it accountable to the targeted results and intentions. In best-case scenarios, they are used in concert with each other—each enabling the other to deliver optimal results, supplementing each other to get at insights, decisions, and problem-solving approaches that neither discipline on its own is intended to address.

In short, for organizations where certain levels of maturity have been attained in business architecture and business performance management, the combination can provide a very powerful solution toolset. Adoption of one discipline does not provide valid rationale for not growing competency in the other discipline. We know from experience that “we do what we measure” and “if you can’t measure it, you can’t fix it”. Therefore, the identification of the most appropriate and highest purpose measurement is a critical success factor for any organization.

Using Business Architecture to Establish Business Performance Metrics

Business architecture may be used as a basis for establishing business metrics, particularly if their management has a particular focus. The following business performance metrics use business architecture to measure the effectiveness, impact, and breadth of coverage for aspects of the business. These metrics can be applied to multiple scenarios. For example, one could apply them to a specific initiative or a series of initiatives. We provide an example of this later in this section. Or, they could be applied generically across the business.

The performance metrics that follow use capabilities and value stream stages as the measurement basis. For example, the effectiveness metric considers qualitative analysis of capabilities and value streams to assess business performance for those capabilities. The four metrics that follow involve assessing the breadth of coverage, the impact on the business, effectiveness of the business areas impacted, and the automation level.

Business Breadth – Coverage of capability and value streams across business. This metric examines how widely a capability is used across the business based on the number of times it appears across multiple stages of multiple value streams. The proliferated use of a given stage can further drive up breadth of coverage.

- 5 = Very limited business breadth in terms of value streams, capabilities, people and organization
- 4 = Limited business breadth in terms of value streams, capabilities, people and organization
- 3 = Moderate business breadth in terms of value streams, capabilities, people and organization
- 2 = Significant business breadth in terms of value streams, capabilities, people and organization
- 1 = Significant and far reaching business breadth in terms of value streams, capabilities, people and organization

Business Impact – Rating the relative impact that capabilities and value streams have on the business operations. Impact is a determination of importance to the business. While breadth of usage may signal importance to some degree, impact is a separate rating that can be applied to a capability and/or value stream stage. A capability is of high impact when success or failure of that capability has significant ramifications to the business.

- 5 = Negligible impact, rarely occurs, almost no internal visibility, no external visibility
- 4 = Limited impact, occurs infrequently, limited internal visibility, no external visibility
- 3 = Moderate impact, occurs occasionally, moderate internal visibility, limited external visibility
- 2 = Noticeable impact, occurs frequently, extensive visibility, noticeable external visibility
- 1 = Significant impact, occurs very frequently, pervasive internal visibility, definite external visibility

Business Effectiveness – Applies heat map results to reflect the aggregate view of the quality of the capabilities and value streams impacted by a given initiative. This includes the heat map ratings for the capabilities and for value stream stages as explained in sections 2.2 and 2.4. Heat map ratings in this sense are aggregated based on what is being measured. For example, if three capabilities are of interest, the aggregated heat mapping of those capabilities and the stages in which they appears are considered. The ratings go from very effective to non-existent.

- 5 = Mostly green
- 4 = Mostly yellow
- 3 = Mostly orange
- 2 = Mostly red
- 1 = Mostly purple

The ratings above are based on the heat index structure defined in sections 2.2 and 2.4 and summarized below. The relative color and number scheme uses the following Heat Index Code:

- 5 - Efficient, correct, timely, meeting expectations (green)
- 4 - At least one of incorrect, inefficient, or non-timely but meeting all critical expectations (yellow)
- 3 - At least one of incorrect, inefficient, or non-timely but meeting some critical expectations (orange)
- 2 - Not meeting expectations (red)
- 1 - Future opportunity (purple) (Does not exist but generally desirable)

Automation Level – Rates the degree of automation associated with the current state capabilities and value stream stages targeted for analysis. Automation level can apply to the capability itself as well as the stage the capability enables. Poor user interfaces, for example, would negatively impact the automation ranking for a value stream stage.

- 5 = Effective and across the board automation for all business areas
- 4 = Effective automation of high impact areas and limited automation in other areas
- 3 = Automation in limited areas and moderately effective automation in high impact areas
- 2 = Desktop tools-based automation only, or ineffective automation in some business areas
- 1 = No automation or highly limited and ineffective automation in selected areas.

Performance Metrics Applied to Business Initiative

As an example of how the business performance metrics would be derived from the business architecture to assess the impact of a business initiative, we applied the metrics to a planned Content Management Improvement initiative. This business initiative is described as follows.

Establish a centralized, consistent, accessible, flexible, and searchable way of managing all “non-metadata items” associated with a file or stakeholder. Content includes things such as images, non-image artifacts, sound, and video as required by the business.

The Content Management Initiative would impact the following capability, with the metrics above shown following it:

Impacted Capability: Content Management

Ability to define, predict, assess, control and improve activities associated with managing the non-metadata items in a file, e.g., image, non-Image artifacts, and text associated with a file.

Analysts would assess the heat index for this capability and all lower level capabilities. This assumes that this capability has been heat mapped. The result would be as follows.

Business Effectiveness

2 = Mostly red; not meeting expectations.

The above result was determined based on the heat index for the capabilities as the prime indicator. If there were other capabilities involved, the analysis would have to aggregate the findings into the Business Effectiveness metric.

The next metric is Business Breadth. Analysts determine breadth based on the distribution of the capability and all lower level capabilities across all value stream stages. This requires a mature capability map, a set of value streams, and a value stream / capability cross-mapping. Assuming this is in place, analysts would assess breadth of coverage for the capabilities independently and based on proliferation across the value stream stages in which they appear. The resulting metric in our example is as follows:

Business Breadth

1 = Significant and far reaching business breadth in terms of value streams, capabilities, people and organization.

Even though the number of capabilities was low, the proliferation of use across value streams drove up breadth. Note that an initiative could also have many capabilities but a low value stream impact. This situation could also drive up breadth of coverage.

The Business Impact metric is based on applying analysis to each capability and value stream stage in which the capabilities appear. There is a degree of subjective analysis that requires strong subject matter expert input from the business to determine true impacts. The result in our example is as follows:

Business Impact

1 = Significant impact, occurs very frequently, pervasive internal visibility, definite external visibility.

Automation level is one additional metric that can help planning teams determine if they want to improve automation of a capability and related value stream stages. Capabilities are automated in application systems and services, but value stream stages also have automation characteristics that surface as from a user interface perspective and in relation to how well a capability is automated for that particular value stream. The metric result for our example is shown below:

Current Automation Level

3 = Automation in limited areas and moderately effective automation in high impact areas.

The above metric results would give business executives and planning teams a rapid snapshot of the effectiveness, breadth, impact, and automation levels of business areas impacted by the Content Management Improvement initiative. This snapshot would be presented to management as shown in figure 3.7.2.

Business Initiative	Business Performance Ratings			
	Effectiveness	Breadth	Impact	Automation Level
Content Management Improvement	2	1	1	3

Figure 3.7.2: Example of Business Performance Metrics for Business Initiative

In this case, the aspects of the business as abstracted and viewed through capabilities and value streams, show that content management has limited effectiveness, significant breadth, heavy impact and moderate (not ideal) levels of automation. This would likely warrant an investment to improve this area.

Summary

This section will continue to evolve and include other standard business performance analysis approaches and techniques. In addition, future releases of the *BIZBOK® Guide* will cover the relationship between business performance management and business architecture in more detail.

¹ R. S. Kaplan and D. P. Norton, *The Balanced Scorecard: Translating Strategy into Action* (Boston: Harvard Business School Press, 1996).

² F. F. Reichheld, "One Number You Need to Grow", *Harvard Business Review* (December 2003).

SECTION 3.8: BUSINESS ARCHITECTURE AND REQUIREMENTS ALIGNMENT

Business requirements are the core expressions for describing what a business needs or wants to deliver improved value to its customers or stakeholders. This section outlines how business requirements align with business architecture and its various blueprint views.

The information in this section is applicable whether an organization is using traditional “waterfall” methodology / System Development Life Cycle (SDLC), an agile framework, or any other requirements methodology. At their core, these methodologies all attempt to describe stakeholder needs, for which this section uses the generalized terminology of “requirements”.

Why Requirements Alignment

A business architecture-based approach allows for increased clarity of purpose, design, context, and scope for requirements development. The progression of mappings utilized in business architecture defines strategy, value delivery, and what a business does. This framework then allows for the alignment of specific initiative or product requirements. Business architecture is ultimately about transforming some part of the business from a current state to a better future state. While requirements analysis and requirements management are the purview of business analysis rather than business architecture, requirements do have important linkages to business architecture, as both can be aimed at the future with requirements identifying what a team needs to do to reach the future state. The *Business Analysis Body of Knowledge Guide® (BABOK® Guide)*¹ defines “requirement” as:

1. A condition or capability needed by a stakeholder to solve a problem or achieve an objective.
2. A condition or capability that must be met or possessed by a solution or solution component to satisfy a contract, standard, specification, or other formally imposed documents.²

For purposes of this discussion, a requirement is “a condition needed by a stakeholder to solve a problem or achieve an object”. Requirements are a direct result of the desire to satisfy an objective, which is a quantifiable, measurable result that defines a strategy. Objectives target capabilities with a focus on improving the value consumed or produced by a given stakeholder. Requirements are framed based on their ability to improve capability behaviors essential to improving stakeholder value delivery. Requirements, therefore, must be traceable back to the originating objective, capability behaviors, and applicable stakeholders. Requirements work is framed in the context of initiatives, which satisfy multiple objectives.

From objective to detailed requirements, there is a hierarchy of more granular and refined requirements. While business architecture does not generally concern itself with the linkages of this requirements hierarchy from top to bottom, domains like requirements management are much more concerned about the mechanics of such traceability. Analysts do need to be certain that requirements made at the higher levels of the business architecture blueprints align with the next lower levels of detail, as well as with each other.

The traceability and decomposition concepts outlined above are seen in practice in multiple development methodologies such as agile and the Scaled Agile Framework® (SAFe®). In agile, user stories scale into epics, each of which is a requirement on varying scales. User stories express a requirement in one way, typically from a user perspective, while other methods may express requirements in other ways. Scaled Agile Framework® provides a more comprehensive requirements model with additional requirement relationships between user story and epic that scale based on the build complexity of systems. The mapping discussion herein is agnostic to the type of requirement employed and the discussion that follows applies to requirements in general of all types.

The end goal of aligning business requirements with business architecture is to improve the results of a company's initiatives. Seventy percent of software initiatives fail outright or are largely challenged due to poor requirements.³ Business architecture provides a framework that helps turn business strategy into actionable results by providing a perspective that can help identify gaps, conflicts, and overlaps between initiatives sooner in the planning process, rather than later when time and money has been already spent. This framework assists analysts in deriving, framing, scoping, organizing, and reusing business requirements to deliver more effective solutions to business challenges. These challenges include a lack of alignment to business strategies, resulting in wasted investments and limited business value.

In addition, the prioritization framework of business capability heat mapping allows deployment teams to sequence initiative/requirements work more effectively. Synchronizing timing and order of requirements work with business priorities enables deployment teams to address work in a manner that provides the highest value to the business.

The future remains bright for organizations with leadership that commits to driving growth using a disciplined process for guiding investments.⁴ While solution architecture, technical design, or implementation details are needed, they are not the core of a business requirement. Strong business architecture will enable analysts to capture the right requirements to drive change. Business architecture enables tracing requirements back to strategic objectives and the goals satisfied by those objectives. By applying practical blueprints, business architecture helps organizations and teams to understand needs fully, uncovering synergies and context around

issues and opportunities. Business architecture facilitates investment decision making by following a disciplined approach to articulate the value of each requirement to stakeholders, which, in turn, aids in designing optimal solutions, including tools, technology, and process.

The elements of the business architecture framework — primarily but not exclusively value streams and capabilities — can be improved and extended through the requirements of an initiative. In cases where requirements are provided in support of new capabilities or changes or enhancements to how they are delivered in the operating model, it is optimal to frame changes through the business architecture first and then provide implementation level details through requirements.

Benefits of Business Architecture and Requirements Alignment

Leveraging business architecture as a framework for and input to business requirements provides the following benefits:

- Shared business vocabulary offers analysts and business stakeholders a common language and context from which to build requirements, reducing confusion that stems from different stakeholders each having a unique vocabulary. This alignment also eliminates the need to redefine business concepts from initiative-to-initiative.
- Business concepts such as capability, value stream, organization, information, and stakeholder enable analysts to establish a more complete scope of a given requirement during initial planning sessions through deployment, reducing the risk of misinterpreting scope.
- Business architecture provides a framework for evaluating business investments within and across portfolios, enabling a holistic view of the strategic business roadmaps and key performance indicators that guide initiative scope, sequencing, and context.
- Along with providing a framework for investments, business architecture also helps identify areas of focus by providing a framework to assess prioritization within initiatives or across initiatives that potentially have competing resources.
- Business architecture can help identify when enough of the future state has been addressed within initiatives to understand if budgets can be closed or re-allocated.
- Delivery teams do not always have line of sight to other active initiatives within the company that are impacting the same organization, stakeholders, capabilities, or value delivery. This framework formalizes the traceability of requirements from strategic direction through solution deployment, providing a common way to map business concepts to initiatives and provide a unique perspective.

- Value streams provide clarity as to how a given business requirement delivers value to specific business stakeholders, providing input to an initiative charter. This value perspective can also be utilized in building requirements as a focal point of requirement value and relevancy.
- Requirement statements in the waterfall methodology, user stories in agile development, or use cases, framed within the context of value streams and capabilities, enable analysts to define a clearer set of requirements acceptance criteria and impacts.
- Business architecture provides a shared context across business teams and business units as input to requirements, ensuring that conflicting or overlapping requirements are addressed appropriately across business boundaries.
- Business architecture heat maps and impact ratings allow analysts to prioritize requirements based on effectiveness and business need. Heat-mapped capability maps identify the state of business capabilities from strong to non-existent and help the business make strategic decisions on prioritization efforts.⁵
- Business architecture enables informed business decisions through the identification of capability gaps/overlaps, misalignment between value propositions, and delivery channels. Business architecture / IT architecture mapping pinpoints the impact on applications, software services, and data to be modified or created within the scope of a given initiative.
- Improved categorization of requirements using business architecture limits variation in requirement definition and structure from analyst to analyst. In turn, this efficiency allows for better reuse of requirements across initiatives and business units and builds incremental knowledge within each capability.
- Business architecture enhances a repository of requirements by value stream or capability, enabling the reuse of requirements when multiple business units and/or systems express the same capability. This enhancement reduces churn at the front end of initiatives that arises from not knowing the current state that requirements are intending to transform. More generally, it also provides an effective categorization of requirements at an enterprise level.

Principles of Business Architecture and Requirements Alignment

Principles underlying the concept of leveraging business architecture to deliver more effective business requirements include:

1. Business architecture provides shared context and understanding of the business to frame requirements development.

2. Business architecture offers a consistent business perspective across business units, rather than a silo view, by understanding how different organizations and/or business units share capabilities or work together to deliver value.
3. Business architecture provides explicit scope of what a business does and how it defines and delivers stakeholder value. Requirements should focus on how value is enhanced in the impacted value streams and stages.
4. The common vocabulary contained within the business architecture framework facilitates a shared understanding. Requirements must use this vocabulary for consistency.
5. Business requirements should always be associated to a desired future state for one or more capabilities, value stream, stakeholder, and business unit.
6. Business requirements are based on a clearly articulated perception of the business for which one or more needs are to be addressed.
7. Business requirements require a common understanding of business concepts that remains consistent across stakeholders and business units.
8. Business requirements are bounded by scope of the business for which a given need is being addressed.
9. Business architecture provides a framework for organizing business requirements in a logical structure that aligns to well-articulated business perspectives.
10. Business architecture heat mapping provides a basis for business requirements gap analysis. Heat mapping can highlight capabilities and value stream stages that are at risk or ineffective. It can even highlight missing capabilities that the business needs. The business requirements can then document improvements or implementation of the needed capabilities.
11. Business impact analysis, complemented by capability effectiveness and breadth of coverage metrics, provides a basis for prioritizing business requirements based on their impact to the business.
12. Requirements should address how information associated to a capability is provided and changes states.
13. Changes to a value stream stage drive potential capability enhancements or new capabilities, which, in turn, drive one or more requirements to deliver value to the customer.

These principles provide the foundation for using business architecture to drive business requirements, frame the scope and context of business requirements, and establish a baseline of understanding that can be used as a starting point for requirements.

Business Architecture and Requirements Alignment

To ensure requirements are accurate and agreed to expeditiously, analysts often link functional requirements to process or workflows as a helpful way to develop and validate a requirement as it provides some business context. The call center process for responding to billing inquiries, for example, might be tagged with a specific requirement to be able to send the customer a duplicate bill on request. While seemingly straightforward, some billing applications do not have such a capability “out of the box”.

There are a variety of ways to implement this requirement, ranging from wholly manual to fully automated. By their very nature as statements of needs, requirements can find linkage to any aspect of business architecture. Therefore, the best practice for mapping requirements is to link them to a capability (section 2.2), which leads to corresponding components of the business architecture.

The alignment is highlighted via the framework outlined in the white paper, “Leveraging Business Architecture to Improve Business Requirements Analysis”.⁶ Figure 3.8.1 shows the linkage of requirements to capability within the context of a value stream stage, initiative, and stakeholder being targeted by the requirement. Requirements must consider multiple perspectives. Value stream stages, capabilities, stakeholders, and initiatives shape and ultimately define those final conditions needed to achieve a given objective as defined within a business strategy.

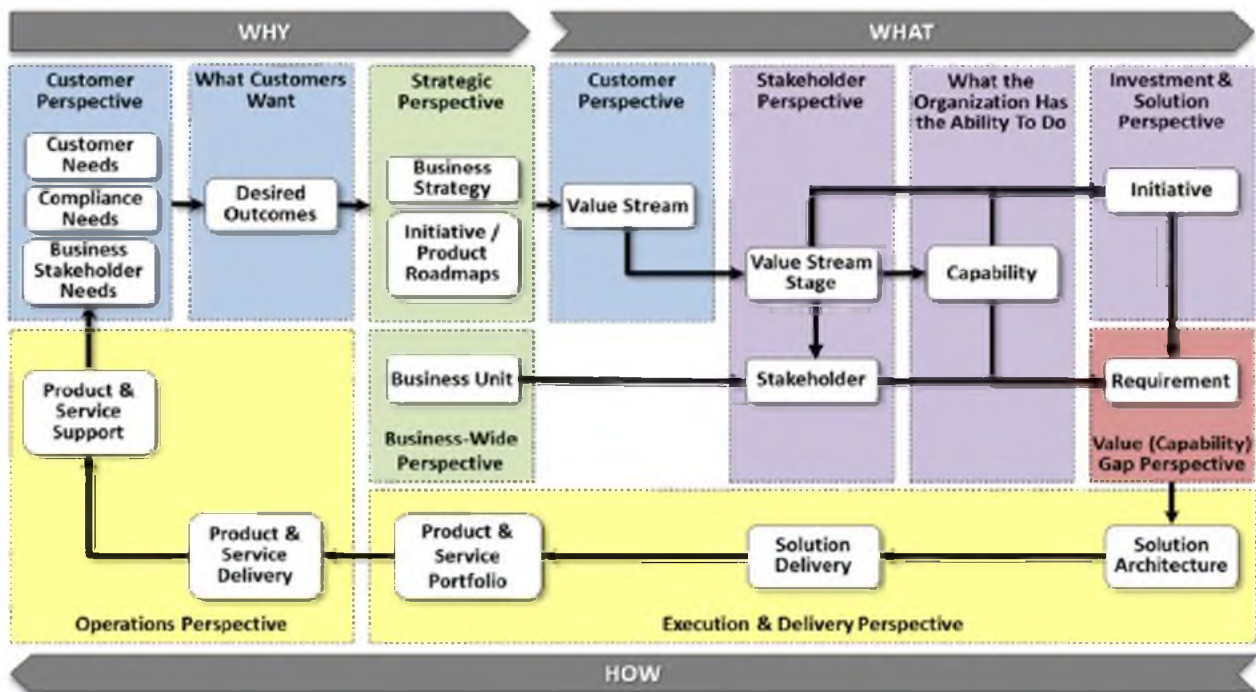


Figure 3.8.1: Business Architecture Enables End-to-End Business Requirements Traceability

Analysts must analyze and understand the who, what, and why that will form and, in some cases, constrain requirements. The ability to capture and link requirements with capabilities and trace those capabilities to a specific value stream stage is not only key to the initiative, but to the overall business through effective and reusable categorization. This linkage will provide the necessary inputs to the deployment team with a full understanding of why the requirement exists, including which capabilities and where along the value stream those capabilities will be impacted or introduced. This information, in turn, will drive a solution design that is appropriately aligned with the customer's needs.

Requirements can certainly be linked to initiatives. Requirements at the highest level are part of the scope of the initiative. The scope should be unambiguous about what value is being delivered to which stakeholders on completion (and what time, cost, and quality constraints to work within). The ability to trace initiative scope requirements to business strategy and requirements of future capabilities is integral to a business's ability to invest and work on the right things at the right time to realize its stated vision.

Requirements Alignment with Information

Requirements gain alignment with information concepts through capability linkage, which suggests that a requirement can be linked to information concepts. For example, a call center may employ the capability of Customer Management. This capability instance may include a requirement to present a 360-degree view of the customer, including preferences and profile information, and would imply the need to keep track of a customer's interaction history, where none was kept before. Interaction histories can include a log of every call, order, trouble ticket, or complaint. This demonstrates requirement dependencies between the capability and information blueprints.

This linkage can be leveraged for data-related requirements, which often serve as an input to data modeling and business intelligence activities. Utilizing the linkage through the capability and information allows for traceability from business architecture through the modeling and intelligence outputs of an initiative.

Requirements Alignment with Value Streams

Requirements can also be linked to value streams, which provide an overall context for what is needed to improve stakeholder value delivery. For example, a technology company maintains a stable value stream for delivery of its computers to consumers. However, some local competitors have begun pushing up the supply chain, by adding on-site installations to their deliveries. This change is not a trivial enhancement, as the business must now introduce an installation stage near the end of the original value stream so that delivery of a product now has the added value

of providing an installation for the customer. This straightforward requirement has many ripple effects in terms of new requirements for a new equipment installation capability, for a technical information knowledgebase needed to support these installations, for the process of managing issues at the customer site, and so on. Again, there are requirement dependencies between and across business architecture blueprints. These dependencies are further explored in the Business Architecture and Requirements Alignment in Practice subsection.

Requirements Alignment with Organization

Requirements can also be specified to be aligned to a business unit defined in an organization map. A business unit and its stakeholders may need to acquire specific skills to support desired capabilities. For example, a business intrigued by the benefits of social networking to reach consumers may decide that its customer-facing workforce needs to get trained in social networking tools and best practices. As such, it would articulate a requirement that its organization needs to reach a certain level of skill in this area, and, like all requirements, can be further refined to statements of how this would be done and how it might be measured.

Requirements Alignment with Products

Requirements are intimately connected to the evolution of products, as defined in *BIZBOK® Guide* section 2.7. Although requirements at the level of specific product features are often too detailed to be in the scope of business architecture, a requirement to offer a completely new product can be linked to higher strategic concerns. For example, consider a systems integration company that offers consulting services to the marketplace. In order to have more reliable revenue flows (a strategic concern), it would like to introduce software licenses and ongoing software support contracts into its product mix. The details of what these offerings include can be worked out by product designers, but there is a clear link between requirements at the business architecture level between strategic outcomes and the range of products that support them.

Clearly, requirements can be linked to almost any domain of business architecture, provided the requirements are kept high-level enough. The alignment can be made to domains explicitly outlined above as well as alignment through business architecture to other disciplines such as business rules modeling or user interface design, which both can utilize the stakeholder, value stream, and routing perspectives. In these examples, the key to organizing and valuing requirements is to define these linkages via business capabilities.

The benefit of viewing requirements from the business architecture perspective is that it provides a defined context and scope for the requirements that leverage an agreed-upon business framework and vocabulary. Well-defined context and scope expedite requirements gathering, keep the team focused, and ensure clear, consistent communications among business

professionals, analysts, practitioners of business architecture, and solution delivery teams.

At its core, as previously stated, a requirement is an expression of what the business wants or needs, which can also be said of the business's capabilities, value streams, information, products, initiatives, or organization. By leveraging business capability linkage, analysis can quickly determine the secondary effects across various business architecture blueprints that demand alignment to achieve consistent progress toward a common goal.

Business Architecture and Requirements Alignment in Practice

Business analysts must be able to answer the question “why”. This question is not necessarily why the initiative was requested and approved, but why the business requirement exists. Requirements are the instructions guiding the design of the solution that creates the intended return on investment. As such, requirements analysts must perform thorough analysis in order to represent accurate business requirements.

The recommended approach to address the “why” question is to trace the requirement logic from its basic components — stakeholder, goal, and reason — through its origins and deployment highlighted via business architecture — business strategy, value stream, and capability. However, frameworks today guide analysts to trace specific requirements back to specific initiative artifacts — business requirements to initiative scope, functional requirements to the business requirements document, and implementation requirements to the functional specification.

Initiatives can rarely trace all requirements from business objectives through solution design. The reason is not due to a fundamental design flaw in traceability matrices, but rather an inability to state the strategy of the business as a whole. Indeed, a study by Kaplan & Norton found that “95 percent of company employees are unaware of, or do not understand, its strategy”.⁷

To understand why a business need or requirement exists, and to promote clear understanding of the desired outcome, the requirements must be aligned to business architecture concepts such as capabilities and value streams. The example below continues from *BIZBOK® Guide* section 2.4 to show how requirements can align to a sample value stream and capability framework for loan acquisition.

Consider the following example. A financial institution has been issuing high-risk loans, putting the institution and customers at risk. Analysis of the business architecture shows that there are two value stream stages across two value streams where risk-rating capabilities are leveraged to further loan approval. The initial scope of requirements may focus on the Approve Loan value stream stage of the Acquire Loan value stream and target-specific improvements to certain risk-rating capabilities. The strategic objectives, supported by key performance indicators (KPIs),

point to this value stream stage and enabling capabilities as the scope of the problem and focal point for a solution. Participating stakeholders, which are mapped to each stage of a given value stream, further serve as focal points for establishing a series of user story requirements.

In this example, the initiative team needs to define requirements for one or more stakeholders who participated in the aforementioned value stream to improve or add capabilities as required to address the loan issue and related objectives. The value stream/capability cross-mapping provides analysts with a concrete requirements target; the enabling capabilities and, by extension, related information concepts. In this way, business architecture serves as a frame of reference to bound the scope of requirements, whether they be in the form of epics, user stories, or other formats, and to tie them directly back to the strategic business objectives. Figure 3.8.2 highlights the targeted capabilities in the Approve Loan stage of the Acquire Loan value stream.

Value Stream: Acquire Loan				
Receive Application	Validate Application	Approve Loan	Activate Agreement	Issue Loan
Submission Management	Submission Management	Submission Management	Submission Management	Submission Management
Inquiry Management	Inquiry Management	Message Management	Message Management	Message Management
Message Management	Message Management	Customer Authentication and Authorization	Customer Authentication and Authorization	Customer Authentication and Authorization
Agreement Definition	Agreement Access Management	Customer Risk Management	Customer Preference Management	Customer Preference Management
Agreement Access Management	Agreement Risk Determination	Customer Information Management	Agreement Access Management	Customer Matching
Agreement Matching	Agreement Matching	Agreement Access Management	Agreement Preference Management	Customer Information Management
Agreement Information Management	Agreement Information Management	Agreement Structuring	Agreement Structuring	Agreement Access Management
Customer Definition	Customer Risk Management	Agreement Risk Management	Agreement Activation	Agreement Preference Management
Customer Authentication and Authorization	Customer Authentication and Authorization	Agreement Matching	Agreement Matching	Agreement Matching
Customer Matching	Customer Information Management	Agreement Information Management	Agreement Information Management	Agreement Information Management
Customer Information Management	Policy Definition	Financial Account Access Management	Policy Definition	Financial Account Management
Message Management	Policy Interpretation	Financial Account Risk Determination	Policy Interpretation	Financial Transaction Management
Time Management	Message Management	Policy Interpretation	Message Management	Payment Management
Work Management	Time Management	Policy Interpretation	Time Management	Policy Definition
Information Management	Work Management	Message Management	Work Management	Policy Interpretation
	Information Management	Time Management	Information Management	Message Management
		Work Management		Time Management
		Information Management		Work Management
				Information Management

Figure 3.8.2: Using Value Stream and Capabilities to Frame Requirements Analysis

Figure 3.8.2 highlights a subset of enabling capabilities for the Approve Loan value stream stage, which may involve multiple stakeholders. This alignment highlights requirements that seek to improve the loan approval work to reduce loan defaults and mitigate risks. Analysts are most likely to focus on capabilities such as Customer Risk Management, Agreement Risk Management, Financial Account Risk Determination, and Agreement Eligibility Determination, which is a child of Agreement Structuring and, while not shown, is an enabling capability by virtue of its parent capability being cross-mapped to the value stream stage.

The most common frameworks applied to moving initiatives forward are waterfall or various forms of agile. Regardless of the framework employed, requirements are often grouped into higher level requirements or decomposed into more granular requirements. Analyst teams also categorize requirements into types, including but not limited to functional, non-functional, data, process, and assumptions.

In a waterfall methodology, all requirements are gathered upfront based upon the initiative charter/scope. These requirements, also known as business needs, are further broken down into detailed requirements of various types, including, but not limited to, functional and non-functional requirements. The initiative is formalized by specifying a stated charter or scope with identified resources — budget, people, and technology. The successful accomplishment of any initiative, however, is dependent not only upon satisfying scope, cost, and schedule, but also upon results that deliver customer satisfaction. Understanding why the requirements exist and aligning the requirements to business architecture concepts at the initiation of the initiative provides a way to show that the initiative is delivering the needed business value by satisfying a formal business objective.

Where the waterfall approach looks to provide all detailed requirements up front, the agile framework is an iterative approach with the intention of providing value to stakeholders in an incremental fashion. Depending on the agile framework that is in use, these requirements may be grouped in a variety of ways. For example, these requirements can be defined in features and user stories, which are grouped into releases to deliver incremental solutions. An agile epic is ultimately decomposed into related user stories, with a shared goal such as Reject Loan Request. One agile approach, the Scaled Agile Framework (SAFe)®, decomposes epics first into features, which, in turn, are decomposed into related user stories. All of these elements can be associated to capabilities.

Regardless of approach, requirements typically are delivered by priority with continuous delivery and moved into production when the business is ready. Tracing epics, features, and/or user stories — developed using agile methodologies — to business architecture concepts — such as capabilities, value stream stages, and stakeholders — enables the delivery of intended outcomes

for the business, just as tracing scope statements or requirements to business architecture concepts does in waterfall approaches.

Regardless of the approach, viewing business capabilities across value streams and value stream stages allows for initiative/release planning based on a prioritized framework. In addition, if one assumes that the previously referenced business capabilities are used by an insurance division to assess policy risks under the context of a different value stream, the priorities may not be clear to anyone on the original initiative. Efforts to improve these capabilities within a loan approval context may also satisfy improvements to these same capabilities for the insurance division. Business architecture views can be used to identify that these same capabilities enable other value streams and are tied to other business units.

Further detail is provided in Figure 3.8.3 where the fourth value stream stage has been further detailed using a dynamic rules-based routing (DRBR) map. This routing map (see section 3.5 for more detail) is used to represent explicit stakeholder interactions, case transference, and event transitions, which enable more informed derivation of user stories.

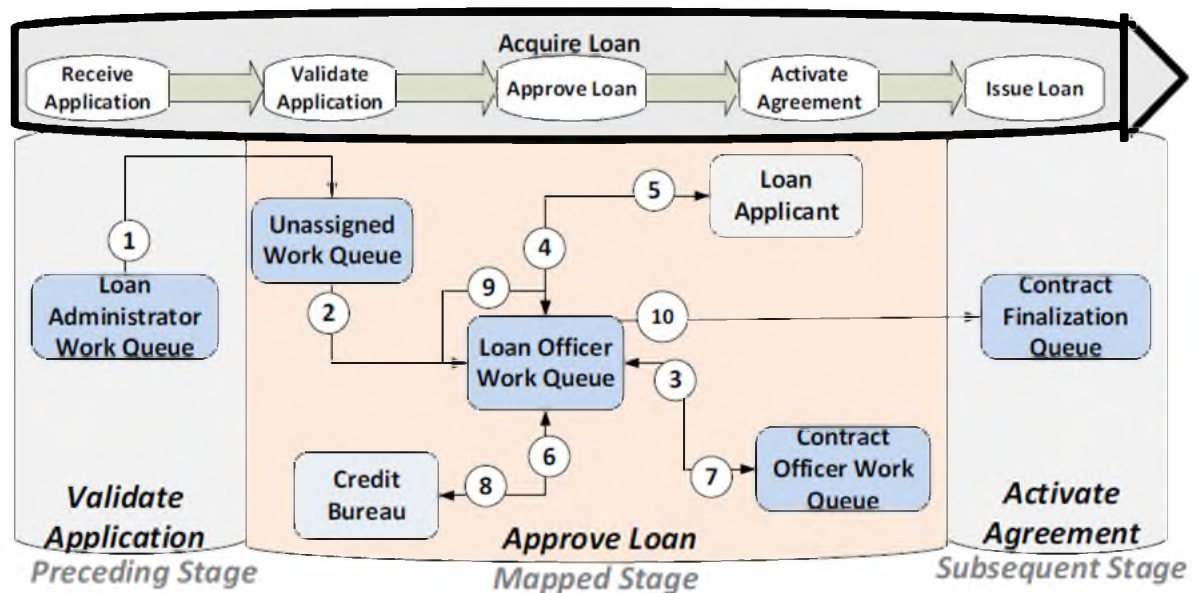


Figure 3.8.3: Deriving Business Requirements from Business Architecture

The highlighted Loan Officer Work Queue can facilitate a single user story based on a specific objective for a given stakeholder. For example: “As a Loan Officer, I want to determine risk rating of an applicant seeking a loan so that I can determine the credit worthiness of the applicant”. This user story ties back to the Risk Rating information concept and an Individual Risk Rating Determination business capability within this value stream stage. A Loan Officer stakeholder would be identified through stakeholder analysis of business architecture, providing a common

vocabulary and definition of all components of the user story.

Again, the construct used for requirements analysis could be agile user stories or traditional requirements. In either case, they should be built out until they fully implement each capability required by the business objectives, heat/value mapping, and gap identification from business architecture. An additional result of business architecture alignment is allowing another initiative team, working on an insurance upgrade, to refer to identified gaps and reuse these business requirements to satisfy gaps as needed. In this way, business architecture serves as a cornerstone for establishing business requirements as reusable artifacts on a larger scale. This, in turn, can save time on related or similar issues that arise and provide a reference point as to what was done to meet certain business objectives within the context of a given business strategy on an enterprise-wide basis.

In addition to using business architecture as a framework for tying requirements to key aspects of the business and subsequent business requirements, business architecture provides the ability to help drive and derive requirements. Consider the previous example of the loan value stream. The business has heat-mapped the value stream stages and, more importantly, the capabilities using colors to draw attention to areas of need. For example, red means the capability is significantly problematic. Assume that the Agreement Structuring, Agreement Risk Management, and Customer Risk Management capabilities are red, meaning that they are in severe distress. Assuming these are high-impact capabilities, which by definition they are as they are customer-facing, and a business objective is driving investment in this value stream, these heat-mapped capabilities become an investment focal point.

As a rule, and based on business criticality, requirements analysis would first focus on the red capabilities. Impact analysis and other metrics tied to a given business architecture perspective, often bound by a given business strategy, provide a basis for prioritizing and focusing requirements on the highest impact, most problematic areas of the business. Value stream stage heat mapping offers similar insights.

Consider the agile user story example shown in figure 3.8.4. Value stream stage / capability / stakeholder-to-user story alignment helps ensure that each user story focuses on improving a capability behavior with a value-focused perspective, linked to a participating stakeholder. In figure 3.8.4, the value stream stage-to-capability cross-mapping points to the Agreement Structuring capability, which is actually a parent of a number of more granular capabilities, one being Agreement Terms Management. The user story at the bottom of the figure identifies this more granular capability along with the Loan Officer stakeholder targets of the requirement. Analyst teams often seek additional granularity in capability decomposition because requirements become easier to specify and satisfy when they have a granular focus.

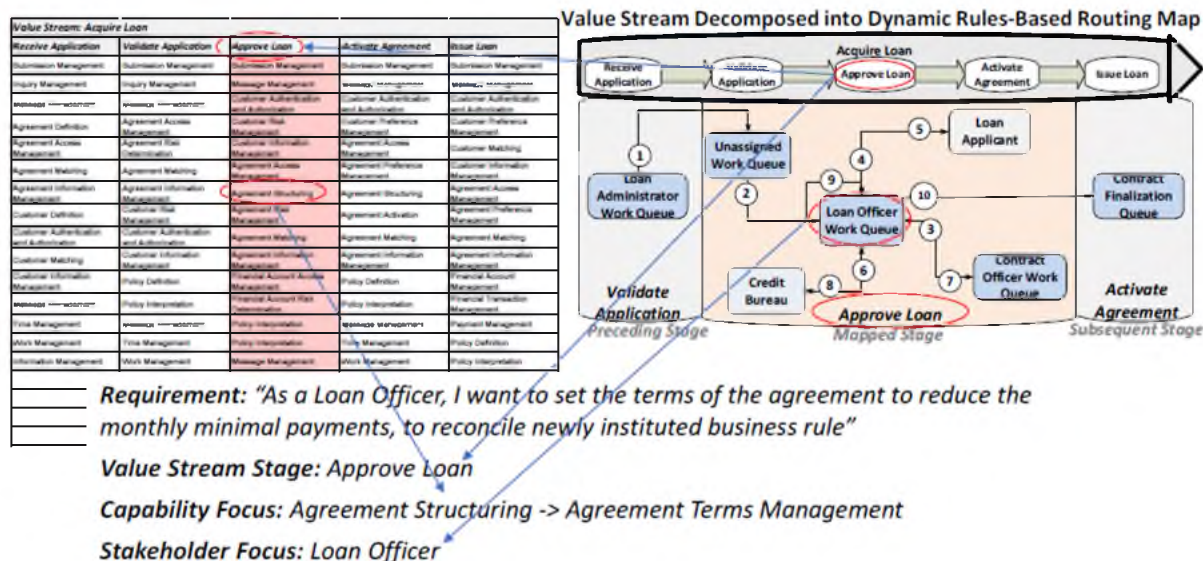


Figure 3.8.4: Deriving Business Requirements from Business Architecture

As shown in figure 3.8.4, analysts now have a narrow focal point for driving forward a requirement. The more granular the capability, the more tightly focused the requirement. In addition, the value stream stage provides essential framing for the overall story, surveying as the main vehicle for connecting a capability with a stakeholder, in context of delivering specific value items, and in context of the relationships among other stakeholders participating in that stage. Subject matter experts, business analysts, software designers, developers, and testing teams all have a clearly delimited, well-articulated, shared perspective and scope for specifying, delivering, and validating a set of business requirements — a shared perspective that is so often missing from the average requirements definition effort.

One additional business artifact, the dynamic rules-based routing map worksheet, which is not shown, provides the underlying details behind the routing map shown in figure 3.4.8. The worksheet depicts various events tied to the numbers shown on the routing map. Each event has a corresponding action and may be associated with a corresponding work transition or object state transition, among other information. Each line item in the worksheet corresponds roughly to a user story. The business analyst may fill in the worksheet as the user stories evolve, and the worksheet and user stories may then be shared with development teams. For more information on routing maps and case management, refer to *BIZBOK® Guide* section 3.5.

Business architecture provides an ideal framing for business analysts formulating user requirements, regardless of the requirements methodology employed. An organization's approach to business architecture engagement with agile teams will evolve over time. Organizations often begin with existing agile teams operating without business architecture. As

highlighted by figure 3.8.5, the approach and description of this collaboration will improve over time to a point where agile teams can become self-sufficient in using business architecture artifacts.

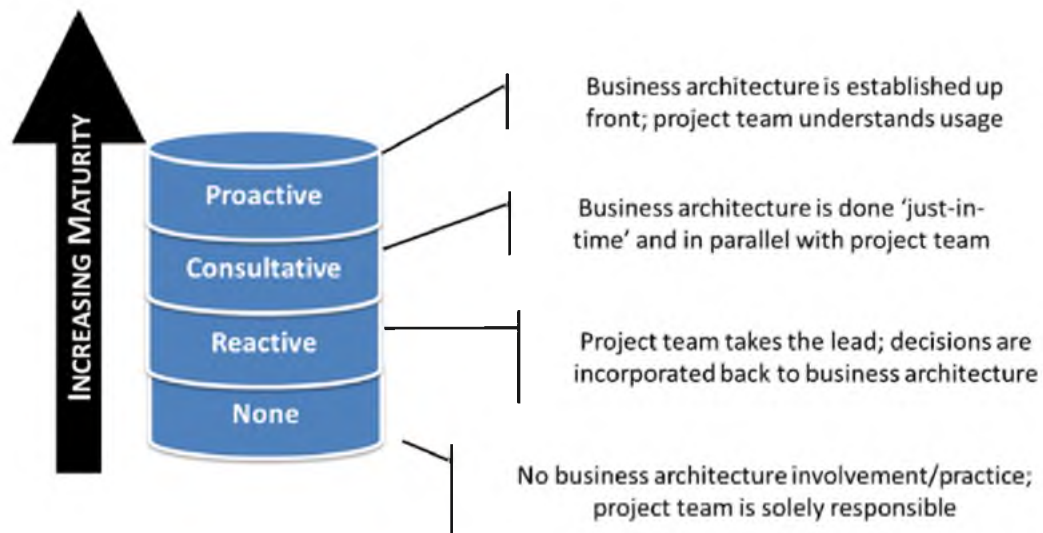


Figure 3.8.5: Business Architecture and Requirements Alignment Maturity⁸

Business architecture not only provides a framework for scoping, defining, and tracing business requirements across the business, but also provides a basis for prioritizing and focusing requirements efforts. This two-phased approach to scoping, organizing, and prioritizing requirements ensures reuse across the business as well as long-term business knowledge capture, essentially showing how business architecture and business requirements analysis are not just casually linked but critically interwoven.

Business Architecture and Requirements Alignment: Guidelines

How does one know if the business architecture is leveraged effectively in the context of deriving and managing business requirements? These guidelines provide a basis for evaluating the viability of the business architecture.

Obtaining good, solid requirements has eluded deployment teams for many years. By leveraging business architecture effectively, deployment teams can quickly focus on identified business priorities. The following guidelines will help align requirements to stakeholder needs:

1. Are the requirements aligned to business architecture in general? If not, the scope and context for those requirements could be called into question.
2. Can a business requirement be traced to a given existing or new capability, value stream, organization, or stakeholder improvement? If not, then it is likely that the requirement is

not well-articulated or even required.

3. Where requirements map to a given capability or value stream, do the requirements fill gaps corresponding to problematic areas heat-mapped within value streams or the capability map? If not, then additional analysis is likely required. Conversely, if a requirement addresses a capability that is not identified as problematic, the requirement may need to be challenged to ensure it is prioritized correctly. Understand that capabilities may be shared across value streams, organizations, and stakeholders. Business architecture should highlight capability usage and provide a map for requirements analysts. Requirements should address the root causes of the capability gap and move the capability toward its future state.
4. Do requirements use the business vocabulary defined within the business architecture? If not, it is likely that misunderstanding of terms will ensue, particularly if requirements cross business lines. This lack of consistency will lead to ambiguous requirements, even though all stakeholders believe they understand the requirement within their own context.
5. Are requirements analysts conversant with the business architecture? If not, it is likely that they are not effectively leveraging the business architecture.
6. Is initiative mapping to value stream, capability, and case management used to assess cross-initiative interdependencies required to support approaches such as Scaled Agile Framework⁹ (SAFe)[®]? If not, initiative dependencies may be lost.
7. Do stakeholders understand the business architecture, strategy, and desired outcomes prior to providing input to requirements? If not, requirements may result in wasted investments or deliver limited business value.
8. Does the business architecture clearly reflect and enable business strategies? Vague strategies will lead to vague requirements. Not all vagueness or assumptions can be removed from the business strategy upfront; therefore, assumptions should be listed out in the requirements documentation.
9. Can requirements be traced to defined business value delivery or capability outcomes? Stakeholder input should reflect the desired outcomes, looking at a capability gap and the strategy to close that gap. Stakeholders bring their own interpretations, biases, and beliefs to the table and seek to satisfy their own needs.
10. Are the business architecture and business analysis functions aligned? The documentation used by business analysts to do their jobs (e.g., requirements, role definitions, procedures, job aids, etc.) should reflect the interaction and collaboration between the roles to fully embed this alignment within the organization.

11. Are the business architecture concepts leveraged in analyzing business performance during planning efforts or during evaluation of changes required due to internal or external factors? If not, then assumptions could be made that all existing capabilities are “working just fine” and the final deliverable may not meet the business performance needs.
12. Are the business architecture concepts used to assess target state vision, objectives, and strategy over the lifecycle of an initiative? If not, then requirements or enterprise solutions could be built in a vacuum, requiring rework to move on to the next strategic initiative.

Requirements Tracking in the Business Architecture Knowledgebase

The business architecture knowledgebase is highly useful for the alignment and tracking of business requirements as they evolve based on their relationship to various business architecture domains. The knowledgebase enables requirements traceability back to strategy as well as reusability across business units and initiatives. Figure 3.8.6 summarizes the relationships between requirement and relevant business architecture domains.

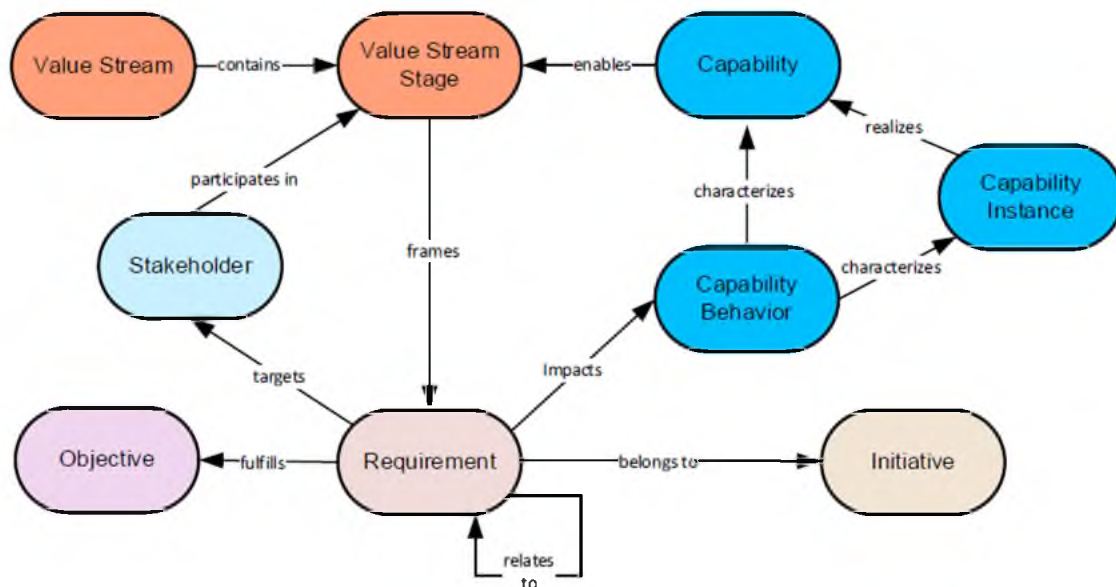


Figure 3.8.6: Requirements Mapping Knowledgebase Perspective

Figure 3.8.6 highlights the relevant relationships between requirement and various business architecture domains as follows:

1. Requirement relates to requirement, where a dependency or other relationship may exist, such as an epic decomposing into a user story.

2. Requirement fulfills an objective where many requirements may need to be met in order to fulfill an objective.
3. Requirement is framed by a value stream stage, which provides enabling capability and participating stakeholder context.
4. Requirement impacts a capability behavior, where that behavior may apply to the capability in general or to a specific instance of a capability.
5. Requirement targets a stakeholder, which provides requirements definition context, such as a user being the target of a user story.
6. Requirement belongs to an initiative, which may be a program, project, sprint, or other endeavor based on methodology in use.

The remaining relationships shown in figure 3.8.6 depict standard business architecture domain mappings commonly found in a mature knowledgebase. The degree of requirements granularity traced in a knowledgebase is based on in-house protocols, methodology, tool usage, and integration employed. The important point is that the knowledgebase helps streamline efforts to establish and trace requirements based on the capability behavior they influence, stakeholder impacted, and related value context. This in turn should further requirements traceability to help inform and scale future initiative investments through requirements analysis and reuse.

Summary

This section demonstrates how a requirement is a universal construct that can be connected to any of the business architecture blueprints through direct linkage to capabilities. Requirements should be clear enough to provide imperatives for the business architecture, while not so detailed that work slips into design detail. Business architecture is a proven discipline. A number of major initiatives are underway that effectively leverage business architecture alongside various other frameworks and disciplines, including the use of agile methodologies. In addition, business architecture empowers delivery teams to succeed by creating a framework and clarity to drive prioritization on the right strategic items.

This empowerment is applicable in a waterfall environment and is especially true in an agile “just in time” environment. Without business architecture, however, these initiatives would have many of the disadvantages cited earlier. Implementation and use of a business architecture framework provide a major step forward in avoiding these issues and driving outcomes that are critical to business success.

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² International Institute of Business Analysis, *A Guide to the Business Analysis Body of Knowledge® (BABOK® Guide)*, 2015, <https://www.iiba.org/career-resources/a-business-analysis-professionals-foundation-for-success/babok/>.

³ A Look at 25 Years of Software Projects: What Can We Learn?", Standish Group, 2017, <https://speedandfunction.com/look-25-years-software-projects-can-learn/>.

⁴ *Harvard Business Review*, Creating an Organic Growth Machine, May 2012, <http://hbr.org/2012/05/creating-an-organic-growth-machine/ar/1>.

⁵ Business Architecture Guild, *A Guide to the Business Architecture Body of Knowledge®, v 4.5 (BIZBOK® Guide)*, 2014. Section 2.2, 88-90.

⁶ A. Randell, E. Spellman, W. M. Ulrich, and J. Wallk. "Leveraging Business Architecture to Improve Business Requirements Analysis", Business Architecture Guild, Mar. 2014.

⁷ *Harvard Business Review*, The Office of Strategy Management, October 2005, <http://hbr.org/2005/10/the-office-of-strategy-management/ar/1>.

⁸ Eric Shayne Elliott and Alex Randell. "Business Architecture & Agile Methodologies". Proc. of Business Architecture Innovation Workshop, Austin, TX. Business Architecture Guild, 16 Sept. 2014.

⁹ Achieving Business Agility with SAFe® 5.0 A Scaled Agile, Inc. White Paper / December 2019, <https://www.scaledagileframework.com/safe-5-0-white-paper/>

SECTION 3.9: BUSINESS ARCHITECTURE MATURITY MODEL®

What is a Maturity Model?

Whenever a business architecture practitioner is setting up a new discipline, it is always a good idea to consider the methods to measure value. One of the means by which value is measured is through the development and deployment of a maturity model. The maturity model provides the ability to create a point-in-time benchmark against a defined baseline from which to measure the maturity of that discipline in your organization. The maturity model will also identify the methods, process, and practices required to move your organization to a desired level of maturity.

The Business Architecture Maturity Model®

This section of the *BIZBOK® Guide* introduces the Business Architecture Maturity Model® (BAMM®). The purpose for developing this model is to provide a tool to help business architecture practitioners and key stakeholder groups assess their organization's maturity in the deployment of business architecture, the governance of business architecture, the use of business architecture within the enterprise, and the value that business architecture delivers to its stakeholders.

The more mature an organization's business architecture discipline and results becomes, the more effective it is at carrying out the mission of business architecture and at delivering business value. With the BAMM®, the business architecture practitioner now has a common reference and industry-wide standard on which to baseline and measure the maturity and value of the business architecture practice.

It is important to note that the purpose of this maturity model is not to assess the performance of a specific business capability or the business itself. Business performance and maturity instead are managed within the practice of the business architecture discipline itself. For example, the use of business performance analysis and metrics (see *BIZBOK® Guide* section 3.7), coupled with techniques such as heat mapping and cross-mapping, offer various perspectives on measuring the effectiveness, quality, maturity, and impact of capabilities, value streams, and other business perspectives.

Business Architecture Maturity Model® Benefits

In general, maturity models provide the following types of benefits:

- Offer a common framework and language to help communicate
- Condense years of experience to establish a standard on which to build
- Help organizations keep the big picture in mind while providing a roadmap for improvement
- Enable trainers and consultants to provide valuable concepts and resources to organizations just getting started
- Provide a standard to help resolve disagreements

The BAMM® provides these benefits specific to the discipline of business architecture.

Defining the Maturity Model Levels

The names and maturity level definitions defined for the BAMM® are outlined in figure 3.9.1. The level definitions provide a summary of the types of characteristics one would generally expect to see within a business that has reached the specified level of business architecture maturity. The detailed level criteria and evidence that should be demonstrated are explained in the comprehensive BAMM®, which may be found in appendix B.3.

Level	Name	Description
1	Initial	• No business architecture discipline exists within the enterprise or where the discipline is being exercised. • It is informal and disconnected to any other likeminded efforts.
2	Managed	• Some business architecture mapping with supporting standards and practices are being applied within the enterprise. • Architecture governance processes and roles are defined but may not be fully or consistently deployed. • Business architecture team has a defined mandate and clearly articulated goals. • Business architect roles are loosely formalized with responsibilities. • There is a core group of business architects with informal structures and no organizational synergies.
3	Defined	• Core business architecture domains have been defined, mapped, and captured within the business architecture knowledgebase using foundational blueprints, including capability map, value streams, information map, and organization map. • The foundational architecture standards, practices, and governance have been defined and established for the organization. • Formal business architect roles and responsibilities exist. • Business architects are named, appropriately skilled, and staffed based on the needs of the business. • A business architecture function has been established, with clearly articulated goals and the appropriate executive sponsorship. • Business architecture is actively being aligned with related disciplines.

4	Strategically Executed	• Business architecture is leveraged to drive business transformation, innovation, performance improvement, strategic initiatives, and portfolio opportunities. • Enterprise-level governance exists. • A business architect career path is defined and supported by a training curriculum. • A strong foundation of business architecture knowledge is distributed across the business architecture core team and interdisciplinary teams. • Formal processes are in place for engaging business architects in business strategy, planning, and solution development. • The business architecture function is fully operationalized and operating effectively. • Business performance metrics, based on the business architecture, are used in selected planning scenarios. • Transformational initiatives leverage business/IT architecture alignment concepts.
5	Fully Integrated	• Business strategy is clearly articulated and realized through business architecture and supported through enterprise architecture and technology strategy. • Capability and value stream performance is a key driver in project and program selection within the organization's portfolio management processes. • Business architects are recognized as strategic partners by executives, business, and IT. • Major IT investments with business implications are driven through business strategy as articulated via business architecture. • A strong foundation of business architect knowledge is distributed across business practitioners, extending beyond core and interdisciplinary teams. • Business architecture is seen as a core capability of the organization. • Business architecture is fully integrated with related functions, disciplines, and processes. • Business performance metrics, based on the business architecture, are used for all strategic business planning scenarios. • Feedback and improvement processes exist that allow for continuous business alignment to achieve innovation and agility.

Figure 3.9.1: Business Architecture Maturity Model® Overview

Measurement categories, principles, and guidelines follow directly.

Maturity and Business Architecture Integration with Related Disciplines

Business architecture does not stand alone in an organization. A number of complementary or ancillary disciplines or programs may exist within an organization. Each of these disciplines or programs may have their own focus, sponsorship, technology, governance, funding, metrics and projects. Examples of related disciplines include Lean Six Sigma (LSS), Business Process Management (BPM), Customer Experience Design, and Case Management. The success and

maturity of business architecture is influenced by its ability to integrate and align with each of these disciplines and programs. This alignment is an important element of business architecture maturity.

In appendix B.3, the BAMM® is divided into two major groups or categories — foundational categories and related disciplines. These include:

1. Foundational categories: Categories of maturity measures inherent to business architecture regardless of its context.
2. Related disciplines: Categories of maturity measures that align business architecture to related or complementary disciplines or programs that may exist in the organization.

For the foundational categories, the maturity evidence is mandatory for any organization. For the related disciplines categories, the maturity evidence is only mandatory for organizations in which those related disciplines or programs are present.

Business Architecture Maturity Principles

Principles for business architecture maturity include:

1. The value provided to the enterprise increases as the business architecture practice matures.
2. The level of services and deliverables a business architecture practice provides is commensurate to the growth stage, maturity, and size of the enterprise.
3. Business architecture maturity must be demonstrable through evidence that would satisfy an external assessor.
4. The maturity model measures the maturity of the practice itself and not the maturity of the business or organization.
5. The maturity model is flexible and can withstand changes in the scope of the organization and the business architecture practice.
6. The maturity model is foundational to the development of an organization's roadmap for the progress of business architecture.
7. Business architecture maturity is represented in the degree of organizational adoption of business architecture, in particular, supporting the creation of business blueprints and using those blueprints to address business scenarios.
8. Maturity is reflective of the ability of business architecture practices to influence strategy and make strategy actionable.

9. Business architecture maturity is supported by technology, but not driven by it.

Business Architecture Maturity Assessment Guidelines

Below is a list of guidelines or steps to help the business architecture practitioner get started on the journey to business architecture maturity. This statement is an important one to make because business architecture maturation is a journey as it occurs over time and should be defined, in part, by the foundational infrastructure the business architecture practice needs to establish.

Most importantly, the journey needs to consider the requirements, expectations, and shared experiences of internal customers and stakeholders. In business architecture, the journey to maturity is as important as the destination. For example, the act of mapping out business capabilities provides value to the business participating in this effort. Attaining a common business perspective as expressed in capabilities, through a shared mapping experience, cannot be overstated because it increases the integrity of the results, usability, and odds of adoption. Businesses that have not undergone this journey and simply “borrow” a set of terms and concepts from various external sources will likely not buy into or successfully leverage the capability map to the ideal degree. In other words, practitioners cannot skip maturity levels by shortcutting the journey.

Therefore, it is important to understand each journey will be unique to the enterprise because each enterprise has a unique business model in which to apply the BAMM®. The maturity model was designed to be customizable based on the goals and objectives of the enterprise looking to employ it.

The guidelines below help provide the business architecture practitioner with some rules of thumb when progressing down the path to maturity.

1. If the organization is brand new to the concepts of business architecture, it should focus on first understanding the culture of the organization and then tailoring the message of the value proposition of business architecture. In the early stages of establishing the practice and building maturity, communication and education are critically important to the successful adoption of business architecture within the enterprise. Often this means tailoring the message based on the firm’s culture and political situation. Refer to *BIZBOK® Guide* sections 3.1 and 3.2 for additional information. And remember to establish baseline knowledge of the business architecture discipline by reviewing *BIZBOK® Guide* part 1. Section 3.1 provides recommendations and approaches for setting up a business architecture practice. Review this section for additional guidance.

2. As the organization becomes more educated in business architecture and the benefits it can provide and it becomes clear that there is a desire to implement business architecture, it is important to establish proper governance structures early in the cycle. Oversight and engagement across the enterprise are critical to ensure proper buy-in from all areas of the business. No one should feel left out. At this point, there may be a need to establish standard operating procedures for how the business architecture steering committee should function. For example, if the organization is made up of multiple lines of business, ensure that business architecture governance addresses how the discipline will be applied across these business units.
3. Document and communicate rules of engagement. A centralized business architecture team should ensure that all appropriate disciplinary processes are defined to ensure the proper levels of governance over business architecture usage and deployment.
4. Establish an organization change management plan. Prosci Global Affiliate Network defined and published a simple, yet effective, research-based organization change management model called ADKAR¹. Change management can leverage business architecture as a basis for evaluating the breadth and impact of change.
5. Once the governing body is in place, articulate foundational business architecture assets for the enterprise. Completion of this activity will get the business on the path to a maturity level 3 of the category “Architecture Process, Methods, and Practice”. At this point, most of the pieces are in place for business architecture to begin providing recognizable value to the organization. See *BIZBOK® Guide* sections 2.2, 2.3, 2.4, and 2.5 for more information on these foundational perspectives.
6. If the organization does not have a clear understanding of its strategic objectives, then employ strategy mapping techniques and optional business modeling approaches, such as those expressed in the Business Model Canvas². The use of strategy mapping and business models help clarify the strategic goals of the organization. See *BIZBOK® Guide* section 2.1 for more on strategy mapping or section 3.3 for more on business models. Once defined, strategy mapping deliverables may be used in conjunction with core business architecture building blocks to determine a roadmap of project opportunities the business may leverage. This set of activities moves practitioners closer to the level of maturity defined in level 4 of the BAMM® found in appendix B.3.
7. Apply initiative, product, stakeholder, and policy mapping techniques to extend and more fully articulate the business architecture. Selection of specific opportunities noted above can be done through an integrated portfolio management process.

Stakeholders may also wish to leverage an extended view of the business architecture to further their analysis and decision making. See *BIZBOK® Guide* sections 2.6, 2.7, 2.8, and 2.9 for more information on these topics.

8. Once specific opportunities are selected and added to a project portfolio and projects progress through their respective System Development Life Cycle phases, apply business and IT architecture alignment techniques. For selected projects, organizations should be able to demonstrate that their business architecture is fully aligned with their IT architecture. This level of alignment enables an organization to reach maturity level 5 as shown in figure 3.9.1. For more information on these concepts, refer to *BIZBOK® Guide* part 6, which discusses business architecture / IT architecture alignment.

It is important to remember that the BAMM® is a tool for the business architecture practitioner to help derive the optimum value from the business architecture discipline within the organization, based on specific goals and objectives.

Measuring Business Architecture Maturity and Stakeholder Value

As mentioned before, no matter where the organization is on its journey, the BAMM® will gauge how the organization measures up in two ways:

1. The BAMM® provides specific criteria to compare against the various maturity levels. Based on that comparison, use that information to define an action plan to continue to grow the business architecture maturity.
2. The BAMM® includes a surveying component in the model to capture the voice of the business stakeholder, which will help ensure that value is delivered to the business. This aspect makes certain that the business architecture matures from an evidentiary perspective, but also adds value through business architecture practice, as evidenced by the internal stakeholders' perspective.

To have a successful business architecture practice, both items 1 and 2 above need to be completed to yield demonstrable results. If either yields a negative result, then a corrective action plan should be developed to address the maturity gap by the business architecture team. The ultimate goal should be to address the needs of the business in the most effective way possible while leveraging formally defined business architecture disciplines.

Summary

Section 3.9 is an introduction to BAMM®. The purpose of this model is to provide a tool to help the business architecture practitioner and key stakeholder groups assess their organization's maturity in the deployment, governance, use, and stakeholder-perceived value of business

architecture. Appendix B.3 describes the BAMM® in further detail. The latest version of the downloadable BAMM® is available in the [Guild store](#). As the *BIZBOK® Guide* continues to mature and evolve with the addition of new content, the maturity model will also continue to mature and evolve.

¹ Prosci, *Change Management Learning Center*, 1996-2013, <https://www.prosci.com/methodology/adkar>.

² A. Osterwalder and Y. Pigneur, *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, (Hoboken, NJ: John Wiley & Sons, 2010).

SECTION 3.10: THE ROLE OF THE BUSINESS ARCHITECT

This section defines the role of a business architect. While the core focus of the *BIZBOK® Guide* is on the business architecture discipline, this section translates its concepts into what it means for the individuals who practice the discipline and builds upon the concepts introduced in section 3.2 Business Architecture Governance and appendix B.2 Business Architecture Roles and Competencies. This section is meant to provide an overall perspective on the practitioner role definition and ideal traits. It provides a general context for individuals seeking to improve their skills, graduate to a business architecture practitioner, or to use business architecture in context of a broader set of responsibilities one might hold.

Benefits of Business Architect Role Definition

Defining the business architect role provides the following benefits:

- Enables the business architect role to be formally recognized and differentiated from other roles, lending further credibility to the role and the discipline
- Articulates the value of a business architect
- Creates consistency during the hiring process by creating a common definition and expectation of the role
- Provides a way to assess and improve competencies and performance
- Defines a career path for business architects
- Provides a common industry definition that can align with other enterprise architecture roles and roles in related disciplines

Business Architect Competencies

Competencies provide the fundamental starting point from which a business architecture practice can orient and grow within an organization. Competencies are grouped into knowledge, behavioral and professional skill categories, articulated at the role level by type, sub-type, and related back to the *BIZBOK® Guide*. The list in appendix B.2 provides a summary of the competencies needed for a business architect. The list is not exhaustive and will continue to be refined and expanded in future versions of the *BIZBOK® Guide*. Competencies differ from traits, where competencies can be learned to a greater degree and traits tend to be inherent in a given individual, though they can be developed.

Top Traits of the Business Architect

What are the top traits for an individual that would allow them to excel as a business architect?

Human resource teams and job boards tend to focus on traits that lean towards the technical. While these “skills” can be useful, a growing history shows that a wide variety of traits can lead to identifying practitioners for a practice or for individuals to self-assess their skills and seek to build out those skills to excel in the practice.¹

1. Holistic Thinker: Business architects think big picture and long-term. Business architects must be able to separate the forest from the trees in order to examine vast business ecosystems and deliver value across the strategy execution spectrum. It is easy to become overwhelmed by scope and complexity, but the business architect should be able to invoke core principles and skills to visualize challenges and solutions across business unit silos. Business architects are problem solvers and trusted advisors because of their structured thinking and rational approaches. Business architects see beyond the details and consider root causes and opportunities for solving a problem smarter.
2. High Business IQ: It takes much less time to learn business architecture principles than it does to understand the cross-functional workings of a given organization and related industry. Business architects need to understand their business ecosystem and who to engage for more clarity and detail as well as have a strong understanding of how business works in general. Of particular relevance is having an understanding of how the organization works as a whole as opposed to narrow expertise in one or two areas.
3. Comfort with Ambiguity: Business architects are rarely handed the scope or context of a given business issue or challenge. Yet they must decipher the underlying challenge, perform root cause analysis, expose business impacts, and provide input to strategy execution and deployment. The business architect leverages the business architecture to turn vague challenges into clear objectives and recommended strategy execution options.
4. Principle-Driven: Business architecture is descriptive, not prescriptive, having no step-by-step rule book. Individuals that adhere to business architecture principles or “agreed upon truths” will thrive in their role. Principles, which guide the articulation and use of business architecture across a variety of business scenarios, ensure the delivery of business value in a highly coordinated, streamlined fashion, which is particularly important when centralized business architects collaborate with federated business architects within the same ecosystem.
5. Ability to Abstract and Simplify Complexity: Business ecosystems are complex. The business architect must be able to apply principles of the trade to synthesize, rationalize, and aggregate complex views, simplify them for a given audience, and deliver insights required to address various business challenges. Simplifying complexity also means knowing one’s audience and framing the right perspective and visuals for that audience, while having the supporting detail to back up one’s findings and recommendations. Business architects have a natural ability to see patterns and bring people together around a common understanding and direction.
6. Having the Courage of One’s Convictions: Business architects relentlessly challenge status quo for the sake of helping their organizations transform and improve. They ask why. They

are driven by value, outcomes, and results for the customer and for the business. As a result of the unique perspectives that business architects bring to the table, they will likely have these perspectives challenged by other professionals on a regular basis. Over the decades, “point” disciplines have created a situation where every problem became a nail and every solution became a hammer. Business architecture, on the other hand, provides a multifaceted toolbox to addressing a variety of business scenarios. Business architects must maintain the courage of their convictions in order to persevere through the business-as-usual headwinds they will encounter as business architecture’s role expands.

7. Influencer: Business architects communicate and collaborate with business professionals at every level, yet have limited authority to dictate decisions or directions. Business architects must, therefore, have the ability to influence by telling stories, sharing analogies, and helping decisionmakers and collaborators visualize the challenges at hand and proposed solutions.
8. Voracious Learner: Business architects are curious and inquisitive. They often come to the role after a significant amount of successful career experience because they are ready to learn and do more. Business architects appreciate intentional structure and rigor and are continually gaining new knowledge and learning new techniques to improve and grow themselves and their organizations, and be able to engage intelligently with related disciplines.
9. Dot Connector Bridgebuilder: Business architects connect the dots between people and ideas. They build bridges across the business, between business and technology, between architecture domains, between teams to create seamless strategy execution, and even between the organization and its ecosystem partners. Business architects bring people together to facilitate collaboration and build consensus. They are enterprise advocates, always looking out for what is best for the customers and the organization overall.
10. Commitment to Rigor: Business architects must be committed to the rigors of the discipline. For example, creating capabilities that are not object-based or value streams that lack value-delineated stage-gates will result in a business architecture that is good for high-level dialog and little else. A lack of rigor will stymie efforts to scale and leverage business architecture for downstream design work, event modeling, requirements articulation, program scoping, and IT architecture definition.
11. Articulate: Expressing and communicating value propositions, business objectives, capability and information definitions, stakeholder and value stream descriptions, and other business perspectives require a strong command of language and vocabulary. The articulate business architect is the successful business architect.
12. Egoless: Business architecture makes other disciplines more effective, meaning the business architect succeeds when the organization succeeds. As a result, the business architect must often step back from the spotlight, allowing other business professionals to claim credit. While there may be easier choices for professions, business architects tend to choose the role because they want to make a difference and are often unsung

heroes behind significant change.

Note that a wide variety of business professionals should have a working knowledge of the discipline as it pertains to their scope of influence. For example, planning teams should be able to leverage business architecture to help inform business objectives and preliminary scope assessments, while design teams should be able to leverage business architecture to target specific products, stakeholders, value propositions, and outcomes. In all cases, whether one is evolving a business architecture or applying it in the context of planning, design, management, or deployment, the top list of traits applies.

Business Architect Interactions

Business architecture practitioners work in an ecosystem with many other roles to carry out a variety of business scenarios. These roles may provide input to the business architect, receive output from the business architect, and/or work collaboratively with the business architect to accomplish results. Typical roles with whom a business architect may interface include business and IT leaders, business strategists, portfolio managers, planning teams, program and project managers, innovation teams, product managers, risk, compliance or audit teams, human resources, and the following teams referenced in other *BIZBOK® Guide* sections, including:

- Customer Experience Designer or Service Designer (section 3.13 Business Architecture and Customer Experience Design)
- Business Analyst/Requirements Analyst (section 3.8 Business Architecture and Requirements Alignment)
- Process Analyst/Engineer (section 3.4 Business Architecture and Business Process Modeling and Management, and section 3.6 Business Architecture and Lean Six Sigma)
- IT Architect (section 6.1 Business Architecture and IT Architecture Alignment Overview)

See section 3.2 Business Architecture Governance for more information on how to define and represent these relationships through an engagement model.

Summary

This section defines the business architect role, competencies, and key traits as well as how business architects can develop in the role over time. It also describes how business architects relate to other roles. Clear and consistent definition is important to formally establish and differentiate the role as well as create consistency for business architects, organizations that hire business architects, and other related disciplines.

¹ Based on the combined works “Seeking Candidates for Your Business Architecture Team? Consider these Essential Traits”, White Paper, William Ulrich, 2020, <https://secureservercdn.net/198.71.233.168/sx5.250.myftpupload.com/wp-content/uploads/2020/12/Seeking-Candidates-for-Your-Business-Architecture-Team-Consider-these-Essential-Traits-.pdf> and the “What Makes Business Architects Unique,” qualities originally published in the “Business Architect Strengths Study: Maximizing and Unlocking the Unique Value of Business Architects,” S2E Transformation, March 3, 2020, <https://www.bizarchmastery.com/what-makes-business-architects-unique>.

SECTION 3.11: BUSINESS ARCHITECTURE AND STRATEGY EXECUTION

The end-to-end strategy execution framework, introduced in part 1 and reprised in figure 3.11.1, aligns business strategy, planning, and investment perspectives with the role of business architecture in successfully completing this journey. This framework is referred to by a myriad of names and approaches, including strategy realization, strategy-to-execution, strategy execution, strategy deployment, and strategy implementation, among many others. Simplifying the message and terminology to strategy execution, however, increases the likelihood of the message resonating with executives.

Figure 3.11.1 frames the ideal pathway for this journey that begins with strategy formulation and ends with successful solution deployment. This perspective while ideal, is not always applied in practice. All too often, organizations identify what they want to do and immediately establish and fund projects without understanding the scope and impacts of that project or interrelated business objectives and projects.

Figure 3.11.1 resets the perspective and ensures that planning and deployment teams understand the overall impacts of the stated objectives, architect appropriate solutions, and scope and fund resulting programs accordingly. The second important aspect of figure 3.11.1 is that it depicts the role of business architecture in strategy formulation, business impact analysis, solution definition, initiative scoping and definition, and solution specification and deployment.

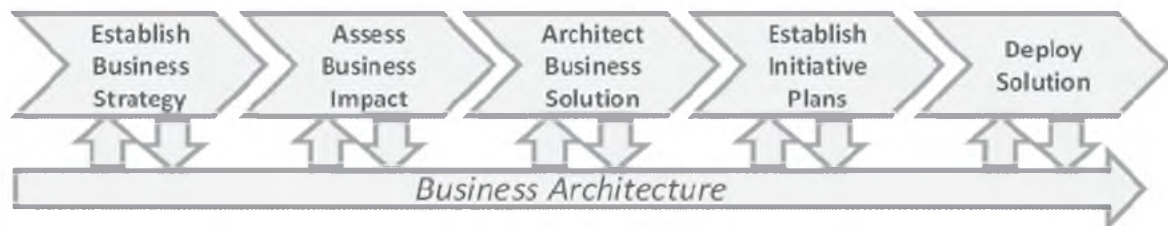


Figure 3.11.1: Business Architecture’s Role in Strategy Formulation through Execution

The information in this section is applicable to practitioners of business architecture but equally important to a cross-section of strategy, planning, program, design, and deployment teams and disciplines that engage at various points across the strategy execution framework. Key roles to be engaged include business leaders, business strategists, product and program managers, IT architects, and portfolio managers to name a few. Focusing on the end-to-end perspective of strategy execution enhances and highlights the value provided by business architecture, speaking to the results it provides to an organization rather than activities and outputs. This section also

places business architecture within an overall enterprise context to underscore its strategic purpose and role.

Why Focus on Strategy Execution

One of the primary reasons for focusing on strategy execution is that it has become an area of significant challenge for many businesses. Some common challenges include:

- Strategies and other business direction may not be fully informed, especially in terms of strategic possibilities and choices. Often too many options are pursued for too long at much expense because the strategic alignment and comprehensive impacts are difficult to determine.
- Strategies and other business direction may become “diffused” as they are communicated throughout the various levels within a business. This is further exacerbated by the fact that strategies are often described at a high level, without a collective or concrete view of what actions are required to act upon it.
- Investment decision-making may lack objectivity and the enterprise perspective necessary to identify investments which are truly aligned with business direction and of the highest priority. There may be a tendency to invest in everything and focus on execution – especially with the shift to agile development – versus investing in the right things.
- Duplicate solutions may be created instead of leveraging shared capabilities and solutions, leading not only to increased expense for development and maintenance, but also increased complexity and decreased agility for future changes.
- Measuring the results of initiatives back to the original strategic objectives may be difficult, and even avoided altogether.

A number of these challenges stem from a lack of decision-making and coordination at the enterprise level. This is because strategy translation, decision-making, prioritization, design, and execution often occur in business unit siloes. Business architecture is perfectly suited to bring business units together around all of these activities, by leveraging an objective perspective and a shared enterprise framework.

Benefits of Using Business Architecture for Strategy Execution

Using business architecture across and throughout the strategy execution framework maintains a continued focus on business direction and outcomes that can be measured, communicated,

prioritized, designed, and executed upon comprehensively by solution teams implementing business and technology changes oriented around value streams and capabilities. In the ever-changing environment in which businesses now exist, business architecture also increases overall business agility, improving the ability to adapt and realize strategy effectively and with pace.

In particular, leveraging business architecture to enable strategy execution provides the following benefits:

- Business architecture informs and translates strategy into harmonized, actionable steps across business units by providing a common framework to identify all impacts across the enterprise and its extended ecosystem. This includes impacts to capabilities, value streams, information, organizations, products, stakeholders, policies, and other strategies and initiatives. If the business architecture is cross-mapped to other disciplines, impacts can be identified to aspects of the operating model as well including processes and technology. The changes necessary to these discrete architectural pieces can then be isolated and described pictorially and/or textually for purposes of scoping unique initiatives and communicating a common vision of the future state business environment.
- Business architecture provides a framework for evaluating business investments within and across portfolios, enabling a holistic view of the strategic business roadmaps and key performance indicators that guide initiative scope, sequencing, and context.
- Business architecture enables informed business decisions through the identification of capability gaps/overlaps, misalignment between value propositions, and delivery channels. Business architecture / IT architecture mapping pinpoints the impact of artifacts to be built or modified within the scope of a given initiative.
- Business architecture provides end-to-end traceability from strategy through the business architecture to initiatives, which enables objective assessment of whether planned initiatives directly support strategic direction as well as whether completed initiatives have delivered on their intended business objectives and outcomes.
- Business architecture can help identify when enough of the future state has been addressed within initiatives to understand if budgets can be closed or re-allocated.
- Delivery teams do not always have a line of sight to other active initiatives within the company. Business architecture, especially value streams and capabilities, serves as the common key to scope initiatives so they do not overlap and helps teams identify other initiatives upfront which have important integration points or dependencies.

Principles of Using Business Architecture for Strategy Execution

Principles underlying the concept of leveraging business architecture for strategy execution include:

1. Business architecture provides a common vocabulary and enterprise framework for impact assessment, design, planning, prioritization, and execution within and across business units and extended organizations.
2. Business impact analysis, illustrated by capability heat maps and other techniques, provides a basis for informing and prioritizing business strategies based on their impact to the business and its stakeholders.
3. Initiatives are defined by the scope of specific aspects of business architecture, with a focus on value streams and capabilities, and the changes that need to be made to them.
4. Business architecture provides the end-to-end traceability from strategy through initiatives used for analysis and decision-making, including any times it becomes necessary to revisit strategic planning, decisions, or priorities.
5. Business architecture is not a standalone discipline, but rather is intended to work in collaboration with other teams and disciplines, enhancing their value and improving the collective strategy realization outcomes.
6. Business architecture informs solution related requirements analysis and IT architecture solutions, regardless of the methodologies and techniques used for solution definition and deployment.

These principles provide the foundation for using business architecture to drive strategy execution, ensuring strategies can be clearly articulated, future states defined, and solutions implemented in line with the original strategic intent.

Strategy Execution Using Business Architecture

The strategy execution framework is initiated every time a stakeholder triggers the need to set business direction and translate that direction into action for any one of a wide variety of business scenarios. These scenarios broadly include defining a new strategic direction, executing a business transformation, delivering significant regulatory change, or integrating a newly acquired organization, to name only a few. As a result, there may be multiple instances of the framework that are occurring at any point in time, each of which would be viewed through a common, consistent business architecture perspective.

The use of business architecture in turn ensures that the cross-impacts of business investments emerge through this common perspective. Though many other teams and disciplines play a role across the strategy execution framework, business architecture provides the common thread throughout, both within a given instance as well as across instances of strategy execution.

In the first step, Establish Business Strategy, business architecture practitioners not only work with leaders to inform and assess potential impacts of strategy, but they also consume strategic documentation and further distill it into measurable objectives where necessary. Objectives are the discrete architectural piece which should be captured in the business architecture knowledgebase and cross-mapped to key domains such value streams, capabilities, and initiatives to create end-to-end traceability.

The role of business architecture is the most intensive in the second and third steps, and these steps often introduce new activities to companies who have not previously had a business architecture practice in place. In the second step, Assess Business Impacts, business architecture practitioners identify the full set of impacts of a strategy by consulting the business architecture knowledgebase. The more complete the knowledgebase is, the more valuable it will become. And the more assessment and execution scenarios that run through this cycle, the more mature the knowledgebase grows.

To assess impact, practitioners typically first identify the value streams impacted down to the stage level as well as the capabilities within each stage which are impacted. Since capabilities are the focal point for relationships to other business architecture domains and related discipline domains such as IT architecture, the full set of impacts to all other aspects of business and technology may be quickly identified.

The second step provides key input for the third one, Architect Business Solution. The impacted business architecture content from step two is further evaluated to understand the current state as well as any changes which need to be made to enable the strategy. Business architecture-based business performance assessments, such as capability and value stream stage effectiveness and level of automation, can be helpful input to this evaluation. Both the current and target state business architecture environment may be visualized for the purposes of analysis and communication. For example, a target state business architecture may illustrate where shared enterprise capabilities will exist in the future, versus the duplicate business unit capabilities which may exist in the current environment.

The business architecture-based changes from the third step are input to the fourth step, Establish Initiative Plans, where business architecture practitioners work with IT architects and program planning teams to organize action items into clearly scope, well-aligned initiatives. Business architecture is used to scope initiatives to ensure they do not overlap, and that the

business changes to be made are clear. For example, the scope of an initiative may be described by a list of value stream and capability changes to be made. Business architecture is also used to ensure that initiatives are sequenced most effectively based on integration points and dependencies. For example, an initiative which is building a new capability such as customer preference management may be sequenced prior to other initiatives which will need to leverage these preferences. The set of necessary initiatives and their sequence may be visualized through a business architecture-based strategic business roadmap, which is a precursor to any program and project level roadmaps.

Finally, in the last step, Deploy Solution, business architecture practitioners serve as ongoing consultants and work with requirements analysts and execution teams to translate the business architecture changes into requirements for business and technology solutions. Business architecture practitioners can also help leaders to understand progress from a high-level business perspective and confirm the success of completed initiatives against the original business objectives.

Using value streams and capabilities as the common connection point, business architecture practitioners can also play a key role across instances of the strategy execution framework to ensure that strategies and initiatives are rationalized, prioritized, sequenced, and coordinated in the most effective way possible. Business architecture also provides the common language and mental model to allow people from any function or area of the company to be able to communicate and make decisions in the best interest of the enterprise.

Further detail is provided for each step in Appendix B.1.

Integrating Business Architecture into Strategy Execution in Practice

The methods, structures, roles, and decision-making criteria for strategy execution are likely already established within a company, even if they are not thought of as a formalized and cohesive end-to-end perspective. As a result, patience is required when introducing and embedding business architecture across the strategy execution framework. Ultimately, encouraging people to think of it as a cohesive practice that operates in an end-to-end manner which crosses business units can take time.

While there may be an executive or executive committee which may sponsor the reinvention of the current processes and structures into a cohesive approach, it is equally likely that business architecture will need to be embedded more organically into the existing environment one step at a time. In this case, it is best to start integrating business architecture into the area(s) of strategy execution where there is the most opportunity for improvement as well as where the existing team(s) are amenable to working together.

For example, business architecture practitioners may choose to first work with strategy teams to improve the effectiveness of strategy translation, or portfolio managers to improve the effectiveness of investment decision-making within and/or across portfolios. Ultimately, the ubiquitous application of business architecture as defined in levels 4-5 of the Business Architecture Maturity Model® ensures that business architecture is not an afterthought but rather integrated across each step of the strategy execution framework.

Regardless of how strategy execution is understood or approached within a business, it is still useful to speak about business architecture, its role, and its value within this context. This ensures that it will be appropriately interpreted as a strategic discipline, which is positioned upstream to work with business leaders and strategy teams, and provide input to planning and execution activities downstream.

Summary

This section details how business architecture can be leveraged for every aspect of strategy formulation through strategy realization. While organizations have been doing strategic planning and managing the resulting execution for decades prior to the emergence of business architecture, it is clear that business architecture can improve effectiveness across the entire strategy execution framework.

Business architecture's value in this area is unlimited. It can be applied anytime business direction needs to be translated into a coordinated set of actions, from digital transformations, to acquisitions to large-scale regulator changes. As companies have quickly evolved over the last two decades, the constructs and applicability of business architecture remain an effective and dynamic framework for business evaluation. Business architecture allows business leaders to more clearly identify and articulate strategies, solution teams to implement successfully, business support teams such as IT and Finance to better understand a business's strategies, and the entire business to increase its overall agility in response to change.

SECTION 3.12: BUSINESS ARCHITECTURE AND OPERATING MODELS

To maintain competitiveness, strong business leaders are continuously reevaluating their strategy and business models. But that only takes them part of the way. Any strategic plan is likely to be incomplete without also identifying and defining an underlying operating model to deliver the desired value from the target business model.

The objective of this section is to explain the concept of the operating model as it relates to business architecture. Specifically, it aims to:

1. Show how business architecture practitioners can employ the operating model with business architecture at the center of focus along with business strategy and the business model to enhance analysis, planning, and operational optimization.
2. Help business architecture practitioners recognize the differences between an operating model and a business model, and to understand how to utilize both in order to ask appropriate questions that will help decision makers drive out strategies and tactics.
3. Explain how and when to use an operating model for decision making and analysis, along with determining which operating model framework(s) to apply.

While there is no universally agreed upon definition of what constitutes an operating model, a generic description is that an operating model provides “an abstract representation of how an organization operates across a range of domains in order to accomplish its function”.¹ There is also relatively little agreement as to what the core elements (building blocks) of the operating model should be, or how they should be represented in a real business.

To aid understanding of the types of elements that might be included, this section is based on examination of four common, publicly available operating model frameworks²:

1. Massachusetts Institute of Technology Center for Information Systems Research (MIT CISR) Operating Model Quadrant: Coordination, Unification, Diversification, Replication.³
2. Strategy& Operating Model Blueprint: People and Organization, Processes, Governance Interactions, Culture, Measures and Motivators, and Ways to Play.⁴
3. Bain Operating Model: Structure, Accountabilities, Governance, Capabilities, and Ways of Working.⁵

4. Operating Model Canvas: Value Delivery Chain, Organization, Location, Suppliers, Information, and Management System.⁶

Benefits of Business Architecture and Operating Model Alignment

The operating model is not developed and implemented in isolation of a defined strategy and business model. Therefore, practitioners need to use business architecture to develop the operating model, which will deliver the organization's strategic objectives.

1. Business architecture-enabled, operating model design: Business architecture helps identify how an organization's operating model should be structured to deliver strategic outcomes.
2. Business architecture-enabled, strategy targeting: Business architecture clarifies strategic impacts and translates them into well-defined, executable elements, targeting capabilities, information concepts, stakeholders, and value perspectives that, in turn, target specific operating model components for investment.
3. Business model interpretation: Business architecture enables interpretation of business models that, in turn enable the targeting of specific operating model components to achieve business model compliance.

Strategy, Business Models, and Operating Models Alignments

An organization's business model describes its value-producing logic while an operating model defines the structure and behavior of that business. Aligning the two is important because the viability and feasibility of a business model can only be determined once it has been analyzed, tested, and validated within the context of the operating model.

As illustrated in figure 3.12.1, the business architecture lens is used to align and develop an optimal operating model. The business strategy is applied to the operating model through the business architecture lens. The business model, in turn, summarizes the expected consequences of the changes to the operating model. The business model results are then used to accept, reject, or make changes to the business strategy.

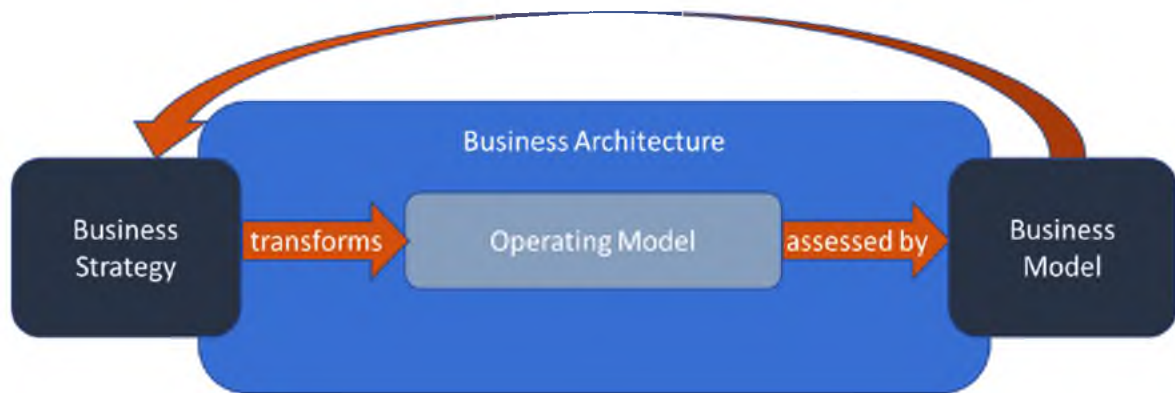


Figure 3.12.1: Linking Strategy to the Operating Model and the Business Model

Businesses need ways to create a variety of strategic ideas and to then have a quick, reliable means to test them for desirability, feasibility, and viability. The abstractions of the business architecture, particularly the capability, information, and value stream maps, provide a simplified view of the operating model. This can help guide analysis as well as present results in a framework that promotes executive understanding and decision making.

Figure 3.12.2 delves deeper into the stages behind the strategy-to-execution process, emphasizing the different cognitive activities that are used to develop strategy. These cognitive activities are also found in many of the strategy execution enabling actions shown in figure 1.5 of the BIZBOK® Guide.

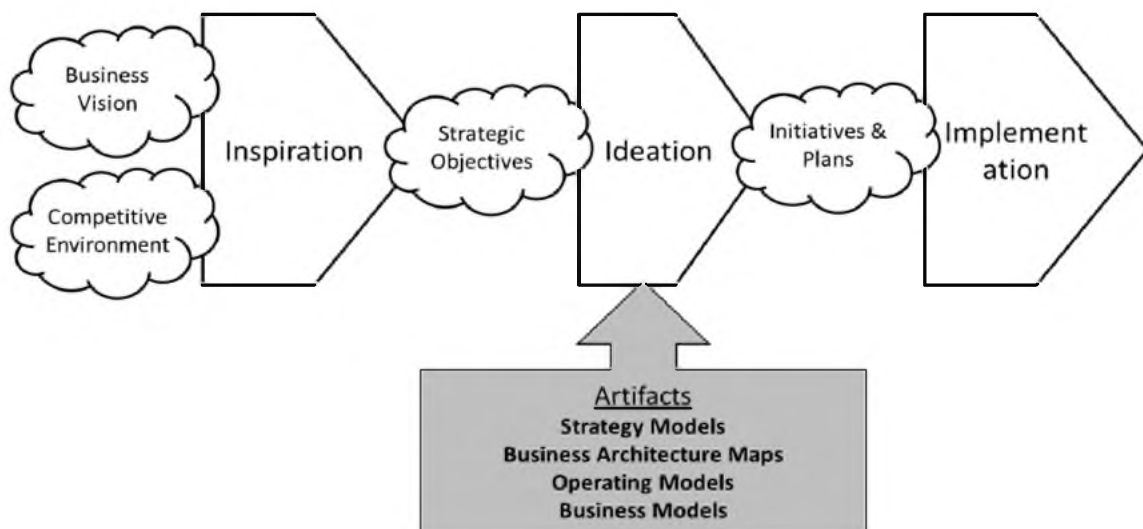


Figure 3.12.2: Strategy-to-Execution Process

Operating Model and Business Architecture Alignment

One of the primary functions of business architecture is to simplify and summarize a complex business so that decision makers can clearly see the impact of business problems and proposed solutions. In doing so, a business architecture practitioner must take into account the relevant structural and behavioral details of the business that would be described in an operating model. The business architecture and the operating model are usually captured in separate blueprints, examples of which include documents, drawings, tables, and data sets. Business architecture domains and related operating model representations are linked together, ideally in a formal business architecture knowledgebase, through a process of alignment that preserves the relationship between the operating model details and the business architecture domain representations.

Figure 3.12.3 shows the alignment between operating model concepts and some of the core business architecture domains, and how strategy impacts both sets of concepts. The left-hand side of the diagram provides a simplified view of the most relevant business architecture domains. The right-hand side depicts a simplified view of the detailed operating concepts. Business architecture practitioners can extend these operating model concepts as needed to include the most relevant and important elements of their environment, based on how they choose to represent their operating model.

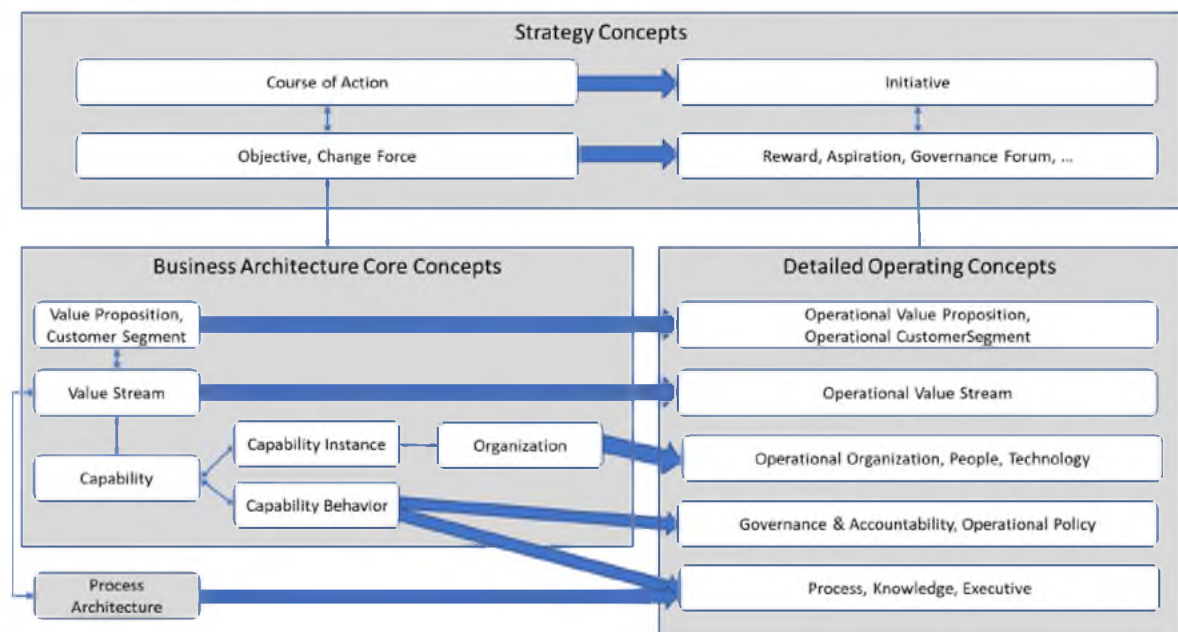


Figure 3.12.3: Strategy, Business Architecture, and Operating Model Alignment

In figure 3.12.3, the thin arrows represent relationships among various business architecture domains and details behind those domain representations. For example:

- Value streams produce value propositions for certain customer segments
- Capabilities enable value streams and produce outcomes
- Capabilities instances realize capabilities in practice within various business units across an organization, each of which has a recognized behavior

Certain operating model concepts, such as operational organization, process, and policy, are important to business decision makers. These concepts are represented in the business architecture as kinds of capability instances, capability outcomes, and capability behaviors. Capability instances and capability behaviors are defined in Section 2.2 of the *BIZBOK® Guide*; they should be thoroughly understood prior to attempting to align a business architecture model with an operating model. The bottom of figure 3.12.3 depicts the relationship of high-level business process architecture (represented by the shaded rectangle labeled “Process Architecture”) to value streams. This concept is defined in *BIZBOK Guide®* Section 3.4. Business process architecture can be used as a companion perspective to capability cross-mapping to value streams.

The thick arrows linking business architecture domains to operating model concepts reflect the conceptual alignment between the models. In practice, the business architecture practitioner creates an alignment blueprint showing, for each concept in the business architecture model, the operating model concepts aligned to that business architecture domain.

For example, a capability instance for keeping stock in a geographical region might be aligned with a dozen actual stock-keeping facilities in that region. If the business believes that each of these stock-keeping facilities should be behaving in the same way, the business architecture will show the capability instance linked to a capability behavior. An examination of the operational stock-keeping processes at each facility may reveal process variations that are not supported by the business requirements. These differences are revealed when the individual processes are aligned with the single capability behavior. Most likely, the organization would operate more efficiently if these facilities were using the same process.

The business architecture practitioner should not assume that any alignment between the business architecture and the operating model is exhaustive. While an in-depth investigation and modeling effort may reveal some hidden business problems, experience shows that this involves substantial effort without necessarily delivering a compensating reward. Instead, the scope and detail of each alignment should depend on the problem being addressed by the business architecture practitioner. For example, if business leaders suspect there are efficiency problems due to process variation, the alignment activity may be limited to focusing on the alignment

between capability instances and capability behaviors with the organization units, facilities, and the operational processes and policies.

On the other hand, if the executives are trying to determine the change impact of a strategic course of action, the scope of the alignment would include alignments of most of the concepts shown on the business architecture side of figure 3.12.3, along with the strategy model concepts. For this reason, the alignment blueprint is not considered part of either the business architecture blueprint or the operating model blueprint.

Finally, the concepts in the strategy model are separated to match the separation between the business architecture and the operating model. A typical strategy execution process will begin with considering the objectives, courses of action, and change impacts, along with their impact on the as-is operating model as seen through the abstractions of the business architecture.⁷ The operating models and their corresponding business models are constructed using the business architecture perspective for each strategy. The strategic objectives and courses of action that survive this part of the process will evolve into planned initiatives, and a more thorough and detailed to-be operating model and its business model will be evaluated prior to a business commitment to execute. The business architecture perspectives guide the business architecture practitioner and analysts toward results that inform executives properly and assist their decision making.

The alignment of a strategy with an operating model should illuminate issues such as:

- The amount and types of operational changes implied by the strategy
- Hotspots within the business where change is apt to result in loss of operational continuity
- Anticipated risks
- Challenges in coherently executing the strategy across multiple business units

Operating models can be complex, and the alignment procedure is often stymied by this complexity. The concepts and procedures explained in this section can provide guidance to the business architecture practitioner about where to look in the operating model and what parts of the operating model to target, based on the impacts of strategic objectives on the business architecture. These impacts will affect some or all of the operating model elements based on their alignment with the impacted business architecture domains.

Practitioners gather information relevant to the issues exemplified above from the business and summarized back through the operating model framework to the business architecture. For example, the business architecture practitioner may summarize the number of people who will

need training in new procedures or take note that a significant number of affected employees can be expected to resist the changes. Such feedback is invaluable to strategic planners and will help insure the successful execution of the strategy.

Alignment and Mapping Principles

Aligning the operating model with the business architecture is based on the following principles:

1. Business architecture takes a holistic perspective on the economic community supported by a foundation of interacting organizations and individuals — the organisms of the business world.
2. Business architecture adopts the guiding principles from the strategy, value stream, capability, and business model design.
3. The business architecture is used for simplifying and summarizing complex business and operating model perspectives.
4. Operating models provide an implementation perspective on how strategy and the organization's business model are to be realized.
5. Operating models focus on people, process, technology, control, and governance.
6. Operating models align to business strategy through the business architecture to deliver operational excellence.
7. Business architecture identifies the operating model components that deliver anticipated customer and business outcomes.
8. Business architecture provides the ability to define target organizational structures that specify the target operating model.

Business Architecture & Operating Model Alignment Guidelines

There are many different conceptual operating model frameworks the practitioner can select to use as part of a business architecture engagement. Some of these frameworks are outlined in the Business Architecture Guild® whitepaper "Aligning Operating Models with Strategy Using Business Architecture"⁸. Once a specific operating model framework has been selected for use, the business architecture practitioner can complete the following:

1. Associate each element of the chosen framework to the abstract operating model framework shown in figure 3.12.3.
2. Associate each operating model element to the business architecture domains that will be changed by a course of action, starting with the capabilities and the value

streams, then extending the analysis to the organization, information, vision, strategies, tactics, initiatives, and projects.

3. Analyze lower-level operating model details while being guided and informed by the business architecture.

Case Study

A global financial institution sought to improve the quality of its product control operation. Product control analyzes and produces reports on risk, volatility, trends, and profitability associated with the management and control of the bank's assets and its customers. The dimensions of product control can vary by asset class, market, and client type, which presents the executives responsible for this operation with a complex management problem.

The company started by constructing a business architecture view consisting of value streams and capabilities. The capability instances and capability behavior analysis exposed a great deal of complexity, while revealing opportunities for process improvement as well as additional IT investment by identifying a great deal of commonality across product control processes. As shown in figure 3.12.4, these opportunities were integrated into a multistage strategy for process improvement and an improved target operating model. Business architecture practitioners used the models to explain and justify the strategy to the executive team as well as to the technical leads who would be responsible for executing the change plan.

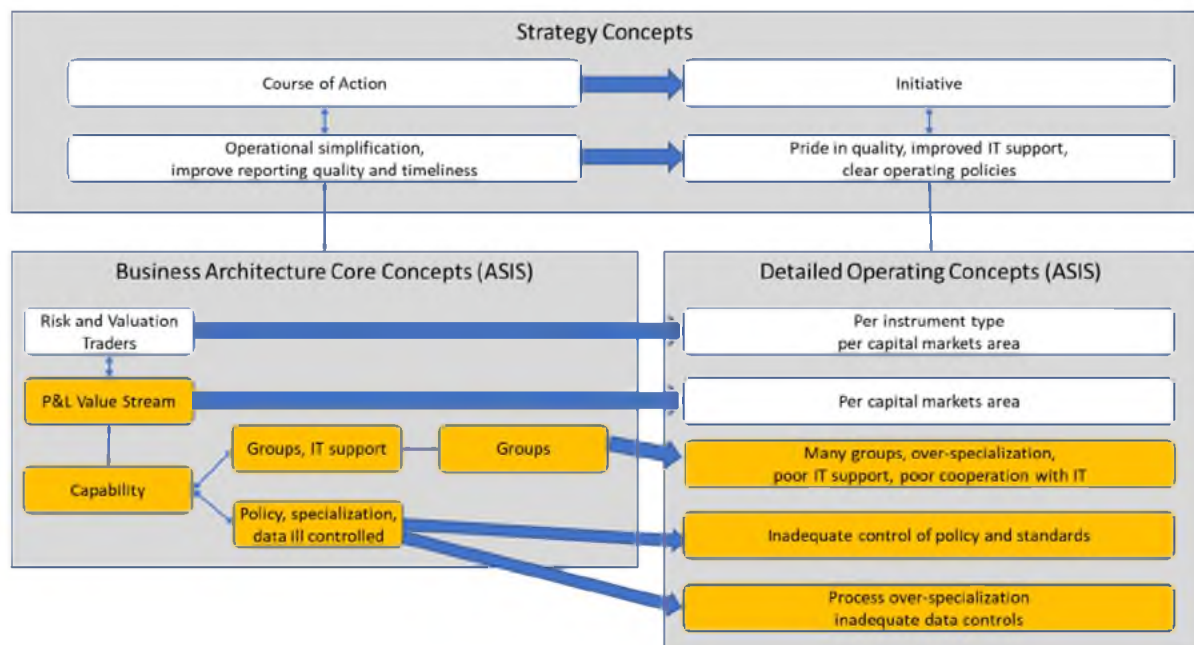


Figure 3.12.4: As-Is (ASIS) Business Architecture and Operating Model

An initial assessment mapped the existing processes to each of the key capabilities and, from the capabilities, to what was being consumed in the IT solutions. The capabilities also identified impacted information concepts, which targeted required data updates. A second stage involved reconciling the process catalog to develop a simple set of common processes and information structures. At the same time, the organization identified, simplified, and normalized policies that control financial products; where policies were identified based on policy-to-capability mapping. This effort made product control more effective and improved the outcome of regulatory inspections.

The strategy-driven revised operating model simplified and standardized many of the firm's capabilities and IT solutions. The reduction in complexity enabled more reliable, timely guidance to be provided to the financial institution and its regulators. The new IT solutions also provided greater transparency to the data behind the product control reports. Overall benefits to the bank included improvements in the quality and timeliness of product control information, a reduction in the amount of labor required to produce the reports, and an increase in job satisfaction within the product control organization. These changes are summarized in figure 3.12.5, which represents the to-be business architecture, strategy, and operating model, with the to-be business architecture's focus being on capability instances and behaviors.

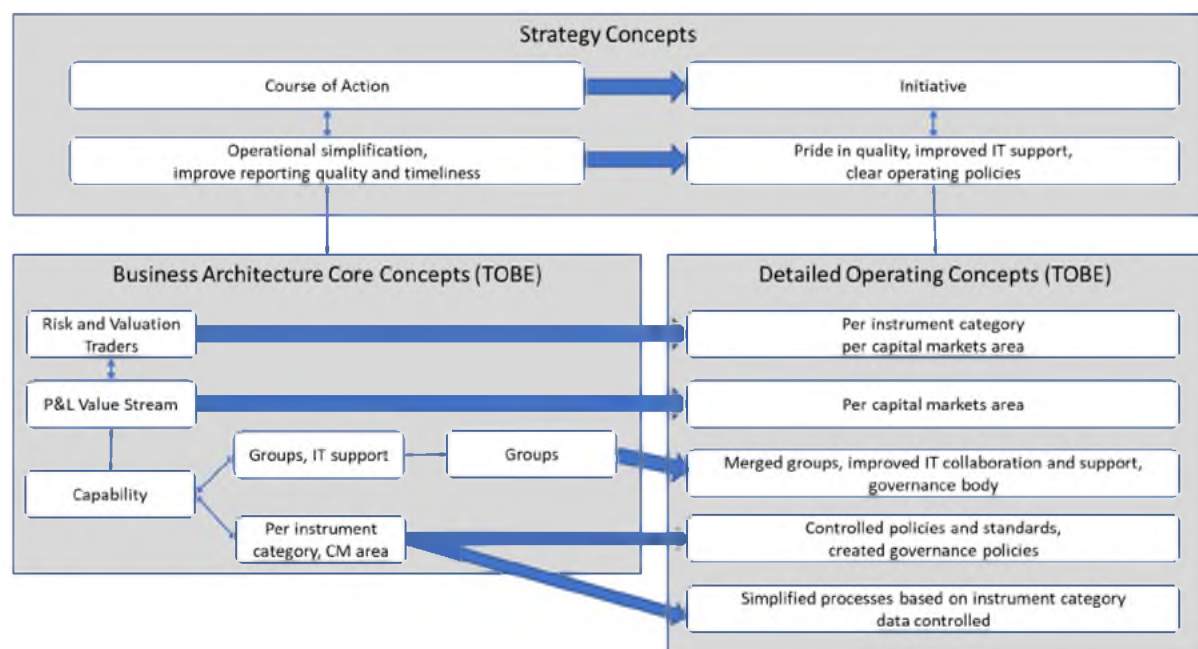


Figure 3.12.5: To-Be (TOBE) Business Architecture and Operating Model

Cultural Influence on Operating Model Outcomes

Business architecture practitioners should consider an organization's cultural aspects when they are engaged in operating model transformation activities. Practitioners will play a crucial part in helping an organization to understand the challenges they have identified as part of their operating model assessment work. For the operating model transformation to be successful in enabling an organization to be agile and resilient to economic crises, the organization's cultural aspects need to be considered from an early stage and continuously evolve thereafter. This may require the current culture and values of an organization to be reviewed and if necessary redefined before implementing the target operating model. As part of the implementation phase, the values desired for the organizational culture should be incorporated to cover the full range of boardroom to office floor activities.

Summary

Today, businesses are constantly evolving their strategies to maintain competitive advantage with respect to their competitors. The business architecture practitioner leverages the business architecture to target operating model change impacts and asks the appropriate questions that will help business leaders identify the tactics required to deliver the desired results. The practitioner also needs to explain how and when an operating model should be used for decision making and analysis.

Organizations review and update strategies and then translate those strategies into business models that outline how the organizations expect to deliver on those strategic objectives. Successfully implementing business models requires reviewing and aligning the underpinning operating model. Business executives leverage business architecture to determine whether they can deliver their strategic objectives under their current operating model or whether they need to transform the operating model to be more effective at delivering their desired outcomes.

The nature of an organization's objectives, its strategic management, team management, organizational collaboration potential, and overall culture will help a business architecture practitioner select the most appropriate operating model framework (or elements across multiple frameworks) that are applicable to a particular business strategy. The intent is that this analysis will ultimately inform roadmap development for the delivery of the organization's strategic objectives.

¹ Marne de Vries et al. "A Method for Identifying Process Reuse Opportunities to Enhance the Operating Model", IEEE International Conference on Industrial Engineering and Engineering Management, 2011.

² Fons et al. *Aligning Operating Models with Strategy Using Business Architecture*. Business Architecture Guild®, 2019, https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/public_resources/operating_model_white_paper_.pdf

³ Ross et al. *Enterprise Architecture as Strategy*. Harvard Business Review Press, 2006.

⁴ Divakaran et al. "How to Design a Winning Company", *strategy+business*, 2013, <https://www.strategy-business.com/article/00194?gko=69783>

⁵ Blenko et al. "Winning Operating Models That Convert Strategy to Results", *Bain & Company*, 2014, <https://www.strategy-business.com/article/00194?gko=69783>

⁶ Campbell et al. *Operating Model Canvas*. Van Haren Publishing, 2017.

⁷ The concept of strategy execution and the business architecture are described in Sections 1, 2.1, and 3.11 of the *BIZBOK® Guide*.

⁸ Fons et al. *Aligning Operating Models with Strategy Using Business Architecture*. Business Architecture Guild®, 2019. https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/public_resources/operating_model_white_paper_.pdf

SECTION 3.13: BUSINESS ARCHITECTURE AND CUSTOMER EXPERIENCE DESIGN

Customer-centricity is now a known necessity for an organization to succeed. Organizations have responded by transforming in various ways: reimagining their products and services, shifting from product-centric business models to customer-centric ones, and even reorganizing to better serve customers. Historically, organizations have driven change from the inside-out and the customer perspective was, in most cases, not fully represented. Business architecture has already made great strides in bringing an outside-in perspective by helping people orient around an external view of their business ecosystem, which puts the customer and value delivery at the center.

Customer experience design further anchors the customer focus, defines the customer journey, and most importantly brings empathy into the process. When customer experience design is aligned with business architecture's external and internal business perspectives, together these two disciplines can help an organization fully maximize customer value delivery and results.

This section discusses the relationship between customer experience design and business architecture, providing an overview of the benefits and principles for alignment, differentiation between customer journeys and value streams, and guidance on specific cross-mappings that align these two complementary disciplines. This section also includes a brief discussion on how customer experience design and business architecture roles can work together in practice, along with an initial perspective on business architecture and service design.

Background on Customer Experience Design

Experience design can be defined as “the practice of designing products (including digital products), processes, services, events, omnichannel journeys, and environments with a focus placed on the quality of the user experience and culturally relevant solutions”.¹ Experience design is a holistic and strategic discipline with its own unique purpose, methods, roles, artifacts, and domains which can be connected to business architecture. Some of the most common artifacts created include customer journey maps and customer personas which should be informed by evidence (e.g., customer insights based on a combination of quantitative mass market research and targeted customers).

This section is specifically oriented around *customer experience design* which focuses on the experience a customer has across every touchpoint of an organization's brand. A customer is defined as “a legal entity that has, plans to have, or has had an agreement with the organization,

or is a recipient or beneficiary of the organization's products or services".² Of course certain organizations may refer to their "customers" by equivalent names, such as patients for healthcare providers, constituents for governments or non-profits, or members for associations. In business architecture, a customer is always defined as an external concept within the context of an organization and its entire ecosystem (i.e., there is no concept of "internal customers" as they would be treated as human resources).

It is important to note that the *BIZBOK® Guide* domain of stakeholder includes all external and internal participants, including customers, partners, and human resources. However, this section will focus on customers only, which are considered to be a category of stakeholder from a business architecture perspective, as represented on the stakeholder map. The experience design discipline can be leveraged, however, to design experiences for any internal or external stakeholder category, including partners and employees, defined within a business ecosystem.

A customer segment is a grouping of customers based on certain shared characteristics. A customer persona is a fictional character representative of a unique group of users who share common goals.³ A customer persona can apply across multiple customer segments. Both customer segments and customer personas can be used with or without a customer journey. Customer segments help an organization to understand and target an audience based on information such as demographics, gender, socioeconomic status, or buying behavior. On the other hand, customer personas help an organization to recognize key traits within and across customer segments based on information such as personal motivations, values, and preferred communication methods. When we consider a specific customer segment or persona that moves through a journey, it helps not only to create empathy but also ensure that the appropriate value and capabilities are delivered.

Experience design can be considered as part of a broader context, such as the overarching framework of Human-Centered Design, which encompasses not only experience design but other disciplines and practices such as service design, design thinking, and user experience design. In addition, other frameworks, frequently referred to as business design or enterprise design, bring the design and architecture disciplines together in order to create coherency of the human and organizational perspectives.

One such framework is shown in Figure 3.13.1, which depicts the facets of enterprise design, inclusive of an organization's identity, experience, and architecture, along with the intersections among them. Each facet provides a different lens for looking at an organization and may be emphasized in certain business scenarios, but they all work together in harmony. Other business design-related frameworks have been defined by IDEO⁴, the Rotman School of Business at the University of Toronto, the Stanford d.school, and others.

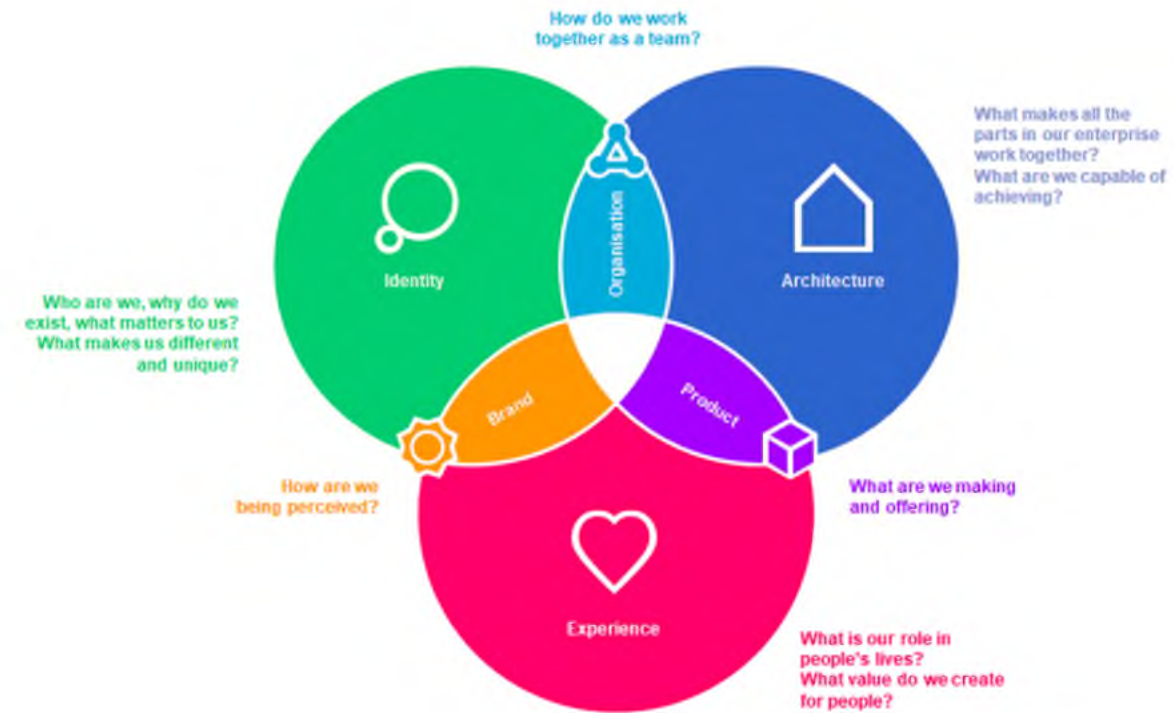


Figure 3.13.1: Enterprise Design Framework⁵

Benefits of Aligning Customer Experience Design with Business Architecture

Customer experience design and business architecture have a natural affinity. They both provide valuable insights and create clarity on who, what, where, when, and how organizations create and deliver value to stakeholders, albeit from different perspectives, focuses, and scope. Business architecture represents the overall business and ecosystem-wide scope, while customer experience design takes a detailed focus on the experiences and emotions throughout each journey stage.

Consider the example of an organization seeking to both streamline order fulfillment and reduce the number of shipping errors. To accomplish this, the organization will engage a partner who will deliver services within the organization's Acquire Product value stream. A business architecture practitioner, from a practical perspective, will ensure the identification, (re)alignment, and deployment of the necessary capabilities to meet the business's needs, while the customer experience designer must ensure that the new stages meet customers' expectations, to not only meet their needs, but seamlessly integrate with the existing journey.⁶

Customer experience viewed through the lens of business architecture offers new insights. For example, business architecture benefits customer experience design by:

- Informing customer experience design plans based on the business architecture that is currently in place or planned, using value streams and capabilities as focal points
- Establishing a common business language and business ecosystem-wide framework describing what the organization does, which can be used as a foundation for identifying and planning customer experiences, automation, and digitalization
- Orchestrating the capabilities, information, stakeholders (internal and external), products, and technology across the customer journey at the right place and time
- Ensuring alignment and consistency of the capabilities required to deliver end-to-end customer value
- Providing a top-down business perspective for planning customer-experience related improvements and initiatives as well as assessing the impact of change to customers and other stakeholders
- Pinpointing customer-related issues for analysis and resolution faster, methodically, and more comprehensively
- Providing a focal point for improving customer service-related experiences in the form of product entitlements

Customer experience design benefits business architecture by:

- Providing insights into the specific needs and outcomes for each customer segment and persona
- Articulating a comprehensive vision of the organization's end-to-end customer experience
- Providing a customer experience focus for an organization that can help break down business silos by creating shared responsibility for the enhancement of capabilities to improve the customer journey
- Assisting in the identification and prioritization of necessary enhancements to value streams and capabilities required to satisfy customer experience requirements
- Informing capability effectiveness ratings with human-centered design research
- Identifying new product or service offerings for an organization
- Providing additional insights on improving, reorganizing, or transforming business structures to meet customer-driven demands and mitigate disruptions
- Bringing customer empathy into the innovation and design of products and related services and experiences
- Providing additional insights into the definition of an organization's value proposition and its ability to deliver upon it

- Serving as a focal point for decision-making and governance for customer-facing capabilities and value streams that transcend business silos

Differentiating Between Customer Journeys and Value Streams

Customer journeys and value streams differ in intent, perspective, and the components they include. A customer journey is defined as a depiction of an experience from a customer's perspective, including the emotions, steps, interactions, and touchpoints they have with an organization. A customer journey contains customer journey stages, which reflect the steps a customer performs in order to complete the journey and achieve their goals. A value stream, as defined in section 2.4, delivers a concrete value proposition for internal and external triggering stakeholders through the accrual of value items at each value stream stage.

The intent of a customer journey is to design, deliver, and improve the experiences customers have as they interact with an organization, and to promote empathy for a customer segment or persona throughout a journey. A customer journey takes a pure customer perspective and defines the stages and experience through their eyes, though filtered through the lens of how an organization perceives their actions, feelings, and experiences while acquiring and using a product.

The intent of a value stream is to create a shared understanding of what an organization does to deliver value, provide a focal point for translating strategies and business changes into initiatives, and support a variety of business decision-making scenarios. A value stream takes the perspective of external and internal triggering stakeholders, though even customer-triggered value streams can have some stages which are performed primarily internally.

Since value streams must deliver a concrete value proposition for the triggering stakeholder(s), they are often scoped differently than customer journeys. For example, a customer journey may have an initial stage that is outside of the scope of an organization's ecosystem and business architecture. In addition, a customer journey that encompasses aspects of pre-service, service, and post-service will likely align with multiple value streams that deliver unique value propositions.

Consider a scenario where a financial institution is completing a complex financial transaction for a customer. In such a scenario, multiple value streams may be invoked where the financial institution may need to formalize a third-party agreement and execute transactions outside the customer's line of sight. The value streams and related stages involved are necessary to achieve the end state value proposition but may not be directly associated with a customer journey stage. Furthermore, customer journey stages will typically align with multiple value streams because the nature of the customer wants and needs at each journey stage are different.

An example of customer journey and value stream alignment for an insurance company is shown in Figure 3.13.2. While customer journeys and value streams should ideally be related to each other at the stage level (i.e., a customer journey stage would be cross-mapped to one or more value stream stages), this diagram illustrates how customer journey stages and value streams align at a high level. The Discover, Explore, and Buy journey stages align to the Acquire Coverage value stream, the Use journey stage aligns to the Settle Claim value stream, the Ask journey stage aligns to the Resolve Inquiry value stream, and the Engage journey stage aligns to the Maintain Customer/Partner Information value stream.



Figure 3.13.2: Alignment Between a Customer Journey and Value Streams

Customer journeys are comprised of customer journey stages and contain components such as customer touchpoints, channels, emotions, pain points, and measurements. Value streams have an overall value proposition and triggering stakeholder and are comprised of value stream stages. Each value stream stage includes entrance criteria and exit criteria, one or more value items, and a list of participating stakeholders. To help delineate customer journeys and value streams, the following criteria can be considered.

A concept should be modeled as a customer journey stage if it:

- Identifies an interaction or cluster of interactions between a customer and an organization (touchpoint) or interactions in their environment (e.g., family, other organizations)
- Represents the wants and needs of a customer at or before the point of interaction
- Accumulates the wants and needs of a customer and their satisfaction as delivered by the organization
- Represents a decision the customer may make whether to continue the journey or abandon it

A concept should be modeled as a value stream stage if it:

- Represents the production of a significant component of the organization's value proposition, framed by a value proposition that is produced by an accrual of value items
- Can be aligned with a collection of enabling capabilities that produce outcomes that collectively deliver value items at each value stream stage
- Is associated with the superset of internal and external stakeholders, including customers, who participate in that stage to contribute value to the triggering stakeholder

Principles of Aligning Customer Experience Design with Business Architecture

The following principles provide guidance for aligning customer experience design with business architecture:

1. Customer is represented as a category on the business architecture stakeholder map, where customer segments and personas can be represented as stakeholders.
2. The stakeholder map depicts all external and internal stakeholders, which enables journey mapping to be expanded to all external and internal stakeholders.
3. A customer journey is a view through a customer's eyes that connects the associated steps, interactions, and touchpoints to achieve a specific goal(s).
4. Value streams provide a framework for envisioning end-to-end customer value and cross-business unit boundaries.
5. Customer request through value proposition is traced through value stream stages in which the customer participates.
6. Value stream stages, from one or more value streams, enable a customer journey stage.
7. Value stream stages are enabled by capabilities.
8. Capabilities, along with essential information concepts, enable value stream stages, and by extension, contribute to the intended value delivered within customer journey stages.
9. Heat-mapped capabilities identify weaknesses that could impact the customer experience at one or more customer journey stages and can help target improvement opportunities.
10. Business units illuminate the internal business units and external partners that are essential to customer value delivery across a business ecosystem.
11. Value stream stages and capabilities scope and frame initiatives to enhance customer journeys.

Cross-Mapping Customer Experience Design and Business Architecture

As with any related discipline, customer experience design domains can be cross-mapped to business architecture at varying levels of detail based on the business need for the information. In addition, practicality and the maturity of the disciplines within an organization can also be factors that drive the timing of cross-mapping relationships creation. For example, cross-mappings may be created at the highest level of detail initially and then defined with additional granularity as the organization's appetite for more specific information grows over time.

In order to establish the formal alignment with business architecture, four domains within customer experience design serve as the focal point: customer (stakeholder category), customer journey, customer journey stage, and touchpoint. Figure 3.13.3 shows the formal mapping of business architecture domains on the left, the customer experience design domains on the right, and the key connections among them.

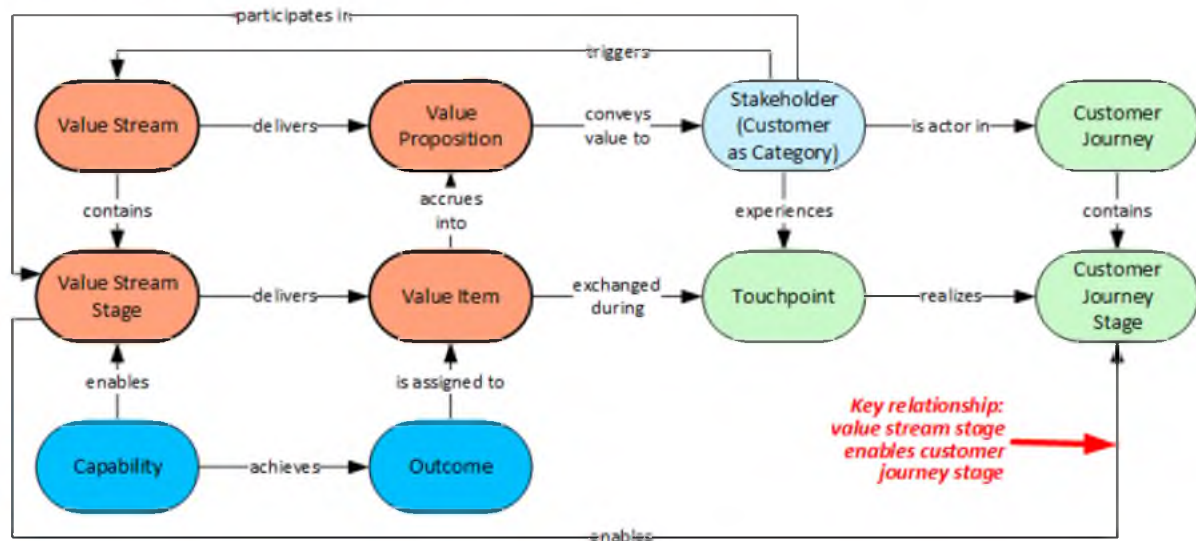


Figure 3.13.3: High-Level Customer Journey and Value Stream Relationships

Starting with the business architecture perspectives, a value stream, represented in orange, produces a value proposition. Value stream stages produce one or more value items, which accrue to deliver the value proposition. Capabilities, which enable value stream stages and are shown in dark blue, achieve discrete outcomes that are assigned to one or more value items within each value stream stage.

Triggering stakeholders, including potentially multiple customer types, seek and ideally achieve the value proposition. Triggering stakeholders also participate in value stream stages, engaging along the way to ensure that they achieve the value they are seeking.

Formal mapping of customer experience design, shown in light green on the right of figure 3.13.3, depicts the customer journey, decomposed into journey stages, where the customer (as a stakeholder category) has certain experiences that are realized as interactions between the customer and the organization. A touchpoint is a way in which a customer interacts with an organization, either in physical or digital format (e.g., a physical or digital advertisement, brochure, or salesperson contact).⁷ Some touchpoints may be considered moments of truth as they are points at which customers form opinions and build trust about an organization and brand which may dictate whether they continue the journey. In practice, a customer journey may or may not include touchpoints.

At the highest level, a customer journey can simply be cross-mapped to one or more value streams, such as for communication purposes, as shown in Figure 3.13.2. However, the key linkage between business architecture and customer experience design is the cross-mapping from the customer journey stage to the value stream stage. A customer journey stage may be cross-mapped to one or more value stream stages. At a more granular level, business architecture and customer experience design can be linked through the cross-mapping from the value item to the touchpoint. Since capabilities are cross-mapped to the value stream stages they enable, by extension a relationship is made from capabilities to the customer journey stages they enable. At the more granular level, a capability outcome is assigned to one or more value items, where the value item is in turn connected to a customer journey touchpoint(s).

Finally, it is important to note how customers are reflected in the business architecture and relate to value stream triggering and participating stakeholders. A customer, which may represent a specific customer segment or persona, is an actor in the journey. Customer is represented as a category on the business architecture stakeholder map, while customer segments and personas can be represented as stakeholders. Furthermore, products are offered to specific customer segments and delivered within the context of customer journeys and value streams.

An example of these business architecture and customer journey relationships in practice can be seen in a transportation example with the Take a Trip value stream, as shown in Figure 3.13.4. Consider an automotive customer traveling in a digitally connected vehicle with passengers onboard the vehicle. The Take a Trip value stream frames the value items produced at each stage accruing to value proposition, selected capabilities that deliver outcomes to produce value items, information concepts required by selected capabilities, stakeholders (specifically Driver and Passenger) which have unique experiences and touchpoints, and products that provide product entitlements (i.e., services) at each stage. A customer journey stage of Use would align to each of these value stream stages, where stakeholders could include multiple customer segments or personas representing different types of Drivers and Passengers. Some touchpoint examples would include a Driver interacting with the Vehicle, Navigation Tool, or Mapping Tool, or a

Passenger interacting with an Entertainment Tool.

Take a Trip					
	Plan Trip	Prepare for Trip	Depart Location	Arrive Destination	Terminate Trip
Value Items	Route(s) to Destination Mapped Out	Vehicle Provisioned Passengers Onboard Route Mapped	On the Way Entertained Along Way	Safely, Happily Arrived at Interim or Final Destination	Trip Satisfactorily Completed
Key Enabling Capabilities	Plan Management, Trip Management, Location Management, Route Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management
Key Information Concepts	Plan, Trip, Location, Route, Network, Device, Material, Agreement, Customer, Product	Plan, Trip, Location, Route, Network, Vehicle, Agreement, Customer, Material, Product	Plan, Trip, Location, Route, Network, Vehicle, Agreement, Customer, Material, Product	Plan, Trip, Location, Route, Network, Vehicle, Agreement, Customer, Material, Product	Plan, Trip, Location, Route, Network, Vehicle, Agreement, Customer, Material, Product
Key Stakeholders	Customer (Driver)	Customer (Driver, Passenger), Help Personnel	Customer (Driver, Passenger), Help Personnel	Customer (Driver, Passenger), Help Personnel	Customer (Driver), Help Personnel
Products	Mapping Tool	Mapping Tool, Gas Buddy	Navigation Tool, Gas Buddy, Mapping Tool, Entertainment Tool	Navigation Tool, Gas Buddy, Mapping Tool, Entertainment Tool	Navigation Tool, Mapping Tool

Figure 3.13.4: Value Streams Frame Capabilities, Information Concepts, Stakeholders, and Products in Value Delivery Context

The relationships shown in figure 3.13.4 are used to improve the customer experience. Consider tracing a touchpoint within the customer journey, for example the Navigation Tool, to the applicable value stream stages which would include Depart Location, Arrive Destination, and Terminate Trip. From there, the value stream stages can be followed through to the enabling capabilities such as Location Management, Route Management, and Vehicle Management which can be targeted for improvement where they are underperforming.

Customer Experience Designers and Business Architecture Practitioners

The discipline of customer experience design is largely practiced by customer experience designers, while business architecture is largely practiced by business architecture practitioners. Both roles certainly share many of the same competencies, but they also require some unique ones. For example, customer experience design emphasizes competencies such as creativity, human-centricity, and empathy while business architecture emphasizes competencies such as information abstraction, synthesis, connectivity, simplification, and visualization.

However, there are practitioners who have either moved from one role into the other, or blend both roles together in practice. Most important is to stay true to the intentions and principles of each discipline equally, even if an individual wears two hats. Furthermore, to fully achieve the benefits of either discipline, they must be adopted throughout an organization. This means that

the mindset and use of customer experience and business architecture artifacts must go beyond just the practitioners and be leveraged by other people as part of their daily work.

Customer experience designers and business architecture practitioners should work together closely to cross-map the customer experience design and business architecture domains as described above, as well as continually improve the business architecture through usage. They should also work together on actual business usage scenarios, especially those related to improving or transforming an organization's value proposition and business model, improving or changing the customer experience, translating strategy into execution, and informing business decisions that impact customers. Customer experience designers and business architecture practitioners can also serve as advocates for each other and help people in the organization to understand and recognize the benefits of these valuable roles and disciplines.

Service Design and Business Architecture

Service design is defined as a “process in which the designer focuses on creating optimal service experiences. This requires taking a holistic view of *all* the related actors, their interactions, and supporting materials and infrastructures”.⁸ Within this context, a service is defined as “an interaction between customers and the service system through many different touchpoints during the customer journey”.⁹ Furthermore, a common artifact, the service blueprint, is defined as “a way to specify and detail each individual aspect of a service. This usually involves creating a visual schematic incorporating the perspectives of both the user, the service provider and other relevant parties that may be involved, detailing everything from the points of customer contact to behind-the-scenes processes”.¹⁰

The key linkage between business architecture and service design is through business architecture's product entitlement concept and the service design service. From a business architecture perspective, a service is represented as a product entitlement, where a product in business architecture includes both tangible goods and intangible services.

As shown in the Take a Trip value stream example in Figure 3.13.5, the same capabilities that enable a value stream stage and deliver a value item from that stage, also enable the product entitlements for the product a customer is using or experiencing within that value stream — which in turn enables a customer journey. For example, the capabilities Plan Management, Trip Management, Location Management, and Route Management contribute to the value item of travel itinerary or journey plans in the Plan Trip stage. These capabilities also enable the product entitlement of Flexible Map for the Mapping Tool product, which aligns with the customer journey stage of Use Product. Another example is that of On Demand Access, which would be a service that allows a customer to talk to a person and Access to Help, which would be a touchpoint or experience that corresponds to On Demand Access. Improving the service design

for On Demand Access would require improving the capabilities that enable the corresponding entitlement. In this case, On Demand Access requires a functioning Network Management capability as well as Message Management, Work Management, and other capabilities (not all capabilities are shown).

Take a Trip					
	Plan Trip	Prepare for Trip	Depart Location	Arrive Destination	Terminate Trip
Customer Journey Stage	Use Product	Use Product	Use Product	Use Product	Use Product
Key Stakeholders	Customer (Driver)	Customer (Driver, Passenger), Help Personnel	Customer (Driver, Passenger), Help Personnel	Customer (Driver, Passenger), Help Personnel	Customer (Driver), Help Personnel
Product	Mapping Tool	Vehicle, Mapping Tool, Fuel Buddy	Vehicle, Navigation Tool, Fuel Buddy, Mapping Tool, Entertainment Tool	Vehicle, Navigation Tool, Fuel Buddy, Mapping Tool, Entertainment Tool	Vehicle, Navigation Tool, Mapping Tool
Product Entitlements (delivering services)	Flexible Map	Connected Customer, On Demand Access, Navigation, Fuel Options	Connected Customer, On Demand Access, Navigation, Fuel Options, Entertainment Options	Connected Customer, On Demand Access, Navigation, Fuel Options, Entertainment Options	Connected Customer, On Demand Access, Navigation
Enabling Capabilities	Plan Management, Trip Management, Location Management, Route Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management	Trip Management, Location Management, Route Management, Vehicle Management, Network Management, Material Management

Figure 3.13.5: Capabilities Enable Products, Value Streams, and Customer Journey Stages

These key relationships highlight the value business architecture can bring in improving customer experience because a product or service experienced within a journey can be followed through the value stream to the capability which enables that product or service. Since capabilities connect to multiple business architecture and operating model domains, a customer issue can be traced back to potential root causes related to people, process, technology, and other perspectives. Service design artifacts, such as the service blueprint, are critical for visualization and storytelling, but can and should leverage the formal business perspectives in an organization's business architecture knowledgebase.

While the alignment of service design with business architecture is an area for future exploration and definition, a few initial principles are defined below. These principles will be expanded and refined over time, but they provide basic guidance for the practice of using business architecture to improve experience design.

1. Business architecture and service design intersect at the service (or product entitlement in business architecture terms) being delivered to a customer.
2. A service blueprint visualizes the enabling components of a service, aligned with a customer journey, in a consumer-friendly way, typically for a specific scenario.

3. A service blueprint provides insights into what is needed to orchestrate the customer journey and further enhances the business architecture that includes capabilities, stakeholders, information, policies, and other business perspectives.
4. The relationships across customer journeys to value streams to capabilities provide a framework to accelerate the identification of potentially relevant components to include on a service blueprint (e.g., to identify the stakeholders, policies, processes, or application systems related to a given capability).
5. Business architecture and its relationships to related disciplines such as business processes and IT architecture provide concrete, reusable perspectives that may be referenced on a service blueprint.

Summary

Customer experience design and business architecture are arguably two of the most critical disciplines for helping organizations to improve and transform customer-centricity and digitalization. Together they define the end-to-end customer vision and make it real in the business and technology environment. Both disciplines gain mutual benefit by working together and allow an organization to serve customers in the best possible way, while also operating effectively. Furthermore, they can help drive the culture shift and internal collaboration necessary for an organization to become customer-centric. Customer experience teams and business architecture practitioners should work hand-in-hand, helping to shape and evolve an organization's customer journeys and business architecture to create maximum customer and business value.

The key connections between the customer journey and business architecture are represented as alignment between value stream stages and customer journey stages, the intersection of the value stream stakeholder and the customer (or specifically the segment or persona) that is an actor in the journey, and the value items exchanged at each touchpoint along a journey. The intersection between business architecture and service design is defined by the relationship between the business architecture concept of product entitlement, which represents the service aspect of a product.

This section will continue to evolve and expand over time in partnership between customer experience design and business architecture teams and industry bodies, both in practice and theory.

¹ Wikipedia, https://en.wikipedia.org/wiki/User_experience_design, last visited: January 9, 2021.

² Business Architecture Guild®, Business Architecture Common Reference Model, Version 4.0.

³ Nielsen Norman Group, <https://www.nngroup.com/articles/analytics-persona-segment/>, last visited: March 10, 2021.

⁴ Innovation Design Engineering Organization, <https://www.ideo.org/>.

⁵ Milan Guenther, *Intersection*, Morgan Kaufmann, 2013.

⁶ “Business Architecture and the Customer Experience: A Comprehensive Approach for Turning Customer Needs Into Action,” Business Architecture Guild®, October 2016, https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/public_resources/CXWhitepaperPub100716Lpdf.pdf.

⁷ Adapted from the definition of touchpoint, Wikipedia, <https://en.wikipedia.org/wiki/Touchpoint>, last visited: January 17, 2021.

⁸ Marc Stickdorn and Jakob Schneider, *This is Service Design Thinking*, Wiley, 2011.

⁹ Ibid.

¹⁰ Ibid.

PART 4: BUSINESS ARCHITECTURE SCENARIOS

BIZBOK® Guide part 1 introduced the business architecture framework. One important component of this framework is the business architecture scenario. Scenarios provide context for applying the blueprints introduced in part 2 and practice related concepts introduced in part 3. Scenarios create usage context for business architecture and form the basis for the practice once a baseline business architecture, which minimally includes a capability map, externally triggered and other priority value streams, and an information map, is in place. A scenario also provides situational context and identifies business architecture or related discipline domains used to analyze and achieve the needs of the scenario.

This section introduces a number of common business architecture scenarios. These scenarios are defined at what is considered a macro level where, for the most part, they represent larger or more far-reaching types of strategies, initiatives, and investments. On a more tactical basis, organizations use what would be considered “micro” scenarios, addressing topics such as improving execution of how a customer completes a financial transaction, obtains an insurance settlement, or checks luggage at an airline. Micro scenarios are primarily defined by work related to the business architecture reference models as discussed in *BIZBOK® Guide* section 8. Sample macro scenarios are summarized as follows.

1. Initiative Investment Analysis
2. Shift to Customer Centric Business Model
3. Merger & Acquisition Analysis
4. New Product Rollout
5. Globalization
6. Business Capability Outsourcing
7. Supply Chain Streamlining
8. Divestiture
9. Regulatory Compliance
10. Change Management
11. Operational Cost Reduction
12. Joint Venture Deployment
13. Digital Transformation
14. Digital Twin Deployment

The business architecture scenario discussions that follow describe various aspects common to that scenario along with business architecture's role. The details underlying the scenarios that follow may be found in various sections of the *BIZBOK® Guide*. For example, where a scenario refers to strategy mapping, guidelines may be found in section 2.1, where a scenario refers to initiative mapping, guidelines may be found in section 2.6, or where a scenario refers to performance management, guidelines may be found in section 3.7.

The list of scenarios in this section is by no means complete. Businesses will continue to encounter variations on each of the above scenarios as well as unique scenarios that are not listed in our sampling. Readers should, however, be able to glean insights into how to apply business architecture to other situations that a business may encounter based on the discussions contained in this section. Future versions of the *BIZBOK® Guide* will expand upon these discussions in terms of breadth of scenarios being addressed and in terms of the depth of discussion for each scenario. This expansion will be based on continuing Guild member feedback.

Scenario 1: Initiative Investment Analysis

Most organizations believe that they have relatively formal processes for determining whether or not to pursue an investment in an initiative within their organization. However, in practice many organizational investment decisions are made throughout an organization with relatively little oversight or transparency. While these investments result from a variety of different sources, one typical outcome is that organizations invest in overlapping, fragmented, or even conflicting initiatives, which may not become clear until well into execution or implementation effort. These issues arise from a lack of transparency of the impacted stakeholders, capabilities, value delivery perspectives, information, and corresponding technology implementations.

No matter what the underlying cause, organizations have the option of continuing to fund these ill-advised investments and accept the resulting failures and related risks or alternatively seeking more aligned, rationalized, and ultimately effective initiative investments. The initiative investment analysis scenario begins with alignment of strategic objectives to value streams, capabilities, and information concepts and ultimately frames the resulting targeted initiatives. In addition, business architecture also seeks to ensure that initiatives are aligned by the objectives they meet and the capabilities, value streams, and information concepts they target, with a key goal of avoiding initiative fragmentation, misalignment, and redundancy that undercut integration and deployment efforts.

Role of Business Architecture

Organizations commonly leverage business architecture to evaluate and compare initiative investment opportunities and assess ongoing spending for the initiative portfolio as a whole. Initiative investment analysis leverages business architecture as follows:

- Obtain a set of actionable, time-targeted, and achievable set of business objectives from a strategy mapping effort with executives
- Based on the strategic objectives, target the value streams and enabling capabilities, assessing the impacts on business units, information concepts, and related processes and technologies to determine initiative viability
- Compare and contrast proposed objective impacts across business units based on overlapping impacts to previously identified business architecture domains to align related objectives into shared or unique initiatives, taking note of dependencies
- Where funding requirements extend beyond annual budget constraints, leverage the performance metric analysis to help prioritize targeted initiatives with high impact initiatives that are incorporated into the annual budget

Consider, for example, a scenario with three initiatives deployed across three different business units. Each initiative is focused on consolidating customer enrollment – which aligns with a major strategic objective for the enterprise. In addition, each initiative is being driven by a different business executive, each of which resides in a different business unit. As a result, the teams are taking independent, uncoordinated approaches to meeting this challenge. Collectively, these initiatives will cost \$60 million during a three-year window. Using business architecture, executives were able to take a second look at the viability of this approach.

The business architecture provided management with increased transparency required to assess this situation. The business architecture team mapped major “in flight” initiative investments to the customer centricity strategy established at the executive level. The team further analyzed related funding, business capability impacts, and funding analysis to look for related or redundant overlaps and impacts. The team discovered that three unique initiatives mapped back to the customer enrollment capability and that these initiatives tied directly back to three different business units.

Analysis of each initiative found that there was no cross-business unit collaboration or coordination. The individual initiatives would still result in poorly aligned enrollment processes, interfaces, desktop systems, applications, and databases. The degree of alignment envisioned in the original strategy would not be achieved. As a result, executives asked the three business units to rework their initiative strategies to align business capabilities, processes, and information requirements enabling a business strategy driven IT infrastructure alignment.

This approach achieved a clear alignment of initiatives with both initiative level goals and strategic goals. By holding all initiatives accountable for achieving a commonly coordinated set of strategic goals, the goals were no longer secondary but drove related investments and bottom-line results. In addition, through business architecture, the executive team established an effective set of checks and balances to keep the initiative moving forward in a strategically aligned direction.

The other examples of investment analysis would follow a similar pattern. Identify the capabilities or value streams of interest, map them to a strategy, business unit, or initiative, and then assess potential spending or cost savings that could be employed based on potential redundancies and other opportunities.

Scenario 2: Shift to Customer Centric Business Model

Many organizations have a product line, business unit, or regionally focused business model that tends to obscure common customer views. Taking a customer-centric viewpoint can be difficult for an organization with decades of product line or business unit focused history. Customer information tends to be stored in silos, although many organizations have taken steps to do some backend reconciliation of information. This reconciliation may only be a small aspect of meeting the challenge of a 360-degree view of a customer.

For example, executives at one financial institution stated that a customer should be viewed as a single customer regardless of the business unit, product line, or region engaging with that customer. Management also wanted full transparency of any customer transaction for any customer at any time, with complete recognition that the customer is using other enterprise products and services.

Role of Business Architecture

Business architecture can provide the visibility to understand the complexity of shifting to a customer-centric business model and facilitate creation of a cross-functional plan to address it. Business architecture enables visualizing customer engagement through customer-focused value streams and the capabilities that enable these value streams. Focal points of business architecture analysis include:

- Identifying all customer-facing value streams, such as Acquire Product, Execute Financial Transaction, or Take a Trip, along with the capabilities that enable those value streams
- Narrowing the list of capabilities to focus on customer transparency such as Customer Management, Agreement Management, and Financial Account Management
- Identifying related information concepts that the customer-focused capabilities rely on

- Identifying the stakeholders, including customers, and business units that engage in those capabilities for the aforementioned value streams
- Assessing resource deployment impacts for these capabilities, which typically includes operating model perspectives that encompass impacted business processes and technologies
- Examining information concept implementations across the existing data architecture to highlight data deployment redundancies to be consolidated across environments

The above business architecture information provides the basis for beginning the impact analysis and helps identify near-term and long-term options for shifting to customer centricity. This type of business model realignment often takes years, but there are typically short-term options that can focus on the frontend of customer-facing value streams and underlying capabilities. The business architecture mapping shines a spotlight on the real complexities and opportunities involved in such a transformation.

Scenario 3: Merger & Acquisition Analysis

A typical acquisition brings one company under the umbrella of another company while a merger is viewed more of a consolidation of two organizations into one. The difference between a merger and an acquisition, along with executive strategies for that merger or acquisition, impact approaches to organizational alignment. Consider, for example, two banks merging into one versus a conglomerate that is bringing a related or dissimilar company under its wing. In many cases, one company will need to merge redundant operations, financial capabilities, business units, and other aspects of the enterprise with the newly acquired entity.

While the decision to execute a merger or acquisition is an executive activity, the evaluation of the viability and related costs of creating a combined entity is essential input to that decision. Once the decision has been made to move forward with the merger, the process of rationalizing the resulting business entity often determines the success or failure of the merger or acquisition. Failure is not always an absolute and may manifest itself in exaggerated operating costs, the inability to align approaches, or the inability to align common customers and strategies.

Consider a property and casualty insurance company being merged into a larger entity with many other lines of business. In this case, the organization is certain to find substantial redundancies. These redundancies are likely to exist in areas as disparate as product management, policy management, marketing, claims handling, and reserves management. This organization will want to consider the impacts from a variety of perspectives and business architecture provides insights into this effort.

Role of Business Architecture

Applying business architecture in a merger or acquisition focuses on overlap across capabilities, value streams, and information – as it relates to existing business units pre-and post-merger. The analysis also considers business unit, product, and policy alignments. Pre-merger analysis provides a basis for planning the business alignment and consolidation effort and can be used as a baseline to compare and contrast the envisioned future state entity. Note that the assessment activities that follow are meant to augment, not derail, the usual merger and acquisition work that has been historically performed by organizations. These actions are meant to provide more targeted and more specific actions.

- Ensure that the organization controlling the merger has a business architecture baseline minimally including capability, information, value stream, and organization maps
- As required, use the controlling entity's business architecture baseline to evolve a baseline for the second organization, focused largely on unique value streams, capabilities, and information concepts
- Identify common value streams across the two organizations, determining a set of priorities for aligning value streams while integrating unique value streams
- Identify shared capabilities and information concepts across the two organizations, reconciling naming conventions and definitions to create a common view of the aggregated business ecosystem
- Map shared capabilities to business units for both organizations, establishing an initial analysis as input to the merger/acquisition consolidation
- Leverage the value streams, capabilities, and information concepts to target overlapping data structures and application systems to be aligned, consolidated, or otherwise integrated

All merger and acquisition scenarios vary. The important common factor involves understanding well-defined overlaps on stakeholder value delivery, capabilities, information, and other business architecture domain focal points.

Scenario 4: New Product Rollout

Rolling out new products and services, where the *BIZBOK® Guide* defines a product as “goods and services” is essential to competing in evolving markets. Rapid innovation through new products is an objective that many organizations are adopting in order to address these demands. But rapid innovation is not something that can just be grafted onto existing practices and requires tradeoffs between the rate of innovation and the ability to achieve transparency and consistency in the deployment of that innovation.

A new product launch typically begins with market research, design, engineering, rollout planning and eventually the actual rollout itself. While some large organizations may have this process well established, many others do not. A typical scenario begins with a product launch plan by engaging marketing, product design, and other key players. In many cases, the launch plan would need to engage multiple internal business lines but also external suppliers or business partners. The plan also typically must engage IT. Note that similar actions are involved when enhancing or improving an existing product. In all cases, it is important to understand the cross-functional impacts on value streams, capabilities, information, and business units.

Role of Business Architecture

The following guidelines may be applied to new and existing products, whether those products primarily represent goods, primarily represent services, or represent a combination of goods and services. A manufacturing company may primarily sell goods, such as major appliances, but also provide services in the form of help support, delivery services, and repair services. A bank, on the other hand, offers products that are essentially all services. Products that are comprised of services, in whole or in part, rely on product entitlements defined to that product, as described in *BIZBOK® Guide* section 2.7.

- Establish a product map, define product families and/or product lines, identify products to be added or updated, and define the product entitlements for those products
- Identify value streams responsible for producing new or updating existing products, such as Deploy Product, Optimize Product Portfolio, Acquire Product, or Retire Product, and leverage them to ensure that the ability to create and improve products is working effectively
- For any product that is largely or even minimally service-oriented, identify the capabilities that enable or will be required to enable the product entitlements for the existing or planned product
- Evaluate capability weaknesses or gaps required to deploy or improve existing or planned product entitlements and determine specific issues to be addressed to improve those capabilities
- Identify value streams to highlight current product usage, such as would be the case for Settle Claim, Take a Trip, or Execute Financial Transaction value streams, and ensure that the corresponding capabilities that enable product entitlements used during these value streams are also improved

An example of targeting and improving capabilities associated with a product entitlement might involve a Settle Claim value stream where the entitlement involves being made whole on a legitimate claim. If the Claim Validation capability fails, the claim may be denied, reducing

customer satisfaction. If this happens when designing a newly proposed product, the company may not have the wherewithal or resources to settle certain types of claims for a specific type of proposed insurance policy. In this case, the company should either improve or obtain those capabilities or not launch the proposed product.

Scenario 5: Globalization

Entering global markets requires the ability to expand enterprise business models to incorporate new markets, regions, countries, currencies, and other aspects of global expansion. The impact on an enterprise of entering global markets can be far reaching. Impacts must be anticipated in advance and incorporated into a plan based on the ability of the management team to visualize the cross-functional, cross-disciplinary impacts.

Global transformation is a long-term initiative that takes many forms. It may involve regional expansion into Europe, Asia, or North America, or it may involve a country-by-country strategy. Each major business unit is likely to feel an impact. The key requirement for this scenario is to gain rapid visibility into the numerous aspects of the enterprise that are impacted by global expansion, including customers, partners, and foreign governments.

Role of Business Architecture

Business architecture supports global transformation through the exposure of all business units and external entities that may be impacted by global expansion based on the capabilities of these business units and value streams impacted. Assessing a globalization effort and its impacts requires visibility into organization, capabilities, information, value streams, customers, and business partners. The following should be included from a business architecture perspective.

- For expansion of the organization's ability and capacity to execute on a global versus a more localized scale:
 - Augment the organization map to include a location indicator for business units and partners defined in the map (use an indicator useful to your organization, such as a country indicator)
 - Obtain the value streams that are potential targets of global expansion where, for example, aspects of Manufacture Product, Develop Product, or Execute Campaign value streams may execute across global geographies
 - Identify the value stream-enabling capabilities that are most conducive to global expansion, where the performance of globally distributed capabilities instances is ensured to be highly effective
 - Cross-map business units and partners in the organization map to the capabilities they currently perform or that the organization would seek to expand geographically

- Cross-map value stream-participating stakeholders in the stakeholder map to the business units and partners in the organization map
- Based on this set of information, look at optimization strategies for consolidating or relocating where capabilities are enacted from a location-specific perspective
- For global expansion of the customer base:
 - Identify customer impacting value streams, including all customer-triggered value streams where customers are engaging with the organization
 - Based on value stream analysis, capability cross-mapping, and organization mapping, determine where capabilities may be globally redeployed based on global expansion strategies
 - Leverage policy mapping as required to determine how global laws, treaties, and regulations affect various capabilities and business units

The previously defined shorthand list of guidelines can be further deployed by implementing them in a formally defined, automated environment based on the capability map and information map. For example, capability and information maps provide insights into detailed associations among business entity, partner, customer, geographic space, location, and related business objects.

Scenario 6: Business Capability Outsourcing

Outsourcing is an increasingly important part of many business models, augmenting in-house capabilities that an organization does not have or does not desire to have. Certain value streams and capabilities are often outsourced, but many businesses do not view outsourcing from this perspective. As a result, there is a lack of clarity surrounding governance and ownership responsibilities and an inability to visualize the overall business environment in which the enterprise functions. Common examples of outsourced capabilities include Human Resource Management, Asset Management, Financial Account Management, Information Management, and Conveyor Management. Other capabilities are outsourced for certain product lines and insourced for others. An insurance company may outsource Product Management, for example, for its health products, but insource this same capability for its auto insurance line.

Role of Business Architecture

In each of the prior examples, understanding which business units have certain capabilities is essential to understanding opportunities for outsourcing, organizational alignment, synchronization across business units, shared automation opportunities, and ways to improve value delivery as required through certain value streams.

One important point about business architecture is that it is not bound by the walls of the enterprise but can rather represent a business in its entirety, regardless of whether or not the

business extends into partner domains. This is an especially important point to consider as one evaluates or manages an outsourcing scenario. Business architecture related factors that should be considered include:

- Verify that the organization map contains all business units and partners or potential partners that do or could deliver capabilities on behalf of the organization
- Cross-map the organization map's business units and partners to the capabilities they deliver, keeping these mappings at level 1 on the first iteration
- Obtain value streams where outsourcing of work is most likely, such as Onboard Human Resource, Manufacture Product, Acquire Product, and so on, targeting top management targets
- Use value stream/capability cross-mappings to identify the capabilities targeted for outsourcing, highlighting where certain capability instances may stay in-house while others are outsourced
- Establish formal capability performance metric thresholds for outsourced capability instances to ensure that those capabilities are delivering to previously agreed upon levels of effectiveness
- Review, update, and expand capability/business unit cross-mappings to create what-if scenarios for capability outsourcing
- Where capabilities are targeted for outsourcing under a given value stream stage, use the stakeholder map to evaluate the shifting of an in-house human resource to a partner resource
- Evaluate the details for capability instance outcome evaluations, design options, and other analysis to determine best options for deployment

This scenario may be applied to situations where outsourcing is already in place, with a focus on improving how the effort is being managed, or to new or proposed outsourcing situations.

Scenario 7: Supply Chain Streamlining

The supply chain scenario can vary dramatically by industry and enterprise. Suppliers and business partners engage with multiple business units across a given enterprise. In one case the enterprise may be suffering high costs or discontinuity from a single provider. In the second case, high costs and discontinuity may stem from redundant supplier relationships. This concept includes outsourced business capabilities, which typically result in business blind spots.

Consider a telecommunications firm that uses many sources of customer support services. In one actual situation, a business was contacted six separate times by six separate support centers to say that a services contract had been inadvertently modified. Each unit had access to different

records and was apparently using different systems. There was no way to correct this according to the service center representatives. This organization required a map of what was going on with service support centers, and business architecture can provide such a map.

Role of Business Architecture

Business architecture, as stated previously, extends into third-party domains, which in turn enables business architecture to offer visibility across business units and enterprise boundaries. Extending the visualization of business units and capability mappings beyond the walls of the enterprise creates a more complete view of the business architecture. In the above supply chain example, business architecture visualization would need to be extended to include all internal and external suppliers that provide this capability. The relevant domain usage is as follows.

- Ensure that the stakeholder map has been or continues to be updated to reflect partners that trigger or participate in value streams where the stakeholder formalizes partner engagement
- Identify value streams that are either partner triggered or partner engaging that involve asset acquisition or similar procurement actions, or the establish partner agreements that enable future procurements
- Identify value stream stages where partners play a contributing role specifically where they participate in value streams that include, for example:
 - Developing or manufacturing a product, where third parties engage in design, quality reviews, or other actions
 - Facilitating delivery of a shipment, such as helping with clearing customs
 - Executing a financial transaction where brokers or other partners enable execution
 - Settling a claim, where a repair shop or other service would provide asset repairs
- Examine possible partner-to-partner relationships or chain structures in the context of the capability and information mappings showing those relationships

The business architecture in some supply chain scenarios may require a greater degree of supplier participation. This is particularly true when one or more third parties play a crucial role in customer-facing capabilities and value streams.

Scenario 8: Divestiture

Divestiture involves taking a line of business and selling it off to another enterprise. For example, consider an insurance company that plans to divest its personal lines unit. This can take many forms, and certain capabilities may need to stay with the divesting company and also go with the business unit or units being divested. This is also true for value streams and information concepts.

Having a complete map of impacted aspects of the business provides management with the visibility to make these decisions and then tie additional people and resources into the equation.

Role of Business Architecture

The business architecture offers the ability to visualize what decoupling and divesting a line of the business entails and how it impacts various aspects of the business ecosystem. All business units, value streams, capabilities, and information concepts impacted by a divestiture should be identified for impact analysis. In a divestiture scenario example, aspects of the business architecture that should be considered as part of the analysis include:

- Identifying business units in the organization map to be divested
- Identifying the capability instances that exist within those business units, via cross-mapping, that will be divested along with the business units
- Tracing the capabilities to information that will also need to be divested with the business units and capabilities
- Ensuring that other instances of the capabilities being divested, along with related information, are retained and maintained throughout and beyond the divestiture
- Mapping the IT application relationships to the capability they automate and the data structures that deploy the information concepts they realize

The main focus of the above mappings is to determine which capability instances will accompany the divested business units along with the application systems, information concepts, and data structures associated with those capability instances. The second focal point requires identifying the capability instances and corresponding technologies and information to be retained, particularly in situations where instances of those same capabilities are divested.

Regulatory Compliance

Regulatory issues hit a wide variety of aspects within a given enterprise and the impacts can have ripple effects. For example, a change in a privacy law can impact multiple departments, information models, processes, and IT artifacts. Examples include *International Classification of Diseases, Tenth Revision, Clinical Modification* (ICD-10-CM) adoption in the healthcare industry or requirements to move from *Generally Accepted Accounting Principles* (GAAP) to *International Financial Reporting Standards* (IFRS). These are highly invasive regulatory changes that impact an organization in numerous areas.

In addition, annual regulatory reviews by insurance, banking, and other industry regulatory bodies are becoming increasingly sophisticated. Beyond examining end results, regulatory bodies are seeking documentation related to infrastructures that support the assertions of business

professionals to those regulatory bodies. Consider a situation where a federal regulation states that organizations can no longer share a social security number (or similar identifier) with business partners, customers, or internal business units. Key business architecture domains involved in regulatory compliance are as follows.

- Ensure the availability of a policy map that has captured the regulations, statutes, or other policies targeted by the regulatory review, and decomposed as appropriate
- Map the policies of interest to the capabilities and related instances associated with the regulatory review, where an instance links a capability to the business unit where it is realized – for example:
 - For a financial review, target Financial Account Management, Financial Transaction Management, Currency Management, and other Finance Management capabilities
 - For an environmental review, target Conveyor Management, Facility or Infrastructure Management, Asset Management, Material Management, and Geographic Space Management
- Narrow down or expand upon the regulatory review target based on the capability instances and corresponding business units, partners, or, as required, customers
- Where what is delivered to customers is under review, target products by cross-mapping policies to the products defined in the product map
- Where programs and projects are under review, cross-map the capabilities to the initiatives in the initiative map
- Where required, trace targeted capabilities to related information concepts and the applications automating those capabilities and data deploying the information concepts

The business architecture domains may also be associated with business processes as guided by the relationships defined in *BIZBOK® Guide* section 3.4.

Role of Business Architecture

Business architecture supports regulatory changes by providing the high-level and drill-down map of impacted aspects and artifacts of the business. Business architecture provides the baseline for mapping various policies related to regulatory requirements to business units, value streams, capabilities, and information concepts.

Regulatory compliance planning and subsequent deployment initiatives require mapping and tracking the evolution of the following elements of business architecture:

- Business policies to business capabilities
- Business units tied to relevant capabilities
- Information concepts tied to those capabilities

- Value streams and enabling capabilities identified in policy mapping

One step to be considered in addressing regulatory compliance would be to engage all relevant parties to address the requirements at a grass roots level. Business units can engage in collaborative teams organized around a shared value stream, capability, or information concept. This step is unique to responding to a new regulation as opposed to responding to an audit to verify compliance with existing regulations.

Scenario 10: Change Management

The ability to react effectively and efficiently to changes in external and internal enterprise dynamics is a huge challenge for organizations today. For example, consider the need to respond to a regulatory requirement to engage all suppliers of a given material from certain regions in order to add a surcharge to that material. The impact of such a change would ripple through purchasing, planning, accounting, and other business units. It would also impact IT related assets. For a large diverse organization, or one with several divisions, such a situation would involve major coordination.

Role of Business Architecture

The change management scenario requires a drill-down into the business architecture to determine specifics of a given change. From a change management perspective, being able to do rapid analysis of changes and impacts across a highly transparent business ecosystem provides rapid development of initiative roadmaps that can be rolled out quickly and cost effectively. Business architecture enables change management scenario by allowing managers and analysts to view impacts across a range of business views including:

- Identify the business objectives driving change
- Map those objectives to the value stream stages impacted and corresponding enabling capabilities impacted associated with those stages
- Where an organization is starting with initiatives as a focal point for change, associate those initiatives with the value stream stages and capabilities they impact
- From the capabilities, assess the business units implementing those capability instances and the information concepts used and modified by those capabilities
- Where products are involved, identify the product impacts directly and enabling capabilities associated with those products
- Trace the impacted capabilities to application systems and shadow systems and impacted information concepts to the data that implements that information

Scenario 11: Operational Cost Reduction

Operational cost reduction identifies opportunities for streamlining the organization in an effort to reduce costs. With a strong focus on operating model optimization, this scenario is characterized by management directives to find areas within the enterprise where spending can be reduced. This may include capability-based realignment, value stream optimization, business unit consolidation, or other considerations.

Consider a scenario where there is a business unit of a telecommunications company responsible for scheduling service calls for commercial and residential customers. The overall business unit is seeking to put a spending ceiling in place. This means that no new people can be hired; the business environment must find a way to cap personnel resources while continuing to support a growth in volume. In this example, it was a factor of doing more with the same resources – another form of operational cost reduction. This organization needed to consider business unit, value stream, and resource factors – not just headcount reduction.

Role of Business Architecture

In this telecommunication company example, a map of the business architecture found three business units with shared billing management capabilities. The value stream where this work was performed was called Settle Financial Accounts, which accommodated recurring payments. The value stream at a given business unit was reasonably efficient; the issue was that each of the enabling capabilities and corresponding information was replicated based on the regions where payments were being made. Streamlining involved capability instance and information concept implementation alignment and rationalization. Operating model optimization targets the streamlining of redundant applications, data structures, desktop systems, and business units. A summary of the sequence of assessments and actions taken here include:

- Focus on the value stream or streams targeted for streamlining and cost reduction
- Determine the value stream stages requiring operational cost reduction
- Target underperforming capabilities and underlying causes that may include, for example:
 - Redundant implementations of instances across multiple business units, application systems, and shadow systems
 - Redundant, incomplete, fragmented, or corrupted data structures, linked to impacted information concepts
 - Other factors as may be determined, including lack of automation, ineffective process definitions, and so on
- Take action under a strategic plan to address the underlying systemic issues impacting operational cost structures

Scenario 12: Joint Venture Deployment

Joint ventures are increasingly important in global business deployment because they are required in certain countries – such as China. This scenario is characterized by the need to clearly define capability and value stream boundaries, ensuring that a given business knows its role while the partner knows its role. In this case the business view again extends beyond the bounds of the enterprise to create a complete view of the joint venture.

Role of Business Architecture

This scenario has similarities with a merger and acquisition scenario but with different end results. The main focal points are as follows.

- Identify the intentions and objectives of the joint venture, which will drive the focal points for the assessment
- Establish one or more business units for the joint venture as the basis for top-down organizational design
- Align the proposed joint venture to a shared business model, focusing on value propositions and other appropriate building blocks
- Based on the business model value propositions, target one or more value streams such as Manufacture Product, Develop Product, Acquire Product, Onboard Human Resource, and so on
- Based on these value streams and the shared business model, target enabling capabilities and information concepts – for example, the joint venture might focus on:
 - Facility Management, Product Management, Material Management, Asset Management, Human Resource Management, and others
 - Identify corresponding information concepts used and modified by the targeted capabilities
- Expand the analysis as required with a focal point of the technologies deploying capabilities, information concepts, and value streams, along with others

Scenario 13: Digital Transformation

Digitizing the business ecosystem requires ecosystem transparency. Business transparency must leverage consistent, reusable business perspectives – centered on capabilities. Capability automation, linked to stakeholder value delivery, is a key focal point of digitalization transformation. Digital transformation scenario can be linked to parallel initiatives and transformation efforts, via business architecture.

Role of Business Architecture

Using business architecture as a means to achieve digital transformation begins with the question – what does the target state business model look like? From the business model, planners, designers, and practitioners can target business architecture focal points, including value streams, capabilities, and information concepts. However, the starting points can vary, as discussed below.

- Where digital transformation is targeting customers, identify each customer-triggered value stream and also value streams where customers participate but may not trigger
- Where digital transformation is targeting internal work, identify the value stream or streams that have stages where digital transformation is a focus
- Where digital transformation is targeting product automation, identify the products and corresponding value streams where product entitlements (i.e., services) are delivered to customers
- From the targeted value streams and products, identify the enabling capabilities
- Use the capabilities to target new automation requirements or the transformation of existing automations, noting that many capabilities in a capability map lack automation today

None of the above are mutually exclusive starting points. Also consider that many capabilities can undergo digital transformation, but in many or most cases, Work Management capabilities that manage work items (i.e., tasks), work queues, decisions, time, events, and schedules will need to be targeted. These capabilities among others should stay top of mind, as they provide the basis for operational delivery of automating event-driven, state-based workflow.

Scenario 14: Digital Twin Transition

A digital twin is, in essence, a computer program that uses real world data to create simulations that can predict how a product or process will perform. These programs can integrate the Internet of things, artificial intelligence, and software analytics to enhance the output. A *digital twin* is the generation or collection of digital data representing a physical object. Historically, digital twin investments have been focused on real-time and industrial applications related to power production, transportation, facility and infrastructure management, utilities, and other physical targets. Digital twin deployments do not have to be constrained to these examples.

Role of Business Architecture

Business architecture plays the following role in a digital twin transition scenario because it establishes a mirror image of the business ecosystem it articulates and represents. For example, capabilities and information concepts are based on a rationalized representation of real-world

business objects, with capability-defined actions representing real world happenings. Consider the capability Facility Access Management, which represents and mirrors the real-world actions of being allowed in or being prevented from being allowed in a building or other structure. The following summarizes business architecture's role.

- Identify which aspects of the real world are to be mirrored
- Identify the business objects in those real-world scenarios including:
 - Products where entitlements require a digital twin
 - Objects used by customers, partners, or in-house teams that may include conveyors (e.g., trucks, planes, cars, ships), assets, infrastructure, and so on
 - People or human resources and corresponding work, that might be replaced by robots and other automations
- From these objects identify the capabilities and information concepts that reflect those objects, such as Product Management, Conveyor Management, Asset Management, or Human Resource Management
- Identify the corresponding value streams that would be involved in the aspects of the ecosystem to be represented as a digital twin – for example Take a Trip, Send Shipment, Manufacture Product, Execute Route, and so on
- Based on the corresponding capabilities, information concepts, and value streams, identify the required automations to be created as the basis for creating the digital twin environment

There are many variations on this scenario and corresponding approaches to the digital twin scenario. This approach may be adjusted to the business objectives envisioned.

Scenario Summary

Scenarios present another aspect to the practice and deployment of business architecture. There is no set list of scenarios, and it is therefore important to consider variations and new scenarios as they emerge. The scenarios in this section provide a guide for these and similar efforts.

PART 5: BUSINESS ARCHITECTURE INFRASTRUCTURE MANAGEMENT

Part 5 of the *BIZBOK® Guide* provides the foundational infrastructure for organizing business architecture artifacts, disseminating business architecture artifacts and perspectives, and sharing and exchanging business architecture information and artifacts across various tools and technologies.

Part 5 – Section Overview

Businesses typically begin their business architecture mapping work using spreadsheets, simple drawing tools, and even word processing tools. These desktop-based tools work as a starting point, but become cumbersome as the depth of mapping increases and the breadth of artifacts grows. Consider that a mature capability map created using such drawing tools often requires days to modify if a significant realignment of capabilities occurs.

In addition, a capability / value stream cross-mapping is achievable in a spreadsheet tool, but this often requires extensive custom programming in the tool. The addition of a third artifact type, such as stakeholder or initiative, would be impractical to craft, more difficult to maintain, and not serve as an effective tool for disseminating business architecture blueprints and information in general. *BIZBOK® Guide* part 5 is meant to address this challenge by providing a guide to tool usage and detailed background on the business architecture knowledgebase any viable tool must utilize.

Part 5 is comprised of two sections: section 5.1, The Business Architecture Knowledgebase, and section 5.2, Business Architecture Tooling Options.

Section 5.1: The Business Architecture Knowledgebase

The business architecture knowledgebase provides the foundational perspective for formalizing the definition, relationships, and management of business architecture artifacts. The knowledgebase is the centerpiece of the business architecture framework, introduced in part 1. The foundation of the knowledgebase is the business architecture metamodel. The metamodel identifies the artifacts and relationships that serve as the foundation for storing and automating a business architecture practice.

As a general rule, this metamodel would serve as the basis for automating the capture and dissemination of business architecture artifacts. For example, a tool based on the metamodel would allow business architects to capture and update capabilities, value streams, and

numerous other artifacts, cross-map them as required, generate blueprints on demand, and query the business architecture knowledgebase. These tasks could be done with an off-the-shelf tool or an in-house solution. Either way, the metamodel ensures that the automation of your business architecture enables the overall practice as discussed in the *BIZBOK® Guide*.

One final point on the knowledgebase is critical to tool selection and evaluation. Tool vendors should be able to show a business architecture tool selection team the underlying metamodel upon which that tool is based. If the metamodel of the tool looks little or nothing like the metamodel in section 5.1, then it would follow that this particular tool cannot support the approaches and related best practices as defined in the *BIZBOK® Guide*.

Section 5.2: Business Architecture Tooling Options

Section 5.2 outlines business architecture tooling concepts, options, and categories used to automate and enable business architecture artifact capture, blueprint production, query and reporting, metric analysis, business / IT architecture knowledge integration, and overall business architecture dissemination.

Section 5.2 provides insights into how different business architecture tool categories offer value at various levels of business architecture maturity. The section further discusses the evolution of tool usage, from simple drawing tools, to business architecture specialist tooling, and into the enterprise architecture automation. The section does not reference or recommend any specific tools or vendors, but rather offers general insights into options, based on where an enterprise is in the rollout lifecycle.

Using Part 5

The target audience for *BIZBOK® Guide* part 5 is individuals or teams responsible for managing the business architecture infrastructure. Generally speaking, this is not the average business architecture practitioner who is primarily a business person with a business focus, but rather the enterprise architect or modeling expert who would typically support the business-focused practitioner.

Note that there are multi-disciplined business architects who play the role of business-focused mapping expert and tool support, but this is the exception not the rule. Most business-oriented professionals would find the metamodel discussion a challenge to absorb and the tool discussion out of their realm of expertise. Section 5.2 does, however, explain the basics of tooling for teams in startup mode or even moving into an advanced deployment mode.

The typical section 5.1 user would be either a tool vendor seeking to standardize on an automated approach based on the *BIZBOK® Guide* and industry best practices. In-house support

teams could also use the knowledgebase metamodel for designing a custom solution. The typical section 5.2 user on the other hand would likely serve in the role of an enterprise architect or modeling support, seeking to establish a business architecture automation strategy.

Summary

Whether just starting out or building a mature practice, tooling and standards integration, aligned to best practices as continue to evolve in the *BIZBOK® Guide*, are essential to long-term viability of the business program. While it may not seem important in the early stages, consider that the business architecture ecosystem shown in the *BIZBOK® Guide* part 1 involves numerous perspectives and options to deliver many more variations on those perspectives. These different views must be easy-to-use ways, aligned to the needs of the business and issue at hand, and readily aligned to various scenarios and changes in the business architecture. This can only be achieved with the requisite level of automation, supported by an effective knowledgebase.

SECTION 5.1: THE BUSINESS ARCHITECTURE KNOWLEDGEBASE

Business Architecture Knowledgebase Overview

The business architecture knowledgebase (i.e., “knowledgebase”) is defined as:

“A combination of process, structure, and logical warehouse for capturing, assimilating, viewing, and sharing a wide range of information that can be used to inform business strategy, optimize business planning through execution, and guide transformation efforts.”

The knowledgebase can be leveraged as a foundation for ensuring business blueprints are consistent, complete, and aligned across the organization (vertically and horizontally). Whether the knowledgebase is informal (a few documents and spreadsheets) or formal (suggesting a sophisticated environment supported by a tool), it should be aligned and informed using a metamodel to ensure blueprints are consistent, complete, and enable best practices and formal disciplines.

A metamodel is defined as “an abstract syntax of a class of models” where a model is considered “a visual and/or data representation of a real-world thing or category of real-world things”.¹

While a knowledgebase may be seen as a means toward an end, it can provide an organic source of knowledge for building and maturing a business architecture practice. A knowledgebase may exist just long enough to serve the needs of an initiative, or it may be a part of the enterprise infrastructure and last through the lifetime of the enterprise and serve as a warehouse of artifacts for enabling business architecture. Designing and building a robust, formally defined business architecture knowledgebase starts with a metamodel, but requires ongoing maintenance, including dedicated resources and a disciplined culture.

A standard practice involves having a small group of business architects take responsibility for the care and feeding of the knowledgebase. These individuals govern the business architecture and its use across the organization and ensure that business architecture metadata is properly identified, catalogued, and captured in the knowledgebase. These individuals also ensure that the underlying metamodel supports a robust set of business architecture domains, relationships, and scenarios identified within the practice of business architecture. Business architecture governance in general is more fully described in the BIZBOK® Guide section 3.2. When defining the business architecture knowledgebase, the individuals tasked with governing that knowledgebase must consider the following:

1. **The overall business architecture objectives that the organization has established for the knowledgebase.** The approach, the time, and investment required to establish and maintain a knowledgebase must be weighed against the contribution it will make to achieve these objectives. The need to scour through a multitude of disjointed and overlapping business diagrams, spreadsheets, and narratives on project after project is a prime motivator for having this information in a formally structured, well aligned, and readily accessible knowledgebase. Ideally, a knowledgebase that is built atop a well-defined metamodel should address most of these concerns.
2. **The desire for an organization to shift from an ad hoc, simplistic business architecture environment to a sophisticated, highly leveraged business architecture environment.** Moving from an ad hoc business architecture approach to an approach that leverages a far-reaching, highly sophisticated set of formal disciplines that link various business architecture perspectives is a significant advancement in the practice. Capturing and leveraging a wide variety of perspectives is enabled by a sophisticated knowledgebase, supported by a robust metamodel. The ultimate level of sophistication envisions that business architecture can be used to trace strategy through execution and solution deployment across initiatives and business units.
3. **The ability of an organization to engage tooling to allow the knowledgebase to fully support and enable the business architecture.** Introduction of tools to support the automation of a knowledgebase needs to be done carefully since there are no simple solutions that meet all needs. Well-considered objectives and enabling a knowledgebase, supported by a formal metamodel, will aid an organization's tool selection process. Vendor product evaluation is simplified if the vendor provides a tool that is built on a robust metamodel that enables fundamental business architecture perspectives that align to industry best practices. Vendors and tools users can use the metamodel to ensure that the tool effectively supports the business architecture practice within the context of the knowledgebase. See *BIZBOK® Guide* section 5.2 for a more detailed discussion of business architecture tooling considerations.

Business Architecture Knowledgebase Principles

Whether formalized or not, every organization has something in place for capturing business architecture content. Organizations may not think about this organizing structure as a knowledgebase, but it exists explicitly or implicitly. Agreement and definition of basic concepts such as “capability” and “value stream” are essential to make sure that business professionals, planning teams, business analysts, business architects, and other stakeholders can communicate effectively. In the same way, relationships among core and extended domains represented within the business architecture knowledgebase should be agreed upon to allow participants to focus

on the business issues at hand rather than being distracted by terminology or differing interpretations of how various domains relate to each other. The combination of terms, definitions, and relationships enable the business architecture and captured business knowledge to be utilized effectively across a wide variety of business scenarios.

The following principles establish a good baseline of agreement for organizations as they begin to develop their business architecture knowledgebase.

1. The quality, effectiveness, and usefulness of the business architecture knowledgebase is commensurate with the overall alignment of the underlying metamodel with business architecture best practices and formal disciplines.
2. Business value, business scenarios, and business blueprint requirements dictate the level of effort and related investments made in the knowledgebase.
3. The knowledgebase is populated as appropriate to the business value it delivers and related strategies and projects it facilitates.
4. Information in the knowledgebase is open and available to all relevant professionals unless it violates security or privacy concerns.
5. Use of technology to support the knowledgebase is appropriate to the maturity of the business architecture efforts.

Business Architecture Knowledgebase Setup & Governance Guidelines

A business architecture knowledgebase is built upon a metamodel that defines the core set of domains, related concepts, definitions, and relationships among those domains and concepts. Organizations populate the knowledgebase with their own business-specific information. In order to do this, they must identify aspects of their business architecture, including value stream, capability, information, organization, strategy and related concepts that contribute to achieving practice-related objectives.

Ideally an organization will pursue this approach by adopting an existing set of best practice perspectives that drive a comprehensive set of concepts and relationships to be defined within the knowledgebase metamodel. A subset of the existing set of business architecture domains and related concepts may then be created to accommodate the immediate needs of the practice. However, the ideal situation is one in which all core and extended domains and basic relationships are in place and ready to be populated as a practice matures. Relationships to related disciplines, case management for example, may be deferred until required. The development of an effective business architecture knowledgebase is furthered by considering the following guidelines:

1. **Promote the capture and sharing of business architecture knowledge to support consistent communications and understanding across business practices.** This includes the ability to provide traceability across planning, strategy, and initiative execution to achieve desired outcomes to all relevant professionals. It further enables business architecture to align with complementary disciplines including BPM, customer experience design, case management, Lean Six Sigma, or business requirements analysis.
2. **Ensure that the knowledgebase and practice are informed by scenarios that cover the enterprise perspective and relevant local and regional perspectives.** This broader perspective ensures usability and value delivery that can scale to the organization's needs, which may need to have regional and global alignment.
3. **Establish and maintain a metamodel that encapsulates the core and extended domains and relationships.** There is recognition that organizations have many existing repositories of information that may not be appropriate to migrate into a new business architecture repository. Any business architecture repository must be able to coexist with and link to multiple existing repositories in order to provide an integrated view of the organization.
4. **Ensure the knowledgebase is populated properly with relevant business architecture content to support value delivery for business initiatives and related scenarios.** A knowledgebase is only as good as the currency and integrity of the business information being represented. This is true with business architecture information, particularly with the more volatile aspects such as strategy or initiative, which can evolve on a more fluid basis than core concepts like capability or value stream.
5. **Leverage technology to support the knowledgebase using a pragmatic approach.** This ensures that the technology being applied to matches the organization's ability and maturity to adopt the necessary discipline to apply the tools and process. An organization may start with a simplistic tool but upgrade as the sophistication of the practice evolves.
6. **Ensure that the knowledgebase can integrate and link information from various sources.** There is recognition that organizations have many existing repositories of information that may not be appropriate to migrate into a new business architecture repository. Any enterprise business architecture knowledgebase must be able to coexist with and link to multiple existing repositories in order to provide an integrated view of the organization.
7. **Ensure that the business architecture knowledgebase can provide multiple business**

- perspectives.** The business architecture knowledgebase should be able to be used to pursue any number of different business objectives or scenarios. These objectives can represent a wide variety of perspectives within an organization all of which may be equally valid. In order to provide a holistic view of an organization it is essential that the business architecture reference model not embed any particular perspective that would restrict its ability to support other perspectives, including, for example, an explicit business model that is likely to change often over time.
8. **Ensure that elements in the business architecture knowledgebase are not restricted to any single aspect of the business architecture framework.** This guideline addresses a core issue in every organization; many organizations have their own “lexicon”, which has been assembled through a combination of sources (internal and external). The knowledgebase needs to support or be reconciled with the semantics that exist within a given organization. For example, business unit structure and names would differ in a government agency from those found in a corporation. The underlying metamodel helps align these semantics through a flexible modeling paradigm that reflects those perspectives.

Business Architecture Metamodel

The business architecture metamodel provides the foundation for managing information within the business architecture knowledgebase. This section discusses business architecture domain categories, metamodel relationships and structure, and building and using the knowledgebase.

Business Architecture Domain Categories

The business architecture metamodel is built upon a set of core and extended business architecture domains and relationships among those domains. The *BIZBOK® Guide* provides the basis for these domain terms and definitions. The table in figure 5.1.1 represents a snapshot of the domain categories and domain elements contained within those domains that served as the basis for defining the metamodel that serves as the foundation for the business architecture knowledgebase.

Entity	Description
Business Unit	A logical element or segment of a company (such as accounting, production, marketing) representing a specific business function, and a definite place on the organizational chart, under the domain of a manager. A business unit may include departments, divisions, or related functional areas as well as external partners that deliver capabilities essential to the functioning of the business ecosystem.
Capability	A particular ability or capacity that a business may possess or exchange to achieve a specific purpose or outcome.
Information Concept	The way to represent business terms and semantics within the context of business architecture.
Initiative	A course of action that is being executed or has been selected for execution.
Objective	A quantitative, measurable result that defines strategy.
Organization	An organization is a social unit of people, systematically structured and managed to meet a need or to pursue collective goals on a continuing basis.
Outcome	An end result or final product that is a consequence of an event, action, or a series of events/actions. In this context, outcome is produced by capability.
Policy	A course or principle of action adopted or proposed by a government, party, business, or individual
Product	The overall experience provided by the combination of goods and services to satisfy the customer's needs.
Stakeholder	An internal or external individual or organization with a vested interest in achieving value through a particular outcome.
Strategy	The pattern or plan that integrates an organization's major goals, policies and action sequences into a cohesive whole.
Value Item	The judgment of worth, made by an individual or organization, attached to something tangible or intangible and attained in the course of a particular interaction with one or more other parties.
Value Proposition	An innovation, service, or feature intended to make a company, product, or service attractive to customers or related stakeholders.
Value Stream Stage	A distinct, identifiable phase or step within a value stream that has a unique name, entrance criteria, exit criteria, and identifiable participating stakeholder(s).
Value Stream	An end-to-end collection of activities that create a result for a customer, who may be the ultimate customer or an internal end-user of the value stream.

Figure 5.1.1: Business Architecture Metamodel Domain Terms & Descriptions

The terms and descriptions defined in figure 5.1.1 are defined in the *BIZBOK® Guide* for the corresponding discipline (e.g., capability is defined in Capability Mapping section 2.2) and in Appendix A: Glossary. The *BIZBOK® Guide* establishes these foundational terms and aligns them through an evolving set of disciplines and practices.

Core business architecture domains, as defined in part 1, include capability, value stream, organization, and information. Figure 5.1.1 incorporates these core domains along with extended

domains that include strategy, policy, initiative, stakeholder, and product. Certain domains are represented in more detail. For example, organization includes business unit, strategy includes objective, and value stream includes value stream stage, value item, and value proposition.

Metamodel concepts and categories will be expanded as more aspects of business architecture and related disciplines, such as business requirements analysis, are incorporated. The *BIZBOK® Guide* defines these related concepts and relationships in the respective sections in which they are defined. Future metamodel representations will expand to reflect those relationships.

Business Architecture Metamodel Definition

The relationships among business architecture domain categories, like the domain categories themselves, are derived from business architecture best practices, as reflected in the *BIZBOK® Guide*. These relationships are represented in the metamodel snapshot in figure 5.1.2.

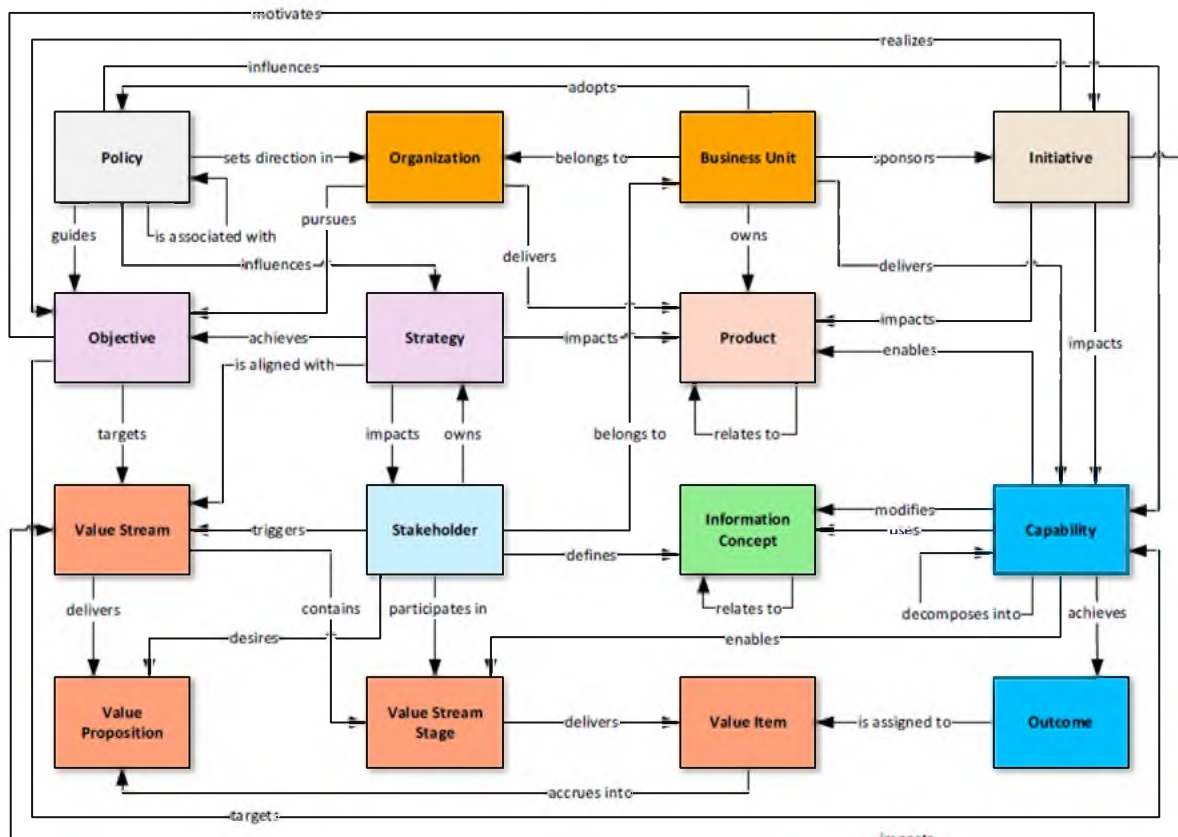


Figure 5.1.2: Conceptual View of Business Architecture Concepts and Relationships

Figure 5.1.2 provides a rendering that offers business architecture practitioners with a solid understanding of how to connect certain business concepts within a knowledgebase in order to

support best practices and disciplines. These simple relationships shown in figure 5.1.2 are outlined in and derived from *BIZBOK® Guide* sections 2.1 through 2.9. Additional relationships to related disciplines are defined in selected sections within *BIZBOK® Guide* part 3.

Figure 5.1.2 is a summary perspective of the business architecture metamodel. Detailed “snapshots” of portions of the metamodel shown in figure 5.1.2, where one or more entities are shown to depict the deeper set of relationships and terms captured and defined in the *BIZBOK® Guide*, have been defined by the Business Architecture Guild’s metamodel team. The fully detailed metamodel depicts linkages to related disciplines as represented within the *BIZBOK® Guide*. Appendix B.4 provides access to additional metamodel views.

Consider some of the relationships rendered in figure 5.1.2 and how they tie back to business architecture mapping and usage disciplines. The relationships defined in this metamodel support powerful business relationship perspectives that include:

- Strategy achieves an objective
- Strategy impacts value streams and capabilities
- Business units deliver capabilities
- Capabilities use and modify information concepts
- Stakeholders trigger value streams and participate in value stream stages
- Value streams contain value stream stages
- Value stream stages are enabled by capabilities
- Initiatives impact value streams and capabilities
- Products are owned by business units and enabled by capabilities

The above domains and relationships inherently exist in most all organizations, across all sectors including the public sector and not-for-profits, and form the basis for business planning, issue analysis and resolution, and solution deployment. The metamodel simply formalizes these perspectives as a basis for formulating and realizing business strategies. In order for this to occur, the knowledgebase and underlying metamodel must reflect these inherent practice disciplines. Domain relationships grew out of formal business architecture disciplines and best practices. As practices evolve, including scenario evolution and alignment to various related disciplines, the metamodel will continue to further the evolution and expansion of these practices.

Many organizations ignore formalization of these conceptual domain categories for too long, creating a hodgepodge of business architecture artifacts in various desktop tools with no ability to relate the information or interpret in high value ways. There is real value in formalizing the metamodel as part of launching a business architecture practice within the organization. It creates alignment around the key terms used by the organization leadership and helps everyone

in the organization understand the relationships and importance of embracing the disciplines underlying business architecture.

A comprehensive, detailed perspective on the business architecture metamodel may be found on the Business Architecture Guild® website, under the white paper section. Just look for The Business Architecture Metamodel Guide v2.1.

Metamodel Disclaimers & Context

Individual *BIZBOK® Guide* sections in parts 2 and 3 define detailed relationships among various business architecture domains as well as related disciplines. Metamodel views, along with additional levels of detail, will be presented in future versions of the *BIZBOK® Guide* and other Business Architecture Guild®-produced content. The evolution of the metamodel and sharing of results will occur based on the work of the Business Architecture Guild's metamodel team and related industry standards work underway and supported by that team. The eventual industry standard metamodel will provide tool vendors and practitioners a foundation for representing business architecture environments in a formal, standardized perspective.

Additional expansion of the metamodel will also reflect associations to IT architecture as well as interdisciplinary practices. Note that business architecture/IT architecture cross-mappings defined in *BIZBOK® Guide* part 6 provide a foundation for the full spectrum of business/IT transformation.

Constructing the Business Architecture Knowledgebase

The business architecture knowledgebase may reside in a database, desktop tool such as MS Access, in a business architecture-specific tool, or in a larger enterprise architecture tool. Some practitioners even fit portions of the knowledgebase into spreadsheet tools. Depending on your tool or tools of choice, your efforts to establish the knowledgebase will vary.

For example, if you create your own tool on top of a database, you will have to use the metamodel to craft a relational data model that you can deploy and populate with business architecture artifacts. Of course, this is probably the most challenging approach. Another option is using tools that align to the metamodel and are seeking to align continuously to best practices as they evolve.

Tools can fall into various categories but as long as the tool's metamodel can be customized to support the domain definitions and relationships defined in figures 5.1.1 and 5.1.2, then the tool can support your practice. This assumes that the tool has the ability to import and report on business architecture artifacts. More tooling information is discussed in section 5.2.

Using the Metamodel-based Knowledgebase

The domain mapping shown in figure 5.1.2 ties together business strategy and remaining business architecture concepts needed to assess the impacts of a strategy, further inform a given strategy, and tie strategy to specific areas of the business for investment purposes. The metamodel in figure 5.1.2 is useful for visualizing and exercising a wide range of business scenarios that rely on the collective set of relationships among business architecture domains within that figure.

One of the most common uses of the metamodel is for conducting impact analysis to understand cause and effect (causality) or for planning change. For example, impact analysis on capabilities and value streams is a major focal point for this mapping perspective. Capability is one, but not the only, focal point for tracking strategy impacts across a business. Another example, involves tracing the strategic impacts on capability from an objective and tactic, which are tied to a given capability. The capability then serves as a gateway to highlighting impacts on value streams, business information, business unit, and initiative.

Alternatively, an objective may impact a value stream, which then becomes the focal point for issue analysis and identifying related capabilities, which in turn may require investment to improve stakeholder value delivery. This knowledgebase enabled analysis is important because it provides insights into how to meet significant and far-reaching objectives and strategies that require examining business-wide impacts, failure points, transformation perspectives, and related priorities.

Summary

In summary, a small subset of business architects will be responsible for ensuring that the information collected to assemble the business architecture is easy to define, store, relate, and access in a variety of ways. While this may involve a simple database or a sophisticated tool, it is important to understand these concepts to create a long-term, robust baseline for the business architecture. The business architecture knowledgebase serves in this capacity and allows organizations to establish a vehicle for encapsulating views of the business that provide transparency and traceability from strategy and planning through requirements analysis, initiatives, and solution deployment.

As previously noted, the metamodel perspective being shared herein will expand over time. Look for ongoing work in progress in this area from the Business Architecture Guild, various vendors enabling the knowledgebase and related metamodel, and the international standards community seeking to formalize a business architecture metamodel.

¹ The Business Architecture Metamodel Guide v2.1, Business Architecture Guild®, October 2023, https://cdn.vmaws.com/www.businessarchitectureguild.org/resource/resmgr/whitepapers/business_architecture_metamo.pdf.

SECTION 5.2: BUSINESS ARCHITECTURE TOOLING OPTIONS

This section discusses tool concepts and categories used to automate and enable business architecture. Based on the current state of the practice as outlined in the *BIZBOK® Guide*, the following content is a list of tool criteria for automating the capture, representation, communication, and sharing of business architecture. In addition, it also provides an overview of three tool categories that have emerged to support business architecture.

Business Architecture Tool Criteria

When identifying a basic set of tooling criteria for a business architecture tool, it is important to consider four main feature categories, including the ability to capture, manage, communicate, and share the business architecture. Business architecture tool criteria categories breakdown as follows.

Capture

- Facilities to load business architecture capabilities, value representations, information, and business units
- Ability to represent additional concepts, including objectives, initiatives, stakeholders, products and services, and external third parties
- Ability to view loaded artifacts in list, graphical, or other formats
- Standard import facility using standards based and other industry input formats
- Ability to support the definition of and relationships among business architecture representations, such as capability to business unit or capability to value stream stage
- Ability to input data via application programming interfaces (APIs)

Manage

- Robust repository for storing, cross-referencing, and accessing business architecture
- Metamodel based repository that reflects industry standard relationships where available and practice-based relationships where appropriate
- Ability to access the tool by authorized administrators and users that enables version control and historical management of metadata
- Support for multiple simultaneous users and the ability to allow multiple streams of work to be managed and synchronized

Communicate

- Ability to generate standardized views of capability, organization, information, and value maps
- Ability to create customized or extended business architecture mapping views
- Enabling of ad hoc views based on usage requirements

Share

- Ability to export webpage views of business architecture blueprints and related information
- Business architecture export facility that uses industry standard exchange formats
- Open interchange formats as necessitated by evolution of data exchanges standards and protocols
- Export of views into standard tooling (e.g., Microsoft® Office) in a manner that enables further customization of views within these tools

The above criteria represent an ideal view of business architecture tooling considerations; finding a tool that addresses the complete list can be challenging. Business architecture teams should, however, consider these criteria from an aggregate perspective when examining tool options.

Current State of Tooling Options

The spectrum of business architecture tool options is broad when it comes to evaluating various technologies against the above tool criteria. There are a number of options that offer certain features and functions but not others. These options fall into three categories — desktop tools, high-end enterprise architecture tools, and lightweight business architecture tools.

Category One: Desktop Tools

The path of least resistance involves using desktop tools because they are readily available and most people know how to use them. Consider the following desktop deployments that organizations have used to package their business architectures.

Word Processing Tools: Word processing documents are a common starting point for building a capability map, often in the form of a simple hierarchical list. These lists are easy to create and change, but lack the visual presentation required to communicate the depth and breadth of the business architecture.

Drawing Tools: Drawing tools are used for a wide range of blueprinting exercises, including the creation of capability, organization, information, and value maps. These tools are easy to use and

available to most practitioners. The downside is that the drawings can take a good deal of time to generate and are difficult to maintain when changes ripple through capability, value, and organization maps.

Spreadsheets: Spreadsheets are used for business architecture because they are easily loaded, support multiple views, and can be programmed to support certain mappings. One practitioner created a Microsoft® Excel spreadsheet that depicted the capability map, including a heat map that was decomposed across subsequent worksheets. This spreadsheet included value streams and cross references between capabilities and value stream stages. Yet adding any additional content to the spreadsheet was almost impossible because an Excel spreadsheet cannot represent multidimensional relationships, unlike a database or repository. In addition, the views were difficult to trace up and down because capability decompositions were spread across worksheets. This highly sophisticated Excel implementation served to highlight spreadsheet limitations for business architecture mapping.

Microsoft® Access: Database applications such as Access can be extensively customized to store more complex relationships, incorporate custom front ends for data entry, and produce standardized and custom blueprints. Limitations exist in terms of flexibility because most of these tools require further customization to produce additional standardized or custom blueprints. In addition, importing and exporting metadata from and to other tools requires custom work. In the end, Access, or a similar tool, takes significant programming time and upkeep to maintain. Unless a company wants to get into the tool business, this is not desirable long term.

Category Two: High-end Enterprise Architecture Tools

For a number of years, enterprise architects have been using certain high-end, enterprise architecture tools. Many of these tools were designed to store a complete view of the business and IT architecture. They offer almost endless flexibility in terms of how this content is stored and number of relationship options. These tools tend to be expensive and require significant investment and resources to manage and deploy. Upgrades to a new release can be costly and time consuming. Metamodel customization for business architecture can be challenging because most of these tools were not designed for business architecture, leaving many customers on their own in terms of representing capability, organization, information, and value relationships.

While the above factors make using these tools a challenge, certain tools additionally lack the flexibility to produce basic business architecture blueprints, with ad hoc and custom blueprinting even more of a challenge. Other tools offer certain business architecture “add on” features that the customer can license. The benefit of these tools is that they allow the business architecture to be tied into other architectural views, particularly IT architecture. This aspect is particularly

important for organizations moving into the business / IT architecture alignment stage of a transformation effort. Yet the cost, lack of reporting flexibility, and customization requirements make using these tools for business architecture a challenge.

Category Three: Lightweight Business Architecture Tools

Lightweight business architecture tools are emerging that can help bridge the gap between desktop tools and high-end enterprise architecture tools. These tools provide business architecture capture options, offer standardized business architecture blueprints, use standard or practice-based metamodels, offer metadata import/export options, and frequently offer cloud-based solutions. As a general rule, these tools augment high-end enterprise architecture tools while providing a level of sophistication and ease of use that exceeds desktop tools.

Business Architecture Tool Selection

When selecting a business architecture tool, keep in mind that tool selection is not an either/or issue. Different tools make sense for different purposes and maturity of the effort. One tool category can augment weaknesses in a second tool category. Consider the following:

- Initial building efforts may use Microsoft® Word or Excel to build out the business architecture
- Excel representations provide flexibility in initiating the business architecture and can be used to export those representations into an enterprise architecture tool
- Drawing tools can be used to enhance the limitations of Excel or the high-end enterprise architecture tools as well as creating custom blueprints
- Lightweight business architecture tools can co-exist with high-end enterprise architecture tools because the tools essentially serve different purposes

Business architecture is not about tools, and tools should not overwhelm the efforts. The business architecture tool should not dictate how to manage or represent the business architecture. The tool enables the evolution and representation of the business architecture selected by the business architecture team. Finally, avoid letting a tool dictate timing, approach, and quality of the business architecture deployment.

To assist business architecture practitioners and decision makers in the evaluation and selection of a business architecture tool, the Business Architecture Guild® developed the Business Architecture Tool Evaluator™ (see Appendix B.7). The Tool Evaluator is based on the criteria illustrated in this chapter and includes a scoring/weighting mechanism to help individual organizations assess features and functions versus the cost of different solutions — depending on their particular requirements.

PART 6: BUSINESS ARCHITECTURE AND IT ARCHITECTURE ALIGNMENT

Up until this point, the *BIZBOK® Guide* has focused on business architecture definition and its use in relation to certain business disciplines. Part 6 expands the use of business architecture with a focus on achieving business/IT architecture alignment. Business/IT architecture alignment is “a state in which automated systems and data architectures fully enable business strategy, business capabilities, and stakeholder value”. “Appropriately deployed” is defined by how well the current state IT architecture reflects and enables the achievement of an organization’s vision, business strategy, and related priorities – as viewed through the lens of business architecture.

Business/IT architecture transformation is the means of achieving alignment and the basis for enabling business-driven, IT investments to meet the demand of a variety of business and IT scenarios. Transformation strategies are not fashioned in a vacuum but rather are the outgrowth of viewing business strategies and objectives through the lens of business architecture.

BIZBOK® Guide part 6 sections detail a number of business architecture and IT architecture alignment and transformation concepts and reflect the latest industry thinking on how business architecture impacts, influences, and enables IT architecture management, alignment, and transformation. Part 6 sections include:

- Section 6.1: Business Architecture and IT Architecture Alignment Overview
- Section 6.2: Business Architecture and Enterprise Architecture Framework Alignment
- Section 6.3: Business Architecture and Systems Development Lifecycle
- Section 6.4: Business Architecture and Application Portfolio Management
- Section 6.5: Business Architecture and Service-Oriented Architecture Alignment
- Section 6.6: Business Architecture and Data Architecture Alignment
- Section 6.7: Business Architecture and Solution Architecture
- Section 6.8: Business Architecture and IT Architecture Transformation

Each section in part 6 leverages formal disciplines derived from various blueprinting and mapping discussions covered in *BIZBOK® Guide* part 2. For example, the enterprise architecture and business architecture section views business architecture against the backdrop of common enterprise architecture frameworks.

In addition, application portfolio management is dramatically enriched by incorporating various

capability and value stream views into the equation, which is particularly relevant to organizations interested in bringing a business perspective to application portfolio planning, management, and investment.

The section on business architecture and service-oriented architecture alignment discusses approaches for leveraging business architecture as a means of establishing and improving software service. The section on business architecture and data architecture provides insights into using information concepts to derive and refine data architecture. These topics naturally segue into a discussion of how to align business architecture and solution architecture. Lastly, the section on business/IT architecture transformation ties together various aspects of business/IT architecture alignment to define an overview and approaches for business-driven, business/IT transformation.

Where appropriate, each of the above topics leverages the business architecture practice-based approaches detailed in *BIZBOK® Guide* part 3. As various business/IT architecture alignment topics expand through practice, the future *BIZBOK® Guide* versions will expand to reflect these advancements.

SECTION 6.1: BUSINESS ARCHITECTURE AND IT ARCHITECTURE ALIGNMENT OVERVIEW

Business/IT architecture alignment is the fundamental link that enables business strategy, vision, design, and requirements to be translated into IT architectural concepts and deployable solutions. Business architecture has the ability to serve in this capacity because capabilities, value streams, and information concepts have direct, traceable, and unambiguous relationships to IT application and data architecture. As a result, any concrete objective or requirement associated with a given aspect of the business architecture has a corollary relationship and predictable impact on IT architecture. Section 6.1 provides an overview of these concepts, while the remainder of part 6 expands on business/IT architecture alignment in other areas.

IT Strategy vs. Architecture Alignment

It is important to clarify the alignment between the concept of aligning IT architecture to business architecture and the topic of IT strategy, which unfortunately is often viewed in a silo, outside the overall business strategy. IT is simply viewed as another business unit and IT strategy should, therefore, be fully integrated with business strategy. As such, IT asset planning, supply chain analysis, outsourcing, onboarding, and investment modeling should be driven by and align with strategic business plans as discussed in *BIZBOK® Guide* section 2.1. In other words, organizations should seek to establish integrated business/IT architecture transformation plans and related investments based on business-driven strategy. Business/IT architecture alignment provides the means to interpret and deliver on such a strategy.

For example, if the business chooses to streamline software asset acquisition, the focus would be on a value stream called Onboard Supplier as well as capabilities such as Partner Management, Asset Management, and Agreement Management. Any strategic objectives associated with this value stream and related capabilities would leverage the same strategy mapping concepts outlined in section 2.1. As a rule, this is likely to provide IT with a more holistic approach to strategic planning that aligns more effectively with the business as a whole. In turn, the business benefits from having a shared strategy for improving supply chain management that benefits all business units including IT.

IT architecture impacts resulting from a given set of business objectives would engage and leverage business architecture/IT architecture alignment as required. This section of the *BIZBOK® Guide*, therefore, comes into play when strategic business objectives impact IT architecture. The approaches outlined in this section enable IT to leverage strategic impacts on the business architecture to drive IT architecture planning, decision making, evolution, and transformation as appropriate to a given business strategy.

IT Architecture Overview

Before discussing business/IT architecture alignment, a brief overview of IT architecture is necessary. IT architecture is defined as “blueprints of the technologies, data structures, and applications that collectively comprise the information technology (IT) environment of an enterprise”.¹ Figure 6.1.1 depicts these three aspects of IT architecture and also includes a fourth and often ignored category: “shadow systems”.

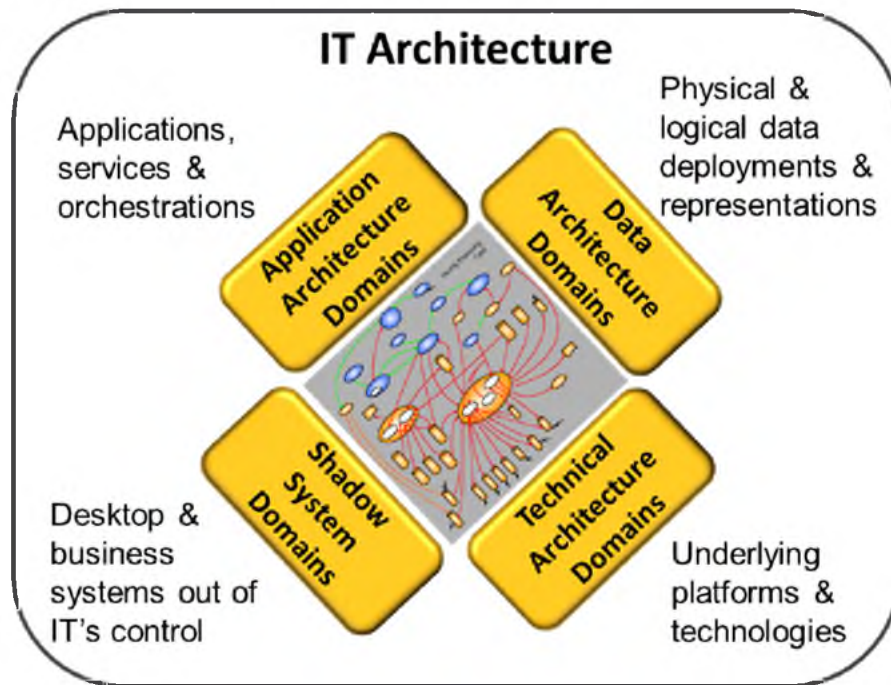


Figure 6.1.1: IT Architecture Overview

The four aspects of IT architecture shown in figure 6.1.1 collectively enable and automate business capabilities, value streams, and information concepts. Consider the following definitions for each of these four IT architecture domains.

1. Data architecture represents integration of value specifications for qualitative and quantitative variables and their alignment with business architecture and strategy.²
2. Application architecture represents the specification and structural partitioning of technology-based automation into business logic, user experience, and data perspectives as an enabler of business architecture and strategy.³
3. Technical architecture represents the logical and physical interconnection of infrastructure elements to enable the deployment and management of data architecture, application architecture, business architecture, and strategy.⁴

4. Shadow systems lie beyond the line of sight of IT and create a fourth category of automation deployed by the business and frequently omitted from representations of IT architecture.

The term “solution architecture” is often used to encompass a cross-section of architectures that typically includes a combination of business, application, data, and technical architecture. Aligning business architecture and IT architecture requires a clear distinction of the four architectural aspects depicted in figure 6.1.1; therefore, it is critical to use these terms instead of the more generalized term solution architecture.

Application Architecture

The application architecture is the most visible aspect of IT architecture to the business and is comprised of in-house application software and services, third-party software, and external systems such as found within cloud implementations. Application systems automate the business capabilities in a given enterprise. As important as they are, older application systems rarely provide the ideal level of support for the business because they were designed and deployed in an earlier era; the businesses and the understanding of how to automate those businesses have matured significantly since that time.

IT has matured as well, seeking to deploy the concept of reusable, automated business services that can be leveraged broadly across any number of front-end, process automation, case management, and other automation environments. In this maturing view of IT deployment, workflow rules are externalized and decoupled from application deployments, providing improved agility for modifying state transition and workflow automation. Application portfolio management, discussed in the *BIZBOK® Guide* section 6.4, provides insights into managing application architecture. Section 6.5 provides additional application architecture insights from a service-oriented architecture perspective.

Data Architecture

The data architecture includes the formal and informal representations of the data used by the business. Representations can vary, but often include various types of conceptual, logical, and physical data models. Current state data representations can also be represented by additional drawings, data layouts, or physical deployment views. Data architecture is often the centerpiece of business/IT alignment activity because information, as represented by and derived from data, is such an essential aspect of the business architecture. Data architecture is an important component in a robust IT architecture because it formalizes the management of business information and enables deployment of agile application architecture.

The *BIZBOK® Guide* section 6.6 discusses how to evolve data architectures from information

concepts. This approach ensures that data architecture reflects business information so that rapid, flexible access to information is established as the norm in organizations and not as the exception. Flexible access enables more effective customer management, financial reporting, market analysis, competitive analysis, and timely delivery of products and services to customers and other key stakeholders.

Shadow Systems

The term “shadow system” is used to mean *any* business-owned, business-maintained technology not under IT stewardship. Desktop and other business systems represent business-developed software that typically resides on desktop environments, hidden from IT in the “shadows” of the business. Shadow systems support numerous critical business capabilities across an enterprise. Consider executive reports, business intelligence, or operational roles processed and supported by Microsoft® Excel, Microsoft® Access, or more sophisticated tools. These spreadsheets, databases, and other programming tools augment manual tasks and limitations in data and application architectures.

Shadow systems often represent crucial automations that should be considered in a business/IT alignment effort. In essence, shadow systems informally automate portions of the application architecture and aspects of technical architecture that are beyond IT’s line of sight. Data often resides within shadow systems that do not exist within the formal view of data architecture. Shadow systems can be thought of as the opaque application and data architectures, often resulting in shadow architectures that are misaligned with formal data and application architectures. While no one would argue that spreadsheets and related desktop tools deliver business value, extensive proliferation of shadow systems can result in increased technical debt,⁵ creating long-term problems and reducing the ability to deliver effective business solutions to the enterprise.

Technical Architecture

Technical architecture can be thought of as the wiring and plumbing that runs through a building, ship, or city. Business professionals, however, unless they build and maintain the technical architecture, typically have a limited interest in that infrastructure. The technical architecture enables data architecture, application architecture, and shadow systems that directly service business professionals; these last three aspects of IT architecture are the focal point for business/IT alignment.

One important point regarding technical architecture is where it fits in business/IT architecture alignment. While businesses may be enabled or constrained by strengths and weaknesses within application and data architectures, they cannot be transformed in a vacuum when data and

application architecture do not align to the business architecture and business vision. The technical architecture may be old, fragile, or even obsolete, but the application and data architectures could still be enabling the business in acceptable ways. Conversely, modern languages and platforms may be in place, but application and data architectures may not support current or strategic application and data architectures.

Therefore, technical architecture, while important, is a secondary consideration in business-driven, business/IT architecture alignment. In other words, if improvements or transformation requirements can be established from an application and data architecture perspective, IT can apply best practices to define and implement a technical architecture that enables the appropriate application and data architectures. As a result, IT technical architecture is not addressed directly within the *BIZBOK® Guide*.

Business/IT Architecture Alignment Benefits

Businesses benefit from business/IT architecture mapping and alignment in a number of ways, including:

- Business vision and related objectives can be interpreted and addressed effectively through the formal mapping between business architecture and IT architecture
- Business-driven planning can be aligned more effectively to IT strategy through business/IT architecture alignment approaches
- Business/IT alignment enables more effective planning and funding of IT projects
- Business architecture provides a framework for expedited, streamlined business design approaches that expedite delivery of business value
- Exposing current state IT architecture that impact business weaknesses, gaps, and risks provides a framework for more effective, highly focused requirements analysis
- Synchronized business/IT alignment enables business-driven roadmaps that allow the business to drive business/IT transformation efforts
- Business/IT alignment provides a framework for effective application and data architecture management

A lack of business architecture results in a lack of clarity and visibility as to how IT architecture must evolve to deliver a wide range of business value. The above benefits can be achieved by adhering to the principles and guidelines in this section and subsequent part 6 sections.

Business/IT Architecture Alignment Principles

An overriding set of principles guide business/IT architecture alignment. These principles are as follows:

1. Business can articulate visions, objectives, and priorities in terms of the impact on the business architecture.
2. Business architecture has a direct, unambiguous relationship to IT architecture.
3. Business capabilities have a direct and defined relationship to applications and deployable business services.
4. Value streams have a direct and defined relationship to automations of business processes, case management, user interfaces, and similar business design concepts.
5. Information concepts have a direct and defined relationship to data definitions within the data architecture.
6. Business impacts on the business architecture can be translated into architectural impacts and requirements for the IT architecture.
7. Business architecture provides simplified business design-level views that can be translated into IT architecture design-level views.
8. Business/IT architecture mapping simplifies the ability to synchronize business/IT transformation.

Principle-oriented business/IT architecture alignment allows architects, planners, and solution delivery teams a great degree of latitude in how they execute business/IT architecture alignment initiatives.

Business/IT Architecture Mapping

Ensuring that the business strategy drives IT architecture transformation requires synchronized business/IT architecture alignment. Business/IT architecture alignment requires a clear mapping between business and IT architecture. Once the business architecture has been established, the business can identify weaknesses and strengths of certain capabilities and value streams, identify specific impacts of various business strategies, and articulate business priorities using the business architecture. An example of the concept of identifying weaknesses and target state vision through business architecture is shown in the *BIZBOK® Guide* section 2.4.

Mapping Concepts Overview

Business/IT architecture mapping focuses on three of the four foundational business architecture concepts: information, value, and capability. While organization plays a role in planning, funding, and enabling alignment, it does not have a direct corollary within IT architecture. Business unit mapping does come into play from a portfolio planning perspective, as outlined in *BIZBOK® Guide* section 6.4, but the baseline for IT architecture analysis remains capability, value stream, and information. Figure 6.1.2 summarizes business/IT architecture mappings at a high level.

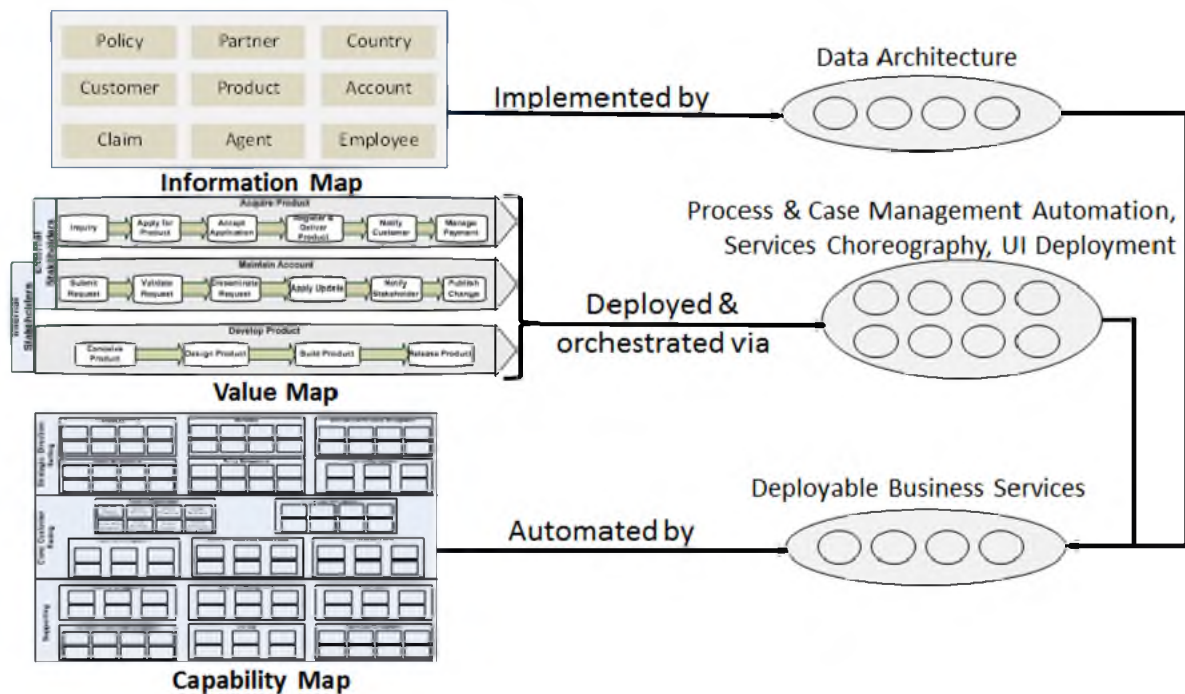


Figure 6.1.2: Business Architecture / IT Architecture Mapping Concepts

The three business architecture categories shown on the left side of figure 6.1.2 represent information-, value-, and capability-based views of the business. Each of these views maps to IT architecture views on the right side of figure 6.1.2.

Information maps directly to the data architecture. A robust set of business information definitions, as discussed in the *BIZBOK® Guide* section 2.3, provides an excellent baseline for establishing business-driven data architecture. While the business information map provides a starting point, data architects would derive additional representations and relationships for data from a variety of other sources. The importance of information-to-data mapping is that it provides a foundation of business semantics and basic relationship concepts that equip data architects with concise, agreed-upon building blocks for the data architecture.

The second mapping category, which runs across the middle of figure 6.1.2, is the value stream mapping to business process, case management, and user interface automations. Value streams provide a framework for envisioning how the business can establish innovative solutions for managing stakeholder interaction and automation to enable a case to visibly transition across and among value streams.

For example, marketing may want to ensure that the customer and customer support personnel

have the same views of an account, that account status is visible to a customer or service person at any point in time, and that internal and external user views are identical, with the exception of authorization to access certain views. This vision, articulated through value streams, provides the business and IT significant latitude when designing automation solutions. While not explicitly mentioned, value streams can also be used to recast the future of any shadow systems that may currently be enabling process automation.

Capability mapping, highlighted along the bottom of figure 6.1.2, provides a basis for transforming application architecture, including the establishment and use of new automated business services — as shown to the right. Capabilities can be mapped directly to current state application architecture, which allows a business to determine where a given capability is automated, if it is automated consistently, and what type of strategy should be employed to address these and related challenges. Where no mapping to IT automation exists, it is a sign of a capability that has no automation or may be automated through shadow systems, which can also be incorporated into this analysis.

Capability mapping to application architecture is aided by the fact that capabilities are based on clearly defined business objects such as agreement, customer, partner, route, claim, human resource, plan, and so on. Application architects ideally identify objects accessed or updated by a given application, sub-system, service, or other application architecture perspective. Once objects are identified, it is a matter of identifying the corresponding capabilities that align to those objects and establishing the association where a capability is automated by an application.

Capability to application architecture mapping provides business and IT with a concise set of conceptual business/IT mappings that can be driven down to a significant degree of detail and, as a result, provide insights into design, transformation, modernization, and automation options. And because value stream stages map to capabilities, as shown in figure 2.2.13 of section 2.2, and capabilities map to applications and services, automation, and transformation requirements can be clearly articulated from a value stream and a capability perspective. For example, if one or more value streams require consistent approaches to risk rating, risk rating capabilities can drive the specification of new service deployments and application architecture transformation requirements.

Business/IT Architecture Mapping Guidelines

Mapping guidelines offer practical advice to organizations that want to benefit from business/IT architecture alignment. These guidelines include the following:

1. Establish baseline capability, value, and information maps as discussed in the *BIZBOK® Guide* part 2.

2. Craft business strategy, business model interpretation, and business priorities in the context of their impact on the business architecture.
3. Use the business information map and related business objectives to craft target state data architecture or modify current state data architecture.
4. Use value stream priorities and related business designs to drive end-to-end process, case management, and user interface deployment designs.
5. Use capability map and related business objectives to identify current state application architecture strategies.
6. Use capability map to identify and specify target state services requirements.
7. Apply variations on the above guidelines based on specific situations, requirements, scenarios, and funding availability.

There are a number of variations to the above guidelines, with each business and scenario requiring a wide range of options that may be pursued. The important consideration is to ensure that business-driven business architecture, aligned to IT architecture, drives the funding and evolution of IT architecture requirements and deployments.

Business/IT Architecture Alignment Usage Scenarios

There are as many business/IT architecture usage scenarios as there are unique objectives and business requirements as well as specific deployed IT architectures. Consider just one example of a business/IT architecture alignment situation — a financial services firm has found that it is getting increasingly harder to:

- Support new financial fund models that the market is increasingly demanding
- Deploy certain new products that the application systems were never built to support
- Address new regional expansion requirements that place demands on individual applications that had to be addressed in externally developed systems or desktop solutions
- Align business information for executive reporting, competitive analysis, profitability analysis, and streamline deployment of new requirements.

In response, the business team crafted the business architecture and aligned business objectives to address the above challenges to that business architecture. The IT organization mapped the business architecture to the current state IT architecture and crafted a high-level target state data and services architecture as a basis for building a transformation strategy. The IT organization leveraged the business priorities, business/IT architecture mappings, and current

and target state IT architecture definitions to define a strategy to pursue a phased evolution of the current-state architecture.

The resulting transformation plan provided a clear roadmap as to how IT would support and achieve the business objectives specified by the business. Doing so enabled the business to get on board with funding the plan and providing the requisite sponsorship required to sustain a business/IT architecture deployment plan. The approach provided IT with a long-term direction it could leverage to incorporate new technologies, best practices, and modern design options, all while delivering business value to the organization.

Summary

There are numerous options when it comes to business/IT architecture alignment. The combination of information, value, and capability mapping across various aspects of IT architecture provide a new level of clarity in terms of business/IT communication, requirements, and option analysis. Additional specific business architecture to IT architecture mapping details, including expansion of the business architecture knowledgebase, are provided in *BIZBOK® Guide* section 6.4.

In the future, the *BIZBOK® Guide* will expand this discussion to further outline various options, more detailed mapping views, and various transformation scenarios that benefit from business/IT architecture mapping and alignment concepts.

¹ “Business Architecture: The Art & Practice of Business Transformation”, Ulrich, William and McWhorter, Neal, MK Press, 2010

² Source: Federation of Enterprise Architecture Professional Organizations (FEAPO), Taxonomy Working Group, Adopted January 14, 2017, www.feapo.org.

³ Ibid.

⁴ Ibid.

⁵ Steve McConnell - “Technical Debt refers to delayed technical work that is incurred when technical short cuts are taken, usually in pursuit of calendar-driven software schedules. Just like financial debt, some technical debts can serve valuable business purposes. Other technical debts are simply counterproductive.” Construx Software Builders, Inc.

SECTION 6.2: BUSINESS ARCHITECTURE AND ENTERPRISE ARCHITECTURE FRAMEWORK ALIGNMENT

This section discusses how business architecture aligns with enterprise architecture (EA) frameworks. The focus of this effort involves aligning the business architecture framework, defined in the *BIZBOK® Guide* part 1, with prevalent industry-standard enterprise architecture frameworks. This section includes a summary of the most well-known enterprise architecture frameworks, a mapping of business architecture concepts to each enterprise architecture framework, and guidelines for adapting enterprise architecture frameworks for business architecture purposes.

Why Align Business Architecture and Enterprise Architecture

Business architecture represents the architecture of a business (in the absence of any IT architecture), while enterprise architecture provides an overarching framework for both business and IT architecture. In practice, organizations should ensure that alignment exists to provide a coordinated perspective across business, data, application, and technical architectures that furthers a wider range of initiatives and investments.

Enterprise Architecture

EA is a widely practiced discipline for creating a collective understanding about an organization and furthering that organization's mission, goals, and practices. According to the Federation of Enterprise Architecture Professional Organizations (FEAPO), EA “represents the holistic planning, analysis, design, and implementation for the development and execution of strategy by applying principles and practices to guide organizations through the integration and interoperation of all other architecture domains.”¹

EA has a number of foundational concepts and domains. Business architecture is one of the architectural domains. Figure 6.2.1 depicts a commonly held view of EA. In this view, business architecture delivers a business perspective to data, application, technical, and solution architecture. Application architecture and data architecture automate capability, value stream, and information-related business perspectives. Solution architecture, which is considered to be initiative or portfolio-specific, embodies aspects of business, data, application, and technical architecture. The EA backdrop as shown in figure 6.2.1 is independent of any particular framework or methodology.

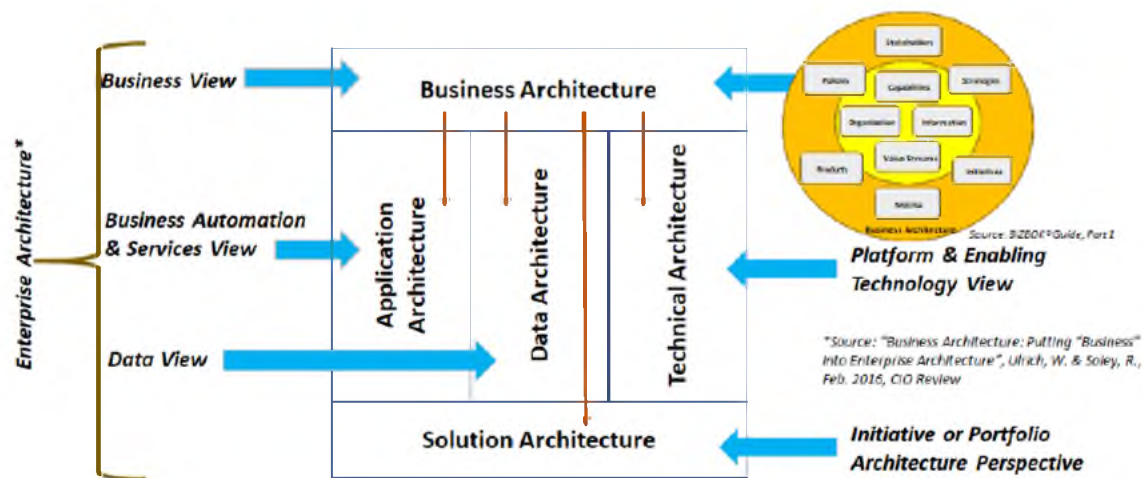


Figure 6.2.1: Enterprise Architecture Perspective²

Architectural Foundations

Architecture, in general, can be described via three perspectives: subject areas, artifacts, and methods. These perspectives ensure usability as well as serve as a focal point for integration as listed below.

1. **Subject Areas:** Describes architecture in terms of the topics or subjects that it covers. In general, each subject area can be decomposed into more detailed subject areas.
2. **Artifacts:** Describes architecture in terms of the blueprints being produced.
3. **Methods:** Describes architecture in terms of the activities performed by architects to produce the artifacts and deliver value specific to each subject area.

Enterprise Architecture Foundations

Business architecture practitioners apply various methods to produce artifacts or blueprints for business subject areas that can be used to leverage the planning and transformation of application, data, and technical architectures. Lack of a clear EA foundation, particularly from a business architecture perspective, can create confusion and complexity in terms of developing an overall architectural approach or outcome. While EA practitioners can mix and match methods and artifacts to best fit their individual circumstances, most EA approaches agree on including the four foundational domains:

- Business Architecture
- Data Architecture
- Application Architecture
- Technical Architecture

An important factor to consider is the scope of a particular architecture effort. This section examines two areas: an enterprise-level scope and an initiative-level scope. The content discussion that follows describes the subject areas, artifacts, and methods of each domain at a general level with more specific details provided in the EA Frameworks section that follows.

Business Architecture

The business architecture practitioner is concerned with defining the business such that strategies and goals are clearly articulated, management decisions are based on facts, transformations are focused on business priorities, and issues to be addressed are based on clarity and facts. From an EA perspective, another concern is specifying clear business intentions that can be supported by information technology (IT).

The business architecture practitioner helps the business achieve effective transformations and alignment, ensuring that those efforts are coordinated across business units so that different business units are not working at cross-purposes or duplicating efforts. The business architecture practitioner defines capabilities, value streams, and information maps to establish a common vocabulary, identifies important stakeholders, and defines the value-based, end-to-end interactions with those stakeholders using value streams. This effort establishes the foundation for applying business architecture to business planning and related initiatives. Next, the business architecture practitioner clarifies and formalizes business goals, strategies, and outcomes, then maps them to capabilities and value streams as targets for alignment. Finally, the business architecture practitioner defines tactics, organizational structures, and initiatives as ways to meet strategic goals. These outcomes are defined in the capability map, information map, value streams, strategy map, organization map, product map, initiative map, various cross-mappings, and business roadmaps.

At the initiative level, business architecture practitioners work with business analysts to align business requirements — established in an enterprise context — with systems implementations within single or across multiple business units. One approach involves using the value stream to frame operating model views, expressed as business process or event models. Business process and event models provide task and decision details for value streams which, in turn, are performed by business stakeholders. At the initiative level, the practitioner may also drive analysis down to the identification of service-oriented architecture (SOA) services.

Data Architecture

The data architect is concerned with providing a managed information environment for operational and transactional data as well as for transforming that data into information to support business analysis and reporting. At the enterprise level, the architect wants to provide a

consistent view and usage of operational data across multiple applications, and to rationalize data and information storage to minimize duplication and simplify access.

At the initiative level, the data architect is concerned with information that has a more limited scope. Access and utilization of the information is based on business rules, governed by security and privacy requirements for both the enterprise and the application. A data model describes the application-level information, which is likely to be different from (but related to) the common enterprise information model.

Application Architecture

The application architect is concerned with ensuring commonality across different applications and software services. At the enterprise level this means:

- Creating reference models and standards that specify a common structure or architectural style to promote the sharing of common responsibilities
- Using common services in a consistent fashion
- Supporting a common user interaction style and configuration mechanism
- Employing a standard technology platform
- Enabling common management
- Monitoring operations procedures

This effort is not done in an attempt to limit the creativity of application developers but rather to improve integration between applications, allow for sharing of common information, provide consistent results for the same operation no matter how it is performed, and reduce the cost and complexity of maintenance and enhancements.

To achieve these goals, the application architect first specifies the architectural styles to be used and the specific roles and responsibilities of the architectural elements that make up that style. Technological aspects such as performance, scalability, reliability, and security are factored into the reference architecture rather than each individual initiative. The application architecture can be expressed as a conceptual drawing but should also be formally specified in a reference model.

The application architect specifies a set of patterns to implement the reference architecture along with standards, guidelines, and templates that describe how to perform aspects of application development. For example, how is the logging service used? What constitutes an error, warning, information, or debug style of message. What set of common error codes will be used across all applications?

At the initiative level, the application architect is concerned with applying the enterprise context (reference models, patterns, standards, guidelines, and templates) to a specific initiative. This

architectural role is often called a solution architect. Regardless of the exact title, the architect acts as a bridge between the enterprise and the application. This arrangement can be an area of contention with the initiative team because it is not usually the team's responsibility to understand the enterprise context. An initiative team is responsible for initiative delivery, and the application/solution architect is responsible for ensuring that the initiative meet its requirements in a way that conforms to the enterprise's application architecture.

Technical Architecture

The technical architect is responsible for providing common platforms that support the various application architecture styles with the appropriate quality of service. Technical architecture often covers a variety of technologies including storage, security, networks, data center, management, capacity planning, performance analysis, and monitoring systems.

At the initiative level, the technical architect is tasked with provisioning a specific instance of the standard platform for the application and integrating it into common management, security, backup, services, and related systems and plans. When initiatives or applications have requirements that are not met by the standard platform, the technical architect needs to create a solution that meets the initiative needs and fits into the rest of the technology infrastructure.

Business Architecture and Enterprise Architecture Relationship Analysis

Given that business architecture is considered a domain of EA, a simple roll-up or summary perspective may be useful. Figure 6.2.2 offers a simplified view of how IT architecture and business architecture domains are rolled up into an enterprise architecture view.

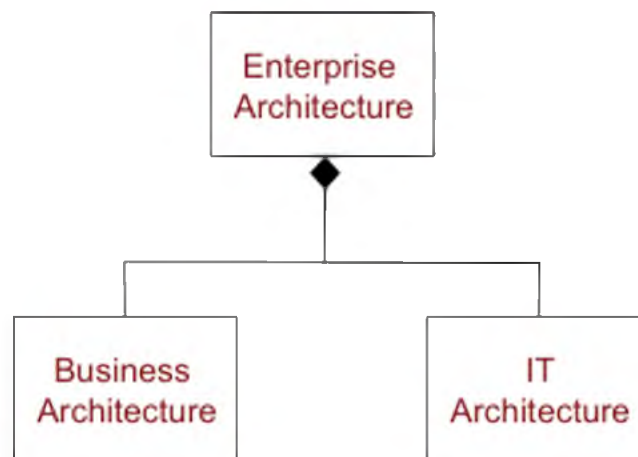


Figure 6.2.2: Business / Enterprise Architecture Relationships

A common EA view is that business architecture and IT architecture (data, application, and technology) are all domains of EA and that business architecture provides the requirements for

IT. While generally there is agreement that business architecture should help frame business requirements for IT (see *BIZBOK® Guide* section 3.8 for more details), this perspective reflects a relatively limited view of the role of business architecture and what it can accomplish.

Benefits and Principles of Business Architecture / Enterprise Architecture Alignment

This section summarizes the benefits and principles associated with business architecture / enterprise architecture alignment.

Business Architecture / Enterprise Architecture Alignment Benefits

Aligning business architecture with EA offers the following benefits:

- Brings a robust, business-centric focus to the discipline of EA
- Integrates all aspects of strategic analysis and planning through to solution deployment
- Provides a complete business and IT perspective from issue analysis to cost/benefit analysis
- Aligns multiple disciplines across the business and technology teams to maximize investments while optimizing value

Business Architecture / Enterprise Architecture Alignment Principles

The following principles guide business architecture / enterprise architecture alignment efforts:

1. EA formalizes views and perspectives of the enterprise.
2. Business architecture formalizes views of the business.
3. Business architecture is a business discipline, owned by the business.
4. EA frameworks provide approaches for defining, managing, and using EA.
5. The business architecture framework provides approaches for defining, managing, and using business architecture.
6. Business and EA frameworks can be cross-mapped to leverage both disciplines.
7. The use and implementation of one or more EA frameworks and the business architecture framework are specific to the organization using the framework.

Architecture Frameworks

Under ISO/IEC/IEEE 42010:2011, an architecture framework is defined as “conventions, principles, and practices for the description of architectures established within a specific domain of application and/or community of stakeholders”.³

In general, architecture frameworks specify such things as:

- Information identifying the framework
- Vocabulary and taxonomy
- One or more concerns or abstractions
- One or more stakeholders having those concerns
- One or more architecture viewpoints and their specifications
- Rules that integrate the viewpoints
- Conditions on applicability

Although there are many EA frameworks, the best known are the Zachman Framework™, The Open Group Architecture Framework (TOGAF®), and the Department of Defense / Ministry of Defense Architecture Framework (DoDAF/MODAF) that is used in United States, United Kingdom, and NATO defense departments and ministries.

Many times, architecture efforts will combine the best of all worlds, using the Zachman Framework™ to describe the overall enterprise at a contextual/conceptual level, using TOGAF® as an architecture development process, and choosing artifacts defined from DoDAF and other sources. The following sections describe each framework in more detail and illustrate the alignment of the *BIZBOK® Guide* architectural domains, artifacts, and methods with these frameworks.

The Zachman Framework™

The Zachman Framework™ is a popular framework used by business architects, first developed in 1987 and summarized in figure 6.2.3. Since its inception, it has seen several major updates. The latest update, version 3, focuses on the core value of the framework as an ontology of fundamental enterprise concepts, or primitives. The primitives are defined from the intersection of six interrogative categories (What, How, Where, Who, When, Why) and six perspectives (Executive, Business Management, Architect, Engineer, Technician, and Enterprise).

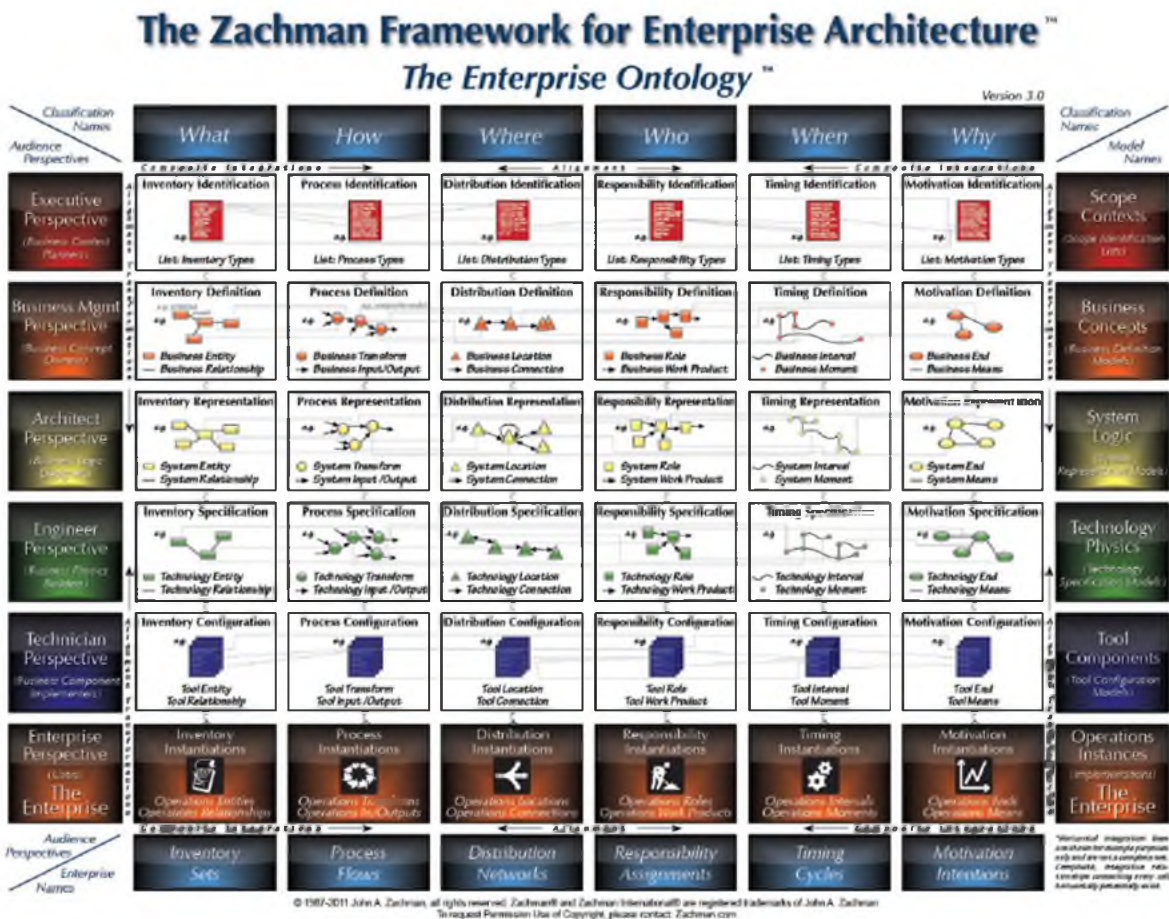


Figure 6.2.3: The Zachman Framework™ Version 3⁴

Typically, the business architecture practitioner is interested in the top two audience perspectives (rows) in the Zachman Framework™. The Executive Perspective (or Business Context Planner) is concerned with the scope and context of the business. The Business Management Perspective (or Business Concept Owner) is concerned with Business Definition Models. The framework classification names, primitives, and composites are outlined below.

Classification Names

The Zachman Framework™ uses six fundamental interrogatives (columns) to describe the enterprise from each perspective: What, How, Where, Who, When, and Why. We can map business architecture to these different interrogatives.

1. What – The information map describes “what” information the enterprise needs.
2. How – The BIZBOK® Guide defines the capability model as describing “what” the enterprise does, not how. However, from the perspective of the Zachman

Framework™, the “how” column is defining what business transformations an organization performs, not how those transformations are executed. This is believed to be the closest mapping to the intent of Zachman. Value stream frames value delivery to external or internal stakeholders and does not map to the “how” column because it is an aggregate of stakeholder value delivery and not a procedural flow of how work is done.

3. Where – The organization map describes “where” in the enterprise things are done.
4. Who – Stakeholder identification describes “who” (customers, employees, suppliers, partners) interacts with the enterprise (internally and externally) and their responsibilities.
5. When – No current mapping.
6. Why – Strategy maps and policy maps describe why things are done while metrics define an overall performance analysis of the business.

Primitives

A foundational concept of the Zachman Framework™ is that of identifying fundamental primitives that describe the enterprise (the six interrogatives from the six different perspectives identify 36 primitives). This concept is often misunderstood and unappreciated. Business and IT implementers are used to working with composite structures, such as a business process or software design, and are not used to identifying or isolating primitives. Yet, a fundamental principle of architecture is the separation of concerns.

It is valuable to separate the questions of “what” the enterprise does from “how it is done”, from “the information that is used”, and from the “organization” that is doing it. In fact, in most organizations, the same thing is being implemented many different times, in many different ways, with different information by different organizations. Perhaps this inconsistency is at the root of customer dissatisfaction, reporting discrepancies, and cost inefficiencies. But the complexity of examining the problem from the process or system perspective makes it almost impossible to understand the multidimensional many-to-many relationships.

Composites

Composites are the combination of two or more primitives that are used to focus attention on the relationship between things. For example, a system design is the composition of what and how (and sometimes who), from the perspective of the architect or engineer (using Zachman perspective names).

The power of the Zachman Framework™ is in the identification of primitives and then in the

composite integration used to address specific issues and tasks that achieve alignment. This approach is exactly the same that the *BIZBOK® Guide* takes — first, in identifying primitives (capabilities, value stream, organization, information) and then using scenarios to lead the development of composites (mappings) for use by particular business people.

Business Architecture / Zachman Framework™ Mapping

Figure 6.2.4 depicts a mapping between the business architecture blueprints and related or corresponding Zachman Framework™ concepts, which were drawn from the top two rows of the framework. Note that some of the blueprints correspond to primitives while others are composites.

BIZBOK® Guide	Zachman Framework™
Business Blueprints	Framework Concept
Business Strategy Map	Motivation Types: Business Ends, Business Means
Capability Map	Business Transformation
Organization Map	Distribution Types; Locations
Value Stream	Composite of Process Types, Transforms; Business Ends; Responsibility Types
Information Map	Inventory Types; Business Entities
Initiative Map	No Mapping
Stakeholder Map	Responsibility Types; Business Roles
Performance Measurement	No Mapping
Product Map	Composite of: Business Entity; Business Transform; Business Location

Figure 6.2.4: The *BIZBOK® Guide* / Zachman Framework™ Mapping

The Open Group Architecture Framework

The TOGAF® specification states, “TOGAF® is an architecture framework. TOGAF® provides the methods and tools for assisting in the acceptance, production, use, and maintenance of enterprise architecture. It is based on an iterative process model supported by best practices and a re-usable set of existing architecture assets”.⁵

TOGAF® components are detailed below:

- TOGAF® ADM: Describes the TOGAF® Architecture Development Method (ADM), a step-by-step approach to developing the enterprise architecture
- TOGAF® Guides: The Open Group produces guidebooks that augment the ADM
- ADM Guidelines and Techniques: A collection of guidelines and techniques available for use in applying TOGAF® and the TOGAF® ADM
- Architecture Content Framework: A structured model for architectural artifacts, the

use of reusable architecture building blocks, and an overview of typical architecture deliverables

- **Enterprise Continuum and Tools:** Appropriate taxonomies and tools to categorize and store the outputs of architecture activity within an enterprise
- **TOGAF® Reference Models:** A selection of architectural reference models, which includes the TOGAF® Foundation Architecture and the Integrated Information Integration Reference Model
- **Architecture Capability Framework:** The organization, processes, skills, roles, and responsibilities required to establish and operate an architecture function within an enterprise

This structure presents numerous opportunities for alignment, including:

1. **ADM:** Adapt the ADM to use the *BIZBOK® Guide* for business architecture. This approach is outlined in the next section.
2. **Guides, Guidelines, and Techniques:** The *BIZBOK® Guide* contains specific guidelines and techniques for the practice of business architecture.
3. **Architecture Content Framework:** Extend the content framework and model to include the reference model concepts from the *BIZBOK® Guide*. Cross reference the current context framework with the *BIZBOK® Guide*.
4. **Enterprise Continuum and Tools:** Provide references to appropriate business architecture content, models, and best practices.
5. **Architecture Capability Framework:** Extend the capability framework to include specific business architecture capabilities.

The following discussion demonstrates how the ADM can be adapted to use the *BIZBOK® Guide* approach and also includes a cross reference of the content framework.

Adapting the TOGAF® ADM

TOGAF® is a generic method and framework that is expected to be adapted to meet specific requirements. The adaptation effort is prescribed in Phase 0, the Preliminary Phase, the purpose of which is to produce a tailored framework that takes into account specific:

- Terminology
- Process
- Content (deliverables)

This section discusses the alignment and use of *BIZBOK® Guide* business architecture perspectives for organizations using TOGAF. This adaptation is taken from the point of view that “I want to follow TOGAF®, but I want to apply the *BIZBOK® Guide* domain definitions, metamodel associations, and corresponding techniques to my business architecture practice”. Figure 6.2.5 depicts the ADM and highlights the two phases A and B that are being aligned.

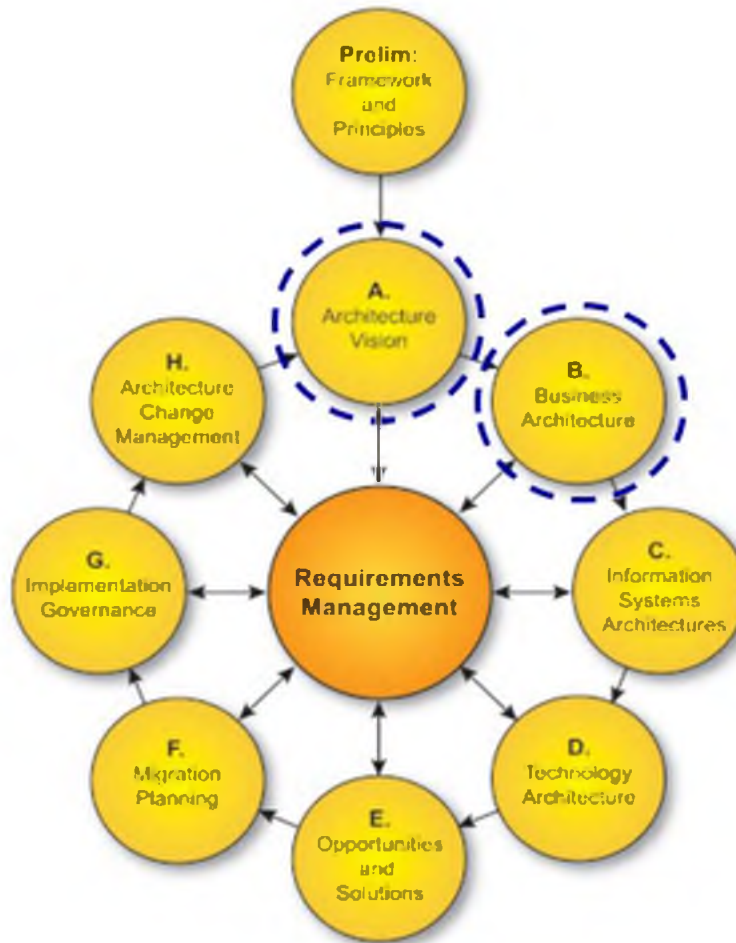


Figure 6.2.5: TOGAF® ADM Phases A and B: Business Architecture Intersection Points

Figure 6.2.6 offers additional insights into the TOGAF® positioning of business architecture in relation to the *BIZBOK® Guide*. The associations defined in figure 6.2.6 provide the means for interpreting terminology and concepts when, for example, a business architecture practitioner using the *BIZBOK® Guide* must interact with another team using TOGAF® v10 for enterprise architecture work. *BIZBOK® Guide* domain terms are shown on the left of the figure 6.2.6 table and TOGAF® v10 terms that align or are generally related to the *BIZBOK® Guide* terms are shown on the right.

BIZBOK® Guide Business Architecture Metamodel	TOGAF® Content Model
Capability	Business Capability
Value Stream	Value Stream
Value Stream Stage	Value Stream Stage
Business Unit	Organization Unit
Information Concept	Information Unit
Goal	Objective
Objective	Goal
Course of Action	Course of Action
Policy	No mapping
Stakeholder	Actor
Initiative	Work Package
Product	Product
Metric	Measure

Figure 6.2.6: Business Architecture Domain Perspectives to TOGAF® v10 Mapping

TOGAF® has undergone updates to business architecture-related content, with TOGAF® v10 coming closer to aligning to the overall *BIZBOK® Guide* approach. TOGAF® v10, for example, includes the following guides, each of which offers perspectives with reasonably close, but not identical, alignment to the *BIZBOK® Guide*'s business architecture framework.

- Business Capabilities, v2 Guide
- Value Streams Guide
- Information Mapping Guide
- Organization Mapping Guide

Figure 6.2.7 shows the content model for business architecture as defined within TOGAF® v10. The content model includes the domain alignments between TOGAF® v10 and *BIZBOK® Guide* domains, as highlighted in figure 6.2.6, along with relevant relationships to related concepts.

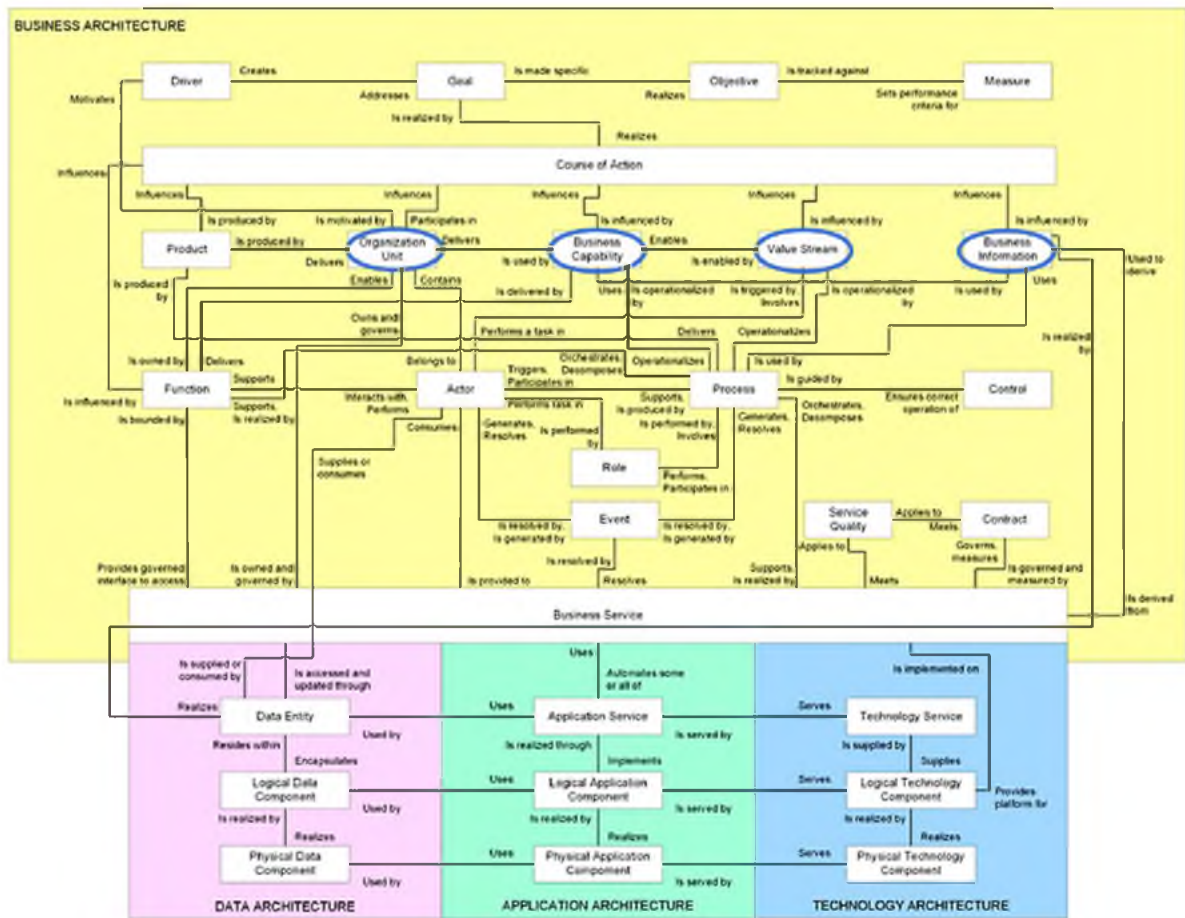


Figure 6.2.7: TOGAF® v10 Business Architecture Content Model⁶

Following are several points to note regarding the TOGAF® v10 content model shown in figure 6.2.7 and how it aligns to the BIZBOK® Guide and corresponding Business Architecture Guild® metamodel:

- Capability is named “business capability”
- Business unit is named “organization unit”
- Goal and objective roles are flipped, with goal linked to course of action (vs. objective)
- Information concept has an appropriate relationship to data entity
- Capability-to-application service relationship is missing
- Additional depicted model elements are largely operating model concepts

Function, process, actor, and role are purposefully absent from the BIZBOK® Guide’s business architecture domain set because they represent operating model perspectives or extraneous architecture views. Function is unnecessary; a capability addresses anything a function is

intended to convey. Event and contract would be represented in instances of a business architecture and may be found in various Business Architecture Guild® reference models.

Business service is a nebulous term when used as an internal, business-unit-to-business-unit point of exchange. At best it is an operating model concept because a business unit realignment, what organizations typically call a “reorg”, can destabilize or make internal business service exchanges meaningless. Finally, *BIZBOK® Guide* section 3.4 provides a more detailed and more nuanced value stream and capability mapping to business process that is absent from the figure 6.2.7 content model.

The mappings to IT-related concepts in the TOGAF v10 content model align from one perspective but not from a second perspective. Information concept has a direct relationship to data entity, which aligns to the overall approach detailed in *BIZBOK® Guide* section 6.6.

On the other hand, the relationship from capability to application service, or what *BIZBOK® Guide* section 6.5 calls a software service, appears to be missing and instead views the association between capability and application service through the lens of a process. In addition, the TOGAF v10 guide titled “Using the TOGAF® Framework to Define and Govern Service-Oriented Architectures” omits capability when discussing the role of business architecture in SOA. Because business process has an indirect and highly nuanced association to a capability, as detailed in *BIZBOK® Guide* section 3.4, this intermediate reinterpretation of a capability by an application service dilutes or eliminates the value of capabilities in software service design. The approach to software service derivation is detailed in *BIZBOK® Guide* section 6.5, where process plays little role in the overall approach.

TOGAF® ADM Phase A: Alignment Guidelines

According to TOGAF® v10, Phase A objectives are to:

- Develop a high-level aspirational vision of the capabilities and business value to be delivered as a result of the proposed enterprise architecture
- Obtain approval for a statement of architecture work that defines a program of works to develop and deploy the architecture outlined in the architecture vision

Phase A outputs call for a number of deliverables that align to mapping outputs and techniques that are defined in the *BIZBOK® Guide*. These Phase A mappings and related artifacts should ideally leverage the mapping principles for each category to formalize, expedite, and align the resulting outputs accordingly. The Phase A techniques and outputs that align to *BIZBOK® Guide* approaches are listed below along with the applicable *BIZBOK® Guide* section or sections containing the principles, guidelines, formats, and examples that guide the derivation of these deliverables.

TOGAF® ADM Phase B: Alignment Guidelines

Alignment between TOGAF® Phase B and *BIZBOK® Guide* perspectives are more detailed and nuanced than those specified in Phase A alignment. This section contains overview, inputs, and outputs for using business architecture in conjunction with this phase of TOGAF®.

Overview

The expanded objectives of Phase B are as follows. Note that the objectives have been expanded to be more specific about items that are listed in the “Approach” section of the standard TOGAF®.

- Develop the target business architecture that describes how the enterprise needs to operate to achieve the business goals and respond to the strategic drivers set out in the architecture vision
- Describe the baseline business architecture
- Develop the target business architecture based on business principles, business goals, and strategic drivers
- Analyze gaps between the baseline and target business architectures
- Select relevant architecture viewpoints that will enable the architect to demonstrate how stakeholder concerns are addressed in business architecture
- Select relevant tools and techniques to be used in association with selected viewpoints

Adaptation: Note that the concept of a “target” business architecture described in TOGAF® Phase B is not a formal concept in the *BIZBOK® Guide* because a business architecture remains largely the same from one transformation to the next. Change, on the other hand, is typically focused on the operating model, defined in *BIZBOK® Guide* Part 1 as people, process, and technology. For example, a robust capability map, information map, or set of value streams may evolve slightly on the periphery, but the business architecture footprint would remain intact. For a perspective on business architecture’s role in current-to-target state transformations, consider the transformation framework perspective defined in *BIZBOK® Guide* section 6.8 as a guide.

Approach

- Select an appropriate scenario for delivering value with business architecture
- Analyze the business using the scenario as a guideline for sequence and specific viewpoints
- Create selected business architecture viewpoints such as:
 - Capability Map
 - Information Map
 - Value Stream Map
 - Organization Map

Note: The viewpoints above are derivable from the BIZBOK® Guide mapping sections 2.2 through 2.5. These mappings provide the basis for additional mappings that follow.

- Create architecture mappings relevant to the scenario, such as:
 - Capability to information map
 - Capability to organization map
 - Value streams to capability
 - Value streams to processes
- Consider relevant resources in the architecture repository
 - Industry-specific business models
 - Generic business models
 - Business architecture cross-mappings to business models (see *BIZBOK® Guide* section 3.3 for details)

DoDAF/MODAF

The Department of Defense Architecture Framework (DoDAF) and the British Ministry of Defense Architecture Framework (MODAF) are architecture frameworks in widespread use by defense departments in the United States, Canada, and across Europe. MODAF is an extension of DoDAF, and therefore a mapping from business architecture to DoDAF may be readily adopted by users of MODAF. Figure 6.2.8 provides a summary-level mapping table to DoDAF.

BIZBOK® Guide	DoDAF
Business Architecture Blueprints	Viewpoints and Views
Business Strategy Map	CV-1: Vision
Capability Map	Capability Viewpoint: CV-2: Capability Taxonomy, CV-3: Capability Phasing, CV-4: Capability Dependencies, CV-5: Capability to Organizational Development Mapping, CV-6: Capability to Operational Activities Mapping, CV-7: Capability to Services Mapping
Organization Map	OV-4: Organizational Relationships Chart
Value Map	OV-5a: Operational Activity Decomposition Tree, OV-5b: Operational Activity Model, OV-6a: Operational Rules Model, OV-6b: State Transition Description, OV-6c: Event-Trace Description
Business Information Map	Data and Information Viewpoint: DV-1: Conceptual Data Model, DV-2: Logical Data Model
Initiative Map	Project Viewpoint: PV-1: Project Portfolio Relationships, PV-2: Project Timelines, PV-3: Project to Capability Mapping
Stakeholder Map	No Mapping
Performance Measurement	OV-1: High-Level Operational Concept Graphic, OV-2: Operational Resource Flow Description, OV-3: Operational Resource Flow Matrix
Product & Service Map	Services Viewpoint: SvcV-1 Services Context Description, SvcV-2 Services Resource Flow Description, SvcV-3a Systems-Services Matrix, SvcV-3b Services-Services Matrix, SvcV-4 Services Functionality Description, SvcV-5 Operational Activity to Services Traceability Matrix, SvcV-6 Services Resource Flow Matrix, SvcV-7 Services Measures Matrix, SvcV-8 Services Evolution Description, SvcV-9 Services Technology & Skills Forecast, SvcV-10a Services Rules Model, SvcV-10b Services State Transition Description, SvcV-10c Services Event-Trace Description
Business Scenarios	DoD Scenarios and Core Processes
Investment Analysis	DoD Process: Planning, Programming, Budgeting, and Execution (PPBE)
Shift to Customer Centric Business Model	No Mapping
Merge & Acquisition Analysis	No Mapping
New Product /Service Rollout	No Mapping
Globalization	No Mapping
Business Capability Outsourcing	No Mapping
Supply Chain Streamlining	No Mapping
Divestiture	No Mapping
Regulatory Compliance	No Mapping
Change Management	Transition Planning
Operational Cost Reduction	No Mapping
Joint Venture Deployment	No Mapping
Business Architecture Knowledgebase	Meta-Model Concepts and Data Dictionary Terms*
Business Unit	Organization, Location
Information Concept	Information, Data
Capability	Capability
Value Stream	Activity
Value Stream Stage	Activity
Policy	Guidance
Rule	Rule
Regulation	Rule
Customer	Performer
Partner	Performer
Competitor	Performer
Vision	Vision
Strategy	Strategy
Tactic	Tactic
Initiative	Project
Project	Project
Decision	Course of Action
Event	Event
Metric	Measure
Measure	Measure
Product	Material
Service	Service
No Mapping	Condition
No Mapping	Desired Effect
Metric	Measure Type
No Mapping	Agreement

Figure 6.2.8: The BIZBOK® Guide to DoDAF Mapping

Summary

Defining the context and relationship between business architecture and EA is very important in order to establish a comprehensive architecture solution across the business and IT environments. The *BIZBOK® Guide* establishes the business architecture context for the business, while various EA frameworks offer the overall context that enables driving business architecture and related business views into solutions.

The *BIZBOK® Guide*-to-EA framework mappings contained in this section provide business, data, application, solution, and technical architects with the required context to leverage important aspects of business architecture and EA in useful and formal ways. Finally, it should be clear from this discussion that these frameworks cannot only work together but can coexist and thrive when coupled with the approaches established in the *BIZBOK® Guide*.

¹ Source: Federation of Enterprise Architecture Professional Organizations (FEAPO), Taxonomy Working Group, Ratified January 14, 2017, <https://feapo.org/wp-content/uploads/2018/10/Taxonomy-The-Federation-of-Enterprise-Architecture-Definitions-copy-copy.pdf>

² Source: "Business Architecture: Putting "Business" into Enterprise Architecture", Ulrich, W. & Soley, R., Feb. 2016, CIO Review.

³ ISO/IEEE (2011). ISO/IEC/IEEE 42010:2011, Systems and software engineering — Architecture description. Retrieved from <https://www.iso.org/standard/50508.html>

⁴ The Zachman Institute for Framework Architecture

⁵ TOGAF® Version v10 "Enterprise Edition", <https://www.opengroup.org/togaf/>

⁶ TOGAF® v10, https://pubs.opengroup.org/togaf-standard/architecture-content/Figures/34_contentfwk8.png.

SECTION 6.3: BUSINESS ARCHITECTURE AND SYSTEMS DEVELOPMENT LIFECYCLE

A systems development lifecycle, or SDLC, is a commonly used term for a framework used by IT organizations to define the path taken to plan, specify, design, build, deploy, and maintain software systems. This section provides a basis for articulating how business architecture provides input to SDLC. Business architecture is not part of SDLC or a stage in any given project. Rather, business architecture is a separate and independently valuable perspective, comprising a set of artifacts that is managed by the business, for the business.

SDLC, and program management in general, are beneficiaries of the business architecture practice. Section 6.3 introduces the benefits, principles, and summary level guidelines that outline how business architecture can be used in conjunction with SDLC. This section is in early stages of development and will be built out further in depth and breadth in future versions of the *BIZBOK® Guide*.

Defining Systems Development Lifecycle

SDLC may be defined as “a process followed for a software project that defines how to develop, maintain, replace, alter or enhance IT architecture”. SDLC can take many forms based on what a given IT organization has adopted. Most SDLC frameworks do share certain concepts related to moving through a lifecycle from planning to deployment. Figure 6.3.1 depicts common SDLC stages.



Figure 6.3.1: Sample SDLC Stage Breakdown

SDLC oftentimes starts with project definition to define the overall scope and deliverables. This is followed by requirements definition, additional analysis and design, development, testing, and deployment. There is typically a separate section of the SDLC to accommodate ongoing maintenance and enhancement to the system.

SDLC may align in whole or in part to a given industry methodology as well. For example, the “agile” methodology aligns to the requirements definition stage of an SDLC. Other aspects of SDLC may align to agile or other methodological approaches.

Benefits of Aligning SDLC to Business Architecture

Business architecture as discussed throughout the *BIZBOK® Guide* is a business discipline that runs independently from any given program or project. Therefore, SDLC does not deliver, dictate, include, or constrain the scope of the business architecture. On the other hand, SDLC benefits from business architecture related deliverables to enable a wide variety of SDLC stages and deliverables. Aligning SDLC and business architecture delivers the following benefits:

- Establishes clear traceability from strategic objectives, business impacts, project definition, and requirement analysis
- Enables the business to frame various projects within the context of a comprehensive, business transformation strategy
- Offers a well-articulated frame of reference to define project scoping and phasing from a business perspective

- Provides the business with the context for establishing project return on investment analysis
- Helps shape project scope by providing a comprehensive, consistent, and robust understanding of various aspects of the business tied to a given business objective
- Provides clear insights into current state IT architecture impacts
- Clarifies insights into data architecture and service-oriented architecture articulation and governance
- Provides a framework for requirements analysis, derivation, and reuse

Principles of SDLC/Business Architecture Alignment

The following principles guide SDLC/business architecture alignment.

1. The business architecture is a distinct and separate discipline and set of perspectives from SDLC.
2. The business architecture is maintained independently by the business, independent from any given project.
3. Business architecture artifacts are input to SDLC related stages.
4. Use of the business architecture in conjunction with SDLC project stages is methodology agnostic.
5. SDLC requires clarity of business objectives, scope, engagement, terms, and perspectives across business unit boundaries.
6. Business architecture crystalizes concise, widely agreed upon business perspectives and vocabulary.
7. Business architecture formalizes traceability of business objectives, business capabilities, value delivery, organizational interdependencies, and other aspects of the business.
8. Business architecture provides a basis for deriving, framing, and reusing business requirements.
9. SDLC establishes phased project deployment roadmaps.
10. Business architecture provides business priorities, aligned to business value and capability related perspectives as input to SDLC roadmap definition.
11. SDLC establishes a well-defined target state data and solution architecture.

12. Business architecture provides business perspective needed to articulate target state data, solution, services, and other target state IT architectural perspectives.
13. SDLC requires identification of existing software assets involved in a given project.
14. Business architecture / IT architecture mapping identifies existing software assets that automate various aspects of the business architecture.

SDLC/Business Architecture Guidelines

The following guidelines represent a draft set of guidelines for leveraging business architecture as input to SDLC related stages. These guidelines, along with this section, will be refined and expanded in future versions of the *BIZBOK® Guide*.

1. Establish the business architecture artifacts as a required business input utilized by the project definition stage of SDLC
2. Ensure traceability back to business objectives and value perspectives
3. State business scope in terms of value streams, capabilities, and stakeholders
4. Inform all data architecture work in terms of input from the business architecture information map and related business architecture perspectives
5. Inform the solution architecture, particularly SOA services definition, by the value streams and capabilities the services will automate
6. Frame all project requirements in reference to the capabilities, within value stream stage perspective, indicating the stakeholder or stakeholders involved
7. Ensure that the business architecture is used to frame and track deployed system artifacts and assets

Summary

This section establishes a basic framing of the role of business architecture in various stages of SDLC. Business architecture is not part of SDLC or a stage in any given project. Rather, business architecture is a separate and independently valuable perspective and comprises a set of artifacts that is managed by the business, for the business. SDLC, and program management in general, are beneficiaries of the business architecture practice. This section will be built out further over time.

SECTION 6.4: BUSINESS ARCHITECTURE AND APPLICATION PORTFOLIO MANAGEMENT

Application Portfolio Management (APM) is a common approach for managing software investments. APM is defined as:

“The discipline applied to managing software assets to justify and measure the financial benefits of each application in comparison to the costs of the application’s maintenance and operations.”

Historically, the focus has primarily been on application cost, with a limited perspective on business value. Whether by happenstance or design, a limited focus on business value hinders an organization’s ability to determine investment strategies for its overall software portfolio.

This section outlines how business architecture provides insights into the business value delivered by various IT assets across a portfolio. Specifically, viewing software assets from the vantage point of which capabilities they automate and the value they enable offers planning and execution teams insights into where to focus future IT investments. Armed with these expanded insights, organizations can plan and execute coordinated business and IT transformation efforts with greater transparency of the business impacts and related business value delivered by those IT investments.

It is important to note that this section is not intended to replace formal APM practices but rather augment them based on the value-based perspective that business architecture provides. The following discussion lays out reasons for leveraging business architecture to frame and inform APM, related benefits, guiding principles, and general guidelines. The primary focus of the section is on application architecture as previously defined in *BIZBOK® Guide* section 6.1. The main focal points within an application architecture are the software assets that automate capabilities. These software assets are often collectively referred to as applications or application systems.

Why Leverage Business Architecture to Frame Application Portfolio Management?

IT portfolio management is an approach used by executives to view, assess, and refine technology investments. IT portfolios are comprised of application systems, which characterize the software assets that automate business capabilities and are identifiable by name and other characteristics. Application systems group related software assets based on shared designs, interdependencies, and access to shared data structures. Application systems often decompose into subsystems, which are more granular than application systems.

Application systems are not always well delineated or all-encompassing from an application portfolio standpoint. Many portfolios are comprised of independent software services. Software services may stand alone, be shared across a portfolio, and reside outside of a formally delineated application system. Software services may also be incorporated into application systems. As a result, an application portfolio may be viewed as a collection of application systems and software services, often connected through various formal and informal interfaces, which may reside across multiple platforms. IT organizations typically manage an application portfolio “inventory”, which would also include shared data structures and cross-application interfaces.

Viewing an application portfolio purely from a technical perspective limits an organization’s ability to intelligently invest in that portfolio in ways that deliver the most business value. For example, an IT executive wanted to turn off an application that was building databases for reporting purposes because of the IT cost of running and maintaining that application. Business units, however, relied heavily on this application. This application functionality changes during and after the modernization process would have an impact on critical business analytics, incapacitating the business in a multitude of ways.

In more complex environments, with hundreds or thousands of applications, major investment decisions hinge on the ability to determine the business value of an application in relation to numerous other applications, desk top solutions, and manual techniques that enable one or more capabilities. The quality of an application is a consideration in most application portfolio management decisions, but the business value, especially when viewed from a comprehensive, value-driven perspective, is often missing from the equation. This lack of insight can result in IT investment decisions being made from purely technical perspectives, which can increase the degree of misalignment between the ability to achieve various business strategies and application portfolio investments, leading to unfulfilled business objectives, failed projects, and misappropriated IT funding.

Benefits of Business-Driven, Application Portfolio Management

The benefits of leveraging business architecture to enrich the management of application portfolios are as follows.

- Allows executives to make better investments in application portfolios
- Places application value in a more strategic perspective
- Delivers holistic context for planning architecture improvements across multiple projects based on business impacts
- Helps determine which applications should stay, be improved, or be retired
- Identifies risks, weaknesses, and gaps in the application portfolio from a business perspective

Principles of Business Architecture / Application Portfolio Management

The following principles guide business-driven portfolio management.

1. Capabilities provide a business view of what a business does.
2. When cross-mapped to value streams, capabilities can be assessed in terms of the value they deliver to customers, partners, and internal stakeholders.
3. Applications automate capabilities.
4. Applications that automate capabilities contribute to the value delivered by those capabilities.
5. There is a cost to managing and maintaining an application.
6. The cost of managing and maintaining an application is balanced against the value the application provides.
7. Investment in an application is based on present-day contribution to business value and projected ability of the application to continue contributing into the future.

Business Architecture / IT Architecture Mapping Overview

Outlining the details and approach behind leveraging business architecture to inform and frame APM requires formalizing certain relationships among business architecture and IT architecture domains. Business architecture domain focal points include capabilities, value streams, information concepts, and business units, which collectively represent a business ecosystem. IT architecture asset focal points include applications, software services, and the data used by those applications and software services.

Figure 6.4.1 provides an overview of business architecture domain and IT architecture asset relationships. Business architecture domains, which include the capability, value stream, information, business unit, and initiative, are shown to the left of figure 6.4.1. IT architecture perspectives, which include application, software service, and data, are shown to the right. Capability serves as the main focal point for connecting business architecture domains and software assets. The business architecture domain relationships are derived from domain mapping views defined in *BIZBOK® Guide* part 2 and detailed in *BIZBOK® Guide* section 5.1.

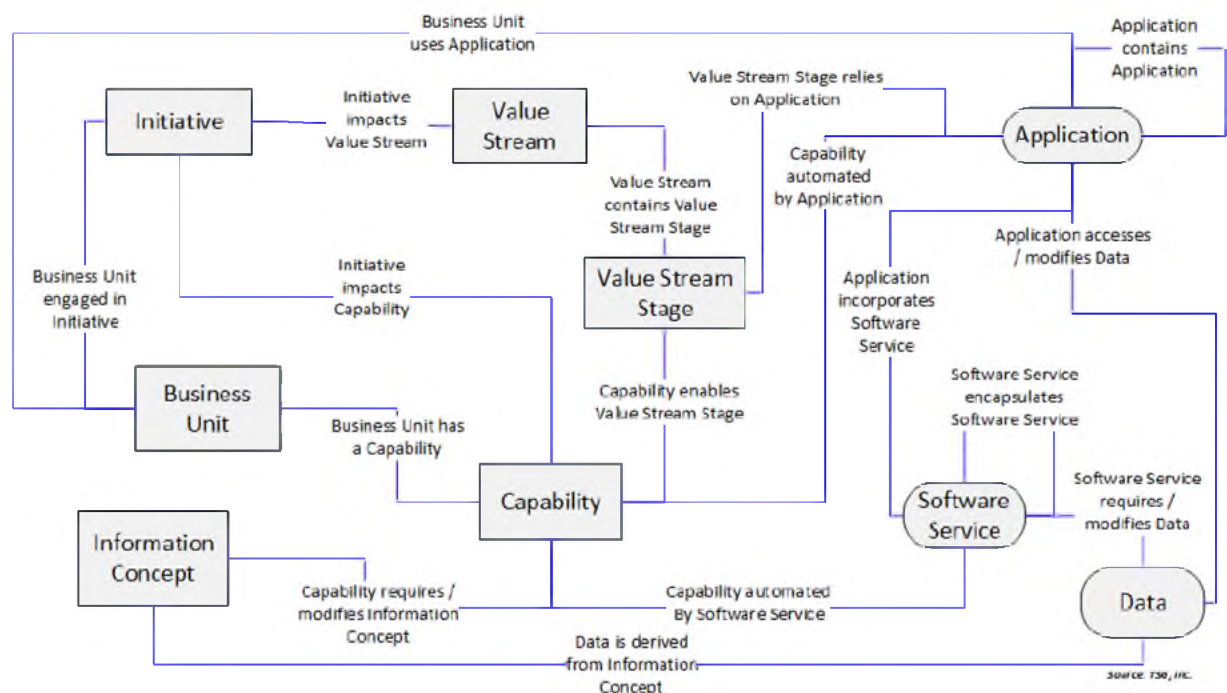


Figure 6.4.1: Business Architecture and IT Architecture Mappings

A summary of business and IT architecture mappings shown in figure 6.4.1 include:

- Capability is automated by Application
- Capability is automated by Software Service
- Data is derived from Information Concept
- Value Stream Stage relies on Application
- Business Unit uses Application

Associating capabilities with the applications and software services that automate those capabilities formalizes an organization's understanding of where and how capabilities have been automated across an application portfolio. The degree of mapping granularity varies based on the scope of impact analysis, which is driven by the scope of the business strategy driving the analysis. As work progresses into detailed design and deployment, more granular mapping may dictate connecting lower-level capabilities, such as Agreement Price Determination, with a particular subsystem.

The value stream stage-to-application relationship is derived from the relationship a value stream-enabling capability has with that application. Similarly, the business unit-to-application relationship is derived from the relationship a capability associated with that business unit has with an application. These derived relationships provide insights into application value determination and also into objective- or initiative-related application investment scoping.

In addition to the business/IT architecture mappings, the following points highlight the relationship among software assets.

- Application contains Application (typically in the form of a subsystem)
- Application accesses/modifies Data
- Application incorporates Software Service
- Software Service encapsulates Software Service
- Software Service requires/modifies Data

Organizations may customize these generic IT architecture relationships to ensure that they align to in-house terminology and standards. For example, some organizations use system versus application. IT artifact customization requires knowledgebase modification along with redefining business architecture domain and software asset associations.

Overview of Application Portfolio Management

The concept of “application” is the most common way of organizing information systems that automate business capabilities. Some organizations use system or application information system. IT often seeks to track software services in addition to applications. Regardless of the makeup or decomposition of an application portfolio, applications must be managed similarly to a real estate portfolio or mutual fund portfolio, which explains the origin of the APM concept.

The approach involves determining how much is spent on applications and the value those applications deliver. Based on cost/value analysis findings, organizations take appropriate action to define a roadmap for change that involves maintaining, improving, retrofitting, transforming, or retiring those applications. Consider this example. If an organization spends \$1 million dollars a year on an application, but that application automates capabilities that enable a value stream that delivers \$100 million in revenue, then the spend-to-value would typically be considered sound.

Assessing Cost Versus Value

Assessing the cost of managing an IT application is a standard practice within most IT organizations and is typically incorporated into standard budgeting cycles. As a rule, IT portfolios maintain a total cost of ownership (TCO) of various applications for accounting purposes. TCO is one metric that, when coupled with the application’s total value, can be used to assess the cost/value measurement for an application.

Application value determination is more challenging. There may be direct and indirect value generated by various value streams, which are the business focal point for value determination.

One perspective involves value linked to revenue generation while a second perspective involves value from a cost management perspective.

For example, an insurance company's Obtain Coverage value stream, which establishes insurance policies for new customers and also handles renewals, is a direct revenue-producing value stream. On the other hand, a Settle Claim value stream has an indirect impact on revenue because it impacts customer satisfaction and could result in a degree of dissatisfaction that results in customer losses.

Consider the example below for a manufacturing company.

- A value stream called Obtain Product for a manufacturing company delivers \$300 million in annual revenue
- High impact enabling capabilities include Agreement Management, Order Management, Customer Management, Product Management, Financial Account Management, Asset Management, Payment Management, and Shipment Management
- These capabilities are automated by two applications and selected shadow systems (e.g., spreadsheets), which collectively contribute to the total revenue for this value stream
- The TCO for these applications is \$2 million annually, meaning the applications more than pay for themselves
- Future investments in these applications is not debatable but the approach taken may vary based on certain metric analysis

The metric assessments that dictate the best options for investing in a set of applications that deliver business value require assessing the business and technical debt associated with those applications.

Assessing Business and Technical Debt

One mitigating factor in determining the future of one's software assets involves assessing "technical debt"¹ and "business/IT alignment debt", metrics that collectively can place an application in any one of the maintain, upgrade, migrate, or replace categories. The reasoning is that a high value producing application or set of applications may still suffer systemic challenges that create business risks, competitive disadvantages, or elevated costs.

Technical debt results when technical architectures have degraded in a way that impacts the ability of the application and data architectures built upon these technical architectures to work effectively. Technical debt looks at application reliability, security, performance, efficiency, and maintainability. At a certain point, technical debt grows so high that applications can no longer be modified cost effectively or with high confidence. Technical debt metrics should be

incorporated into the portfolio management equation by IT for the business sponsors and owners of those applications.

A second type of debt involves “business/IT alignment debt”, which measures how well automated systems and data architectures fully enable business strategy, business capabilities, and stakeholder value. While these metrics are evolving, examples include:

- Number of software automations per capability: This metric determines overall automation redundancy, which increases potential inconsistencies, points failure, and the cost of managing changes to impact a capability’s behavior.
- Number of software automations per capability instance: This metric is similar to the “automations per capability” metric, but measures these factors within a business unit context.
- Percentage of capabilities with no automation: This metric highlights capability automation gaps. Not all capabilities can or should be automated, but more capabilities lack automation than management may realize. As a result, this metric serves to highlight opportunities to increase automation and corresponding operational efficiencies.

Assessing business/IT architecture alignment metrics for a given application requires context. For example, a set of objectives might dictate the scope of capabilities and related applications being assessed for debt.

The combination of technical debt and business/IT alignment debt provides input to determining the future of an application from an investment perspective. For example, examining the business and technical debt associated with the applications that automate the capabilities enabling the Acquire Product value stream might suggest a major enhancement, redesign, migration, or other transformation investment based on degrees and type of debt. In other words, assessing the cost and value of a set of applications is important, but determining the action to be taken as a next step requires understanding the depth and types of debt associated with those applications.

Business Architecture/Application Portfolio Management Approach

The content that follows discusses guidelines and approaches to software asset inventory definition and business-to-IT architecture mapping that provide input to portfolio management.

Business Architecture/APM Alignment Summary Guidelines

Approaches will vary based on size and scope of the portfolio. For organizations seeking to examine an entire portfolio, value analysis may be applied selectively, prioritized by applications,

value streams, and capabilities of interest. The following guidelines consider this perspective.

1. Determine the scope of portfolio planning.
2. Ensure that the organization has a robust inventory of application software assets.
3. Verify that the capability map has been established to a level 2-3 mapping.
4. Prioritize the value streams or business areas to be targeted for value analysis.
5. Verify that capabilities have been appropriately mapped to prioritized value stream stages and, where required to streamline the analysis, business units.
6. Work with application teams to establish level 1-2 capability mappings to applications of interest. There is no need for lower-level mappings unless a transformation effort is envisioned.
7. Where subject matter expertise is lacking, rely on documentation or software analysis tools to augment the analysis.
8. Systematically map the capabilities of interest to the applications that automate those capabilities.
9. Establish value stream stage/capability cross-mappings to determine the overall business value of each capability and the degree of automation provided by the mapped application.
10. Incorporate organizational mapping into the mapping performed in point #9 to further streamline or focus the analysis.
11. Establish business/IT alignment debt and technical debt metrics for the value streams, capabilities, and applications targeted for assessment.
12. For applications included in the portfolio assessment, incorporate debt metrics to help determine the best near-, mid-, and long-term investment strategies for these applications.
13. Use this information to inform APM investment, transformation, or modification planning.

Application Inventory and Decomposition Concepts

Establishing an application inventory is a standard IT practice. Organizations should follow those practices as a starting point for application inventory definition. An application inventory should be captured in a formal knowledgebase as previously discussed.

An application may decompose into smaller chunks. These chunks have historically been called

subsystems, but other terms may also apply. Figure 6.4.2 shows the application decomposition concept, which is relevant to APM because the cost/value analysis concept may be applied at a more granular level.

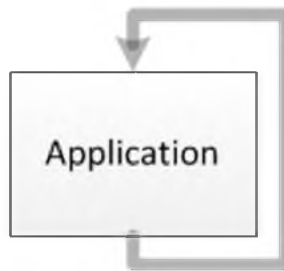


Figure 6.4.2: Application Decomposition Concept

The application inventory should show tiered layers of applications, where an application may include multiple subsystems. The inventory should also include software services, grouped or organized based on the standard practice of application or enterprise architects.

Business Architecture-to-Application Portfolio Mapping

The mapping concepts between capability and application are fairly simple in concept but can get complex in practice. Many organizations have multiple applications automating multiple capabilities, and the impact of this fragmentation and redundancy may not be evident in the absence of capability/application mapping. The capability to application mapping concept is shown in figure 6.4.3.

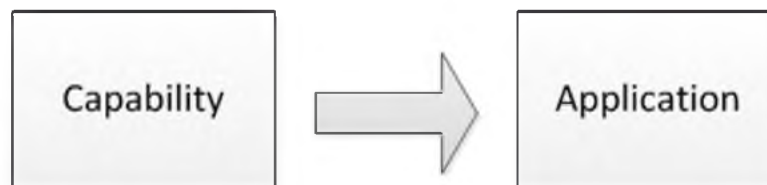


Figure 6.4.3: Business Unit, Capability, Application Mapping

Figure 6.4.3 depicts the concept of a business capability being automated by an application. For example, a Financial Account Management capability may be automated in part by an application called Order Processing.

Building upon this concept, it is important to look at the capability from a value delivery perspective. If the capability is leveraged across multiple value streams, each of which are enabled by the same application or set of applications, the value of the capability to the business increases along with the value of the application supporting that capability. Figure 6.4.4 depicts this relationship.



Figure 6.4.4: Value Stream, Capability, Application Mapping

Figure 6.4.4 shows how a value stream stage is enabled by a capability, which in turn is automated through an application. If one or more value streams and value stream stages are enabled by the same capability, which is automated by the same application, the value of that application increases further. If an application subsystem (a decomposed application segment) automates a capability, the mapping should extend to that subsystem because it offers a greater degree of specificity for application portfolio planning.

Adding business unit to this mapping involves further mapping the business unit directly to the application where that business unit has the capability involved in the cross-mapping. For example, if an Acquire Product value stream is enabled by an Order Management capability, and that capability is automated by an Order System and a Contract Management System, then there would be two capability instances enabling this value stream and both systems should be incorporated into the assessment.

Application Portfolio Management Usage Scenarios

Consider an insurance company example. Figure 6.4.5 depicts an insurance company example where three claims teams, one for each line of business, have the same capability.

Business Unit/Capability Mapping			
Business Unit	Capability (Level 1)	Capability (Level 2)	Application Support
Health Claims	Claims Management	Claim Processing	Health Claims System
		Claim Adjudication	Health Claims System
		Claim Payment	Master Claim Payment
	Customer Management	Customer Information Management	Health Claims Systems
Life & Disability Claims	Claims Management	Claim Processing	L&D Claims System
		Claim Adjudication	L&D Claims System
		Claim Payment	Shadow Systems
	Customer Management	Customer Information Management	Shadow Systems
Auto & Fire Claims	Claims Management	Claim Processing	A&F Claims System

		Claim Adjudication	A&F Claims System
		Claim Payment	A&F Claims System
	Customer Management	Customer Information Management	A&F Claims System

Figure 6.4.5: Business Unit, Capability, Application Mapping

In the figure 6.4.5 example, Claims Management and Customer Management are supported by different applications and desktop applications for each of the different business units. The value of these capabilities to the business is significant, but each application only delivers partial automation enablement for these capabilities. Yet the business is paying three times over for these systems, in spite of the value of these applications being diluted.

A second concern with the figure 6.4.5 mapping is use of “shadow systems”, which are desktop or similar business systems that are not a part of the formal IT architecture. These systems are automations that are of an unknown quantity and complexity. Shadow systems by their very nature increase technical debt because they are hard to manage, hard to find, and increase risks associated with a lack of management rigor.

The assessment of the value delivered by each of the contributing applications must reflect the value each business unit can associate with the various capabilities. The weighting associated with the applications automating these capabilities would, therefore, vary based on the link back to the business units these capabilities support and the applications help automate.

Summary

In summary, APM is a very important concept for many organizations with a large-scale investment in application software assets. The value of the assets and decisions associated with managing application portfolios cannot be driven solely by the cost side of the equation. The business value, which can be derived from business architecture, is a major factor in determining application portfolio management strategies. In addition to the value analysis, the ability to use business architecture as a means of defining the level of business/IT architecture alignment debt provides additional insights into portfolio investments planned for these applications.

¹Technical debt measures the degree of source code reliability, security, performance, efficiency and maintainability. Source: Consortium for Information & Software Quality™ (CISQ™).

SECTION 6.5: BUSINESS ARCHITECTURE AND SERVICE-ORIENTED ARCHITECTURE ALIGNMENT

Service-Oriented Architecture (SOA) is a collection of principles and methodologies for designing and developing software, based on the concept of a “software service”. A software service is defined as:

“A self-contained unit of software that performs a specific task with three components: an interface, a contract, and an implementation”¹

Note that all references herein to a “service” are specifically referring to a software service, meaning that a service in this context is realized as a piece of software. This section also references software service types and categories, such as business software services, data software services, and integration software services. There is also a subcategory of software service — a microservice — which can also be independently deployable, loosely coupled, and derived from capabilities.

In addition, this section refers to the concept of a “solution” within the context of SOA deployment. The topic of “solution architecture”, an architectural perspective that aligns a feasible business solution with stakeholder expectations within the bounds of mandated delivery parameters, is discussed in more depth in section 6.7 of the *BIZBOK® Guide*.

While SOA has become the de facto approach to software development, the design of software services can still be quite challenging in practice — particularly when scaling the use of those services across a business ecosystem. This section discusses how business architecture helps architects and designers drive SOA and software service analysis, design, and delivery from a business perspective.

SOA and Software Service Overview

In the words of Ulrich Homann: “Service-orientation is a concept that naturally evolved out of the desire and longstanding efforts to modularize complex computer systems and the real world that those systems represent”.² SOA is an architectural approach where a software service is the fundamental focal point for analysis, design, implementation, and delivery, with an overriding philosophy of “One way to do one thing. One place to get one kind of information”.³

SOA provides two strong value propositions to the business community. First, it offers a means of representing what an organization does and what it chooses to automate in ways that closely mirror formally defined capabilities. Secondly, SOA offers a more sustainable way to build and

manage systems, because it maximizes reuse, minimizes redundancy, and provides a greater degree of clarity about the role of each software service.

SOA relies on application architecture to define three important concepts:

1. The fundamental reference architecture that determines how applications will be constructed.
2. The integration of applications (functions and data).
3. The maintenance of a portfolio of application systems.

Business Architecture / SOA Alignment Benefits

Software services automate capabilities, which in turn provide context, scope, and related insights into software service design. The following benefits summarize the reciprocal benefits of business architecture / SOA alignment:

- Business architecture provides context for transforming business objectives into deployable solutions through SOA, which helps to streamline end-to-end strategy execution
- Business-driven SOA delivers IT solutions that align more closely to business demands, creating a more responsive IT environment
- Business architecture provides capability, value, information, and stakeholder perspectives as a basis for software service analysis, design, scoping, and testing
- Value stream / capability cross-mapping provides insights into service orchestration
- Capability-to-information concept relationships provide insights into software service data requirements and corresponding outcomes
- Capability to current-state application architecture cross-mapping provides insights into how best to incorporate software services into legacy software environments

Service-Oriented Architecture Layers

Modern enterprises use SOA as the basis for defining and deploying their application architectures. A layered reference architecture is shown in figure 6.5.1.

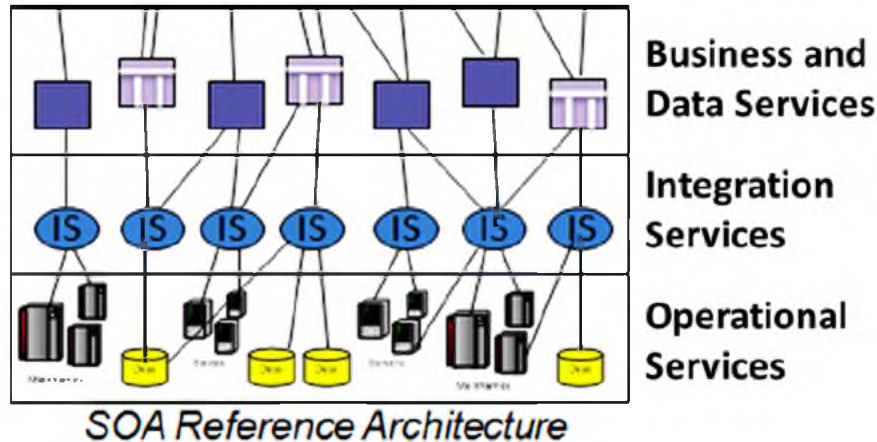


Figure 6.5.1: SOA Layered Reference Architecture

The architectural layers shown in figure 6.5.1 are described as follows:

- **Business services.** Software business services, or “business services”, are a logical grouping of operations concerned with representing business logic. Business services play a major role in SOA in terms of automating the vast number of capabilities that can be automated.
- **Data services.** Software services provide high-level business functionality throughout the enterprise. Data software services or “data services” provide consolidated, cleaned, and rationalized data. This layer provides a service interface abstraction and integration of the data layer. Data services play a role in automating information-related capabilities, including those associated with each business object, and specialized capabilities associated with the Information Management capability.

For example, if customer profiling is viewed as a service, then Lookup Customer by Telephone Number, List Customers by Name and Postal Code, and Save Data for New Customer represent possible associated operations within the logical service. Not all operations or data will necessarily come from the same operational systems, or the operations may be replicated across multiple systems. Thus, the business and information services provide a virtual implementation of related business operations.

- **Integration services.** Integration services provide a communication vehicle and access point to existing applications. Separation between integration services and business services is critical to maintaining a flexible enterprise environment. The means to achieving this separation involves the decoupling and transformation of data and application software logic from existing, tightly coupled application architectures. Integration services are derivable from Asset Management, Network Management, and other commonly found capabilities.

- **Operational services.** This layer consists of existing applications, legacy, and Commercial-Off-The-Shelf (COTS) software, which includes Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) applications. These applications provide business operations — transactions that represent single logical units of work in the enterprise's operational systems. Execution of an operation will typically cause one or more persistent data records to be read, written, or modified in a System Of Record (SOR). Operations have a specific, structured interface and return structured responses. Data at this layer resides in existing applications or databases.

Capabilities and Software Service Shared Characteristics

One reason that business architecture offers benefits to software service design and deployment is based on the fact that they share similar characteristics. The following capability-related characteristics are philosophically shared or aligned with software services:

- **Reusability:** Capabilities are non-redundant, non-overlapping business representations and are leveraged across multiple business units, value streams, and products. Software services are also non-redundant, non-overlapping, and reusable pieces of software.
- **Statelessness:** Business objects, upon which capabilities are based, are stateless, which allows a business object to be established at the point where it is conceived in a value stream, and transition through a series of finite states. Software service statelessness is a design principle that enables scalability by separating the software service from its state data.
- **Defined outcomes:** Capabilities have clearly defined information inputs and outcomes. Software services must also deliver predictable outcomes.
- **Autonomy:** Capabilities act independently from other capabilities and can be applied to multiple business scenarios, business units, and partner environments. Software service autonomy is a design principle that seeks service independence from its execution environments, as well as independence from other software services to reduce software coupling.
- **Discoverability:** Capabilities are defined once for a business ecosystem and are widely available for planning through deployment to any practitioner that requires them. Software services should also be deployed once and be discoverable across that same ecosystem.
- **Composable:** A set of capabilities may be composed to work collectively to deliver value in a value stream or to enable product entitlements. Software service composability is a design principle that seeks to ensure that services can be reused in multiple solutions composed of multiple services.

Software Service / Capability Relationships

Software services are comprised of the following views:

- Logical view: Classes, packages, and relationships
- Implementation view: Software modules and corresponding executables
- Process view: Runtime and communication view
- Deployment view: Machine and networking view

The logical view of classes, packages, and relationships is the main focal point for leveraging capabilities in software service design, where a logical view decomposes into the following layers:⁴

- Presentation layer: User interface and API logic
- Business layer: Containing business logic
- Persistence layer: Database access logic

Different capabilities may be leveraged as input to software service design based on the aforementioned layers. For example, capabilities that inform the presentation layer may include the following:

- Submission Management: Ability to define, facilitate, interpret, acknowledge, validate, route, track, and control access to a container that is used to exchange one or more requests, inquiries, messages, notifications, content, or other objects between parties.
- Channel Design: Ability to take the conceptualization of an idea about a channel while considering its predetermined specifications in order to define the channel's features and required standards of performance.

Capabilities that inform the business layer may, for example, include the following:

- Customer Preference Determination: Ability to capture, represent, analyze, and act upon explicit or implicit wants, needs, inclinations, leanings, likings, predispositions, penchants, or options — expressed formally or informally — as determined or derived from a combination of sources and associated with a customer
- Product Risk Management: Ability to identify, assess, aggregate, articulate, and incorporate various exposures to harm, danger, or loss associated with a product
- Agreement Eligibility Determination: Ability to ascertain that a customer or partner is qualified for an agreement

Capabilities that inform data access logic layer and related software service design may, for example, include the following:

- **Information Persistence:** Ability to store and control information so that it may be found and retrieved as required
- **Information Compression:** Ability to remove redundancy in, tokenize, and otherwise reduce the size, footprint, usage, and volume of information
- **Legal Proceeding State Management:** Ability to determine, modify, and interpret the status or condition of a legal proceeding
- **Payment History Management:** Ability to manage a chronological order of events and information that is related to a payment

Practitioners should ensure that a capability map is comprehensive enough to cover all aspects of what an organization does, including interface, business logic, and information management. The approach to meeting this goal is to ensure that all business objects, along with the real-world actions that target those business objects, are articulated in the organization's capability map. Industry reference models, available from the Business Architecture Guild®, provide an excellent starting point for achieving this goal.

Principles of Business Architecture / SOA Alignment

The following principles allow organizations to collectively leverage business architecture and SOA in ways that enable and improve IT's ability to deliver effective business solutions:

1. Business capabilities define distinct, unambiguous, and non-redundant views of what the business does through object-based perspectives, with defined outcomes.
2. Business information defines the common vocabulary of the information required by capabilities and that must be shared across the enterprise.
3. Value streams specify the context in which capabilities are required and leveraged to deliver stakeholder value.
4. Value streams provide an architectural view of business design perspectives, events, state transitions, workflow, and requirements.
5. Capabilities share characteristics with and map directly to software services; specifically, capabilities represent a modular definition of actions performed against business objects.
6. Value streams provide insights into information passing and service orchestration from a business perspective.

7. Services share information through their interfaces, in particular, the common vocabulary identified by capability analysis and shared information required by value stream analysis.
8. Weaknesses or gaps in business capabilities highlight the need for improving or creating new software services to address those weaknesses and gaps.
9. SOA is a foundational perspective that underlies and is leveraged by a solution architecture.

These principles establish a basic foundation for using business architecture to influence and benefit from SOA.

Business Architecture and Software Service Mapping

Figure 6.5.2 depicts how business architecture domains align to software services. The relationships show various mappings across different aspects of business architecture and software service to inform software service design.

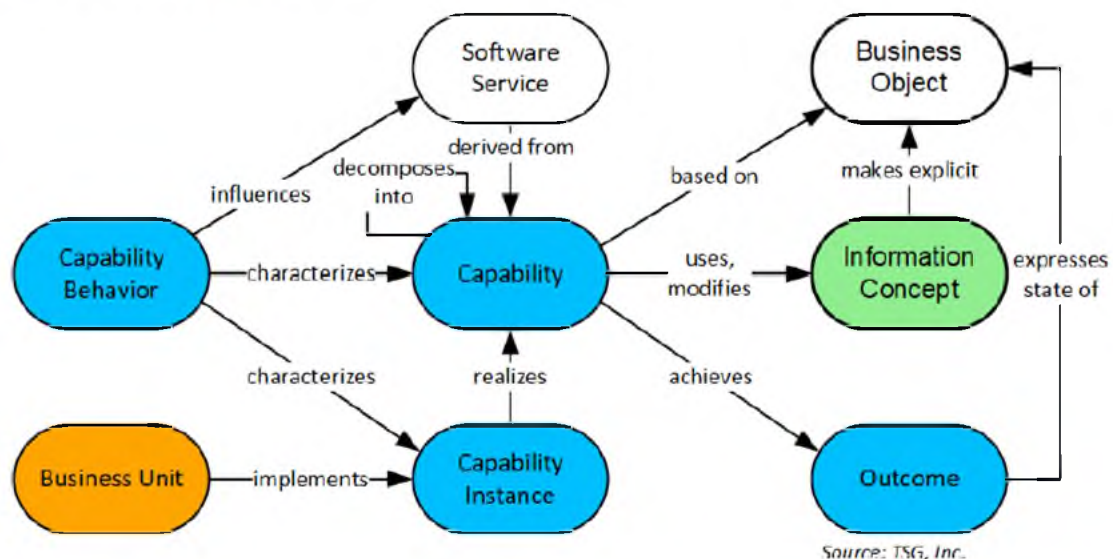


Figure 6.5.2: Capability to Software Service Mapping

The capability, business unit, and information concept domain associations to software service highlight important relationships that provide insights into software service design:

- Capability, which is based on a business object, may decompose into more capabilities
- Capability uses and modifies information concepts
- Capability achieves a specific outcome, which may impact a business object state, which in turn is made explicit or represented by an information concept

- Capability instance represents an implementation of that capability within the context of a business unit
- A capability and, more importantly, one or more of its instances is characterized by a specific behavior
- Software service is derived from a capability and automates capability-specified actions that target a business object
- Software service design is influenced by the behavior of a capability instance

There are several critical aspects related to the role of capability in software service derivation. The first is that a capability's scope is explicitly linked to a specific business object with a singular action applied against that business object, particular at the lower levels of capability decomposition. A capability called Agreement Valuation, for example, provides more specific context than would its parent, Agreement Management.

The second focal point is on the capability instance's link to behavior, which influences how a software service acts and what it delivers. Consider the Customer Preference Determination capability, which explicitly or implicitly captures a customer's preference. One such preference may be what the customer likes to buy, while another preference may involve a customer requesting that the company not share their data. Both are preferences, but how those preferences are derived and the information used to derive them may differ. Software service designers should be fully aware of unique behaviors that a service may need to automate.

The last focal point involves the data needed by a software service, which would mirror the information concepts the corresponding capability uses. For example, implicitly determining a customer's preference based on historic buying patterns would involve looking at information related to past orders, products browsed during website visits, customer location, and inquiries submitted by that customer. The software service would, therefore, require data mirroring of those information concepts.

Business Architecture / Software Service Derivation

The remaining subsections discuss approaches and guidelines for pursuing business architecture and SOA alignment.

Software Service Derivation Requirements

Approaches to business architecture / SOA alignment vary but there are several essential requirements common to most efforts that include the following:

- A robust capability map that spans the business ecosystem, with detailed decompositions

for any capabilities being automated via software services

- An information map that represents all business objects in the capability map
- Capability/information concept cross-mapping, particularly for any capabilities targeted for software service automation
- The identification of capability instances and corresponding behaviors for all capabilities being automated
- Value stream-to-capability cross-mapping for the capability instances being targeted for automation

One of the major benefits of using a capability map as a basis for software service design is that the capabilities are either already decomposed to the level of granularity required, or they can easily be decomposed further by the business architecture team. One of the main tasks software designers often cite involves software service decomposition. With a robust, object-based capability map, this decomposition task can defer to capability mapping teams, which derive decomposition insights directly from a cross-section of business subject matter experts.

Business Architecture-Driven, Software Service Derivation Guidelines

A summary of alignment guidelines is shown below:

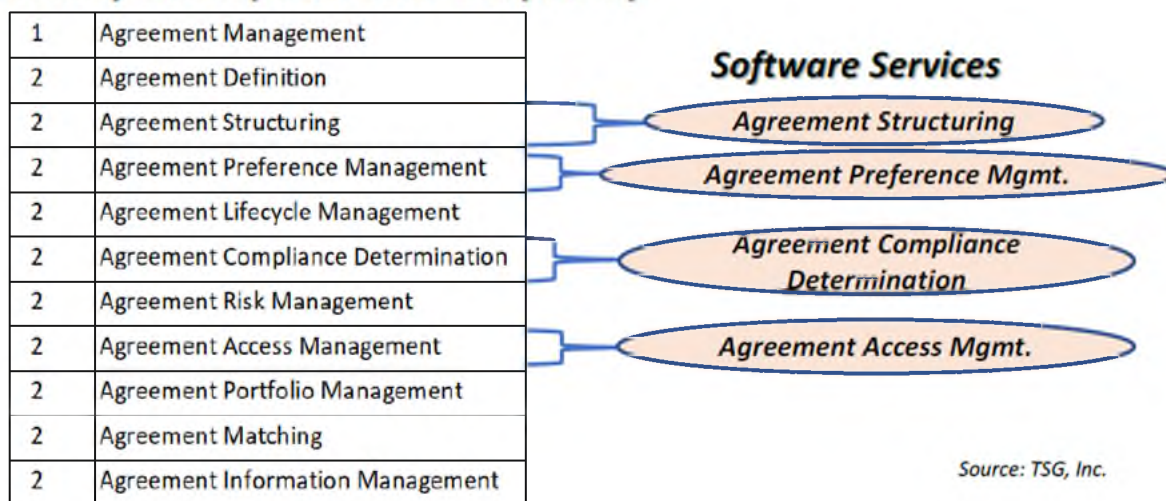
1. Ascertain business objective-targeted value streams as discussed in *BIZBOK® Guide* section 2.1.
2. Target selected capabilities for automation or automation improvement as follows:
 - a. Using capability-to-value stream cross-mapping, identify objective-targeted capabilities as automation candidates.
 - b. Using business unit-to-capability cross-mapping, identify objective-targeted capability instances to assess software service automation from a holistic perspective.
3. For each targeted capability, select the level of decomposition upon which to base the software service design where:
 - a. High-level capabilities translate into coarse-grain software services that address a broader set of outcomes.
 - b. Low-level capabilities translate into fine-grain software services, allowing designers to narrow outcome scope, data requirements, and overall coverage.
4. Assess the behaviors associated with the targeted capability instances to determine the range of behaviors that the software service must accommodate.

5. Derive software services from targeted capabilities as follows:
 - a. Limit the range of software service impact to the capability-defined business object.
 - b. Limit the range of actions performed against that business object to the actions specified by the capability.
 - c. If the targeted capability lacks the ideal level of specificity for software service formation, decompose the capability to the next level.
 - d. Leverage capability information concept usage and modification relationships to identify software service data access requirements.
6. For information-related capabilities, focus on the actions to be performed by data access layer software services.
7. Define orchestration options based on value stream/capability cross-mappings.
8. Leverage capabilities and corresponding outcomes along with information concept cross-mappings as input to software service validation during test cycles.
9. Based on prior planning, validate and integrate the software services into the current-state application architecture.

Capability-Based Software Service Derivation in Practice

Selecting the capability level to be used for software service derivation is an essential step. When software designers, solution architects, and others are considering which capability level to use for software service derivation, clarity of outcome and manageable scope are paramount considerations. The examples that follow provide further insights into the overall approach.

A level 1 capability, such as Agreement Management, would typically incorporate too many diverse actions and encompass too wide a range of outcomes to be deployed as a single software service. When this occurs, analysts and designers should move to the next level of capabilities to narrow the focus of software service derivation. Figure 6.5.3 highlights software services that may be derived from level 2 capabilities under level 1 Agreement Management.

Partially Decomposed Level 1 Capability**Figure 6.5.3: Software Service Derivation from Level 2 Capabilities**

As shown in figure 6.5.3, Agreement Preference Management might be considered a good candidate to use as a basis for a software service. The outcome is clear and not overly broad. Agreement Structuring, however, is likely too broadly stated, particularly when one examines the child capabilities shown in figure 6.5.4. Here, Agreement Structuring is decomposed to level 3 capabilities, a number of which appear to be software service derivation candidates.

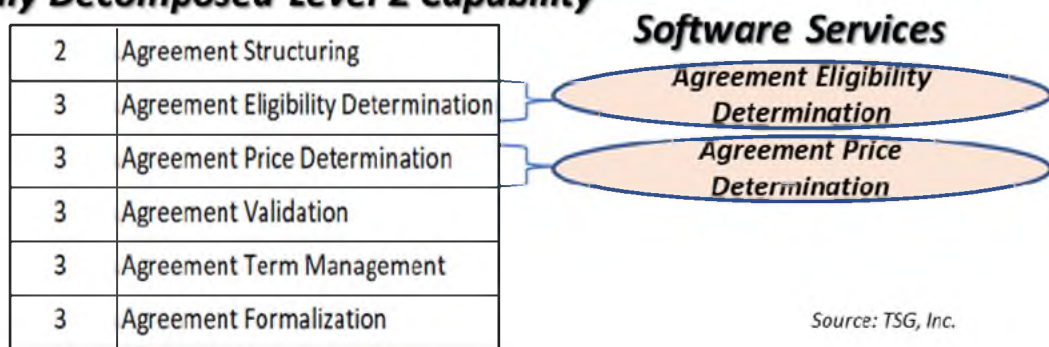
Partially Decomposed Level 2 Capability**Figure 6.5.4: Software Service Derivation from Level 3 Capabilities**

Figure 6.5.4 depicts level 3 capability decompositions under Agreement Structuring. In this example, Agreement Eligibility Determination and Agreement Price Determination, sometimes specified as Agreement Valuation, have outcomes that are narrowly defined enough to warrant their use as a basis for software service design. Agreement Term Management, which is essentially a subordinate business object to Agreement Management, warrants further

decomposition. This level of analysis may also be a signal to business architecture teams to move a capability out to level 2, reflecting the fact that the use of a capability map in software design efforts can influence the evolution of the map.

Software Service Refinement: Capability Behavior and Information Usage

Fully designing a software service may require accommodating multiple behaviors across capability instances. Once relevant behaviors have been determined, software designers and solution architects can gain greater insights into information dependencies and corresponding data requirements. A good example of a multi-behavioral capability is Agreement Preference Management.

Explicitly derived preferences differ behaviorally from implicitly derived preferences. For example, explicitly derived preferences often leverage a customer choice that must be made and reflected in the agreement information. Such a choice may be in the form of an option to allow or disallow a company from sharing customer data. This is a simple design but important as a customer preference may or may not override preferences associated with one or more agreements connected to that customer. Getting this wrong has, in practice, resulted in major lawsuits related to unauthorized data sharing.

Implicitly derived agreement preferences, often used for marketing purposes based on historic buying and shopping patterns, exhibit more complex behaviors and, as a result, use a broader range of information to achieve an outcome. One example involves deriving agreement preferences based on products associated with that agreement prior to actually completing a purchase. Multiple capability behaviors raise a commonly asked question: Do multiple, unique preferences limit the ability of software service designers to craft a single software service, or would it drive them to design and build a second software service? The answers can vary but based on the overall goal of having one software service per capability, the ideal is to strive for a single service.

Summary of Business-Driven Software Service Design

There are many other steps involved in a business architecture SOA alignment. The overall approach can be summarized as follows:

- Review value streams targeted by specific business objectives, and derive targeted capabilities through related cross-mappings
- Decompose targeted capabilities to the point where capability-related actions and outcomes are succinctly defined to the point where they serve as the basis for software service design

- Use the business unit-to-capability cross-mappings to identify unique instances and related behaviors of targeted capabilities
- Leverage capability-to-current-state application architecture mappings to surface relevant weaknesses that may be used to refine stated business objectives
- For each capability, use the capability-specific business object, actions targeting that object, outcome, instance behaviors, and required information concepts to design the targeted software service
- Apply relevant business requirements associated with the value stream stage, capability, and related stakeholder needed to meet stated business objectives
- Use value stream(s) and the framing of business events to identify SOA deployment patterns, and related orchestration and delivery options

This section will be expanded in future releases of the *BIZBOK® Guide* to reflect the growing use of business architecture to improve the success of SOA deployments that deliver sustainable business value.

¹ [Service Oriented Architecture Field Guide for Executives](#), Wiley, Jan. 2012, Kyle Gabhart and Bibhas Bhattacharya.

² Ulrich Homann and Jon Tobey, "From Capabilities to Services: Moving from a Business Architecture to an IT Implementation", Microsoft Corp., April 2006.

³ Michael Rosen, et. al, "Applied SOA: Architecture and Design Strategies", Wiley and Sons, 2008.

⁴ *Microservice Patterns*, Chapter 2, Chris Richardson, Manning, 2019.

SECTION 6.6: BUSINESS INFORMATION AND DATA ARCHITECTURE ALIGNMENT

In this section, we explore the relationship between information, data, and IT architecture. The information concepts from section 2.5 are an essential prerequisite for elaborating these ideas. As business architecture continues to mature in this area, these concepts will be refined in future releases of the *BIZBOK® Guide*.

Why Align Business Information and Data Architecture

Information, in both explicit and implicit forms, is crucial to the success of business strategy and operations. It informs decisions and makes routine operations more efficient. Information can prevent mistakes, including missed opportunities, and facilitate learning. To provide these benefits, information must be used in decision processes, and it must be communicated – without communication, an organization becomes an uncoordinated collection of individual accomplishments. Collective decision making is a critical component of coordinated activity.

Information is most effectively communicated when it is explicit. Data is an explicit representation of information. Aligning business information and data architecture ensures that the data is both representative of the performance of the organization, suppliers, clients, and partners, and also relevant to those who guide and monitor the business. Misalignment tends to result in the collection and storing of data that has low value to the business managers and failure to collect data that can enhance decision making and operational control. For many years, the CFO was the chief steward of data and, consequently, organizations had a good view of whether they were profitable but lacked a view of whether their customers saw them as valuable partners.

The business information map, introduced in section 2.5, incorporates the discovery and making explicit of information that is used across all aspects of an organization, including what many would call data, but inclusive of ideas and concepts that may not appear in the form of data in a computer system. The information map informs the implementation of data architecture, IT solutions, data provenance, and data governance.

Business Information Impacts on Data Architecture

Business information influences both application management and data management. Information technology evolution has created a separation between application management and data management, but this separation is of no interest to organization. The IT solution for an implementation of the information map will inevitably be a blend of data and application

management technologies. Consequently, it will be the job of the information technologist, particularly the application and data architects, to define this solution.

The information map is intended to be a principal element in the collaboration between the business architect and the data architect. The information map defines the information concepts, relationships, types, states, history, and other information that enables data and other IT architects to make sensible decisions about technology solutions. For example, information concept relationships with capabilities inform service-level requirements that allow data and application architects to understand data currency and frequency of use, particularly when visualized in context of various business scenarios. Other business architecture domains, such as capabilities and value streams, enable the solution and data architects to understand governance and provenance requirements.

Data Management

The topic of data management is significantly covered in the Data Management Body of Knowledge (DAMA-DMBOK2)¹ and includes the following topics:

- **Data Governance:** Planning, supervision, and control over data management and use
- **Data Architecture Management:** Defining the blueprint for managing data assets
- **Data Modeling and Design:** Analysis, design, building, testing, and maintenance
- **Data Storage and Operations Management:** Supporting physical data assets storage deployment and management
- **Data Security Management:** Insuring privacy, confidentiality, and appropriate access
- **Data Integration and Interoperability:** Acquisition, extraction, transformation, movement, delivery, replication, federation, virtualization, and operational support
- **Reference and Master Data Management:** Managing golden versions and replicas
- **Data Warehousing and Business Intelligence Management:** Enabling reporting and analysis
- **Document and Content Management:** Managing data found in unstructured sources to make it available for integration and interoperability with structured data
- **Metadata Management:** Integrating, controlling, and providing metadata
- **Data Quality Management:** Defining, monitoring, and improving data quality

The relationship between the information map and data management is as follows:

- Information governance relates to data governance and data security management.
- Information analysis relates to data architecture, master data management, data warehousing, business intelligence, document and content management, and metadata management. It also relates to application architecture data software services, which is discussed further in *BIZBOK® Guide section 6.5*.

- Information provenance relates to data quality and integrity management.

In practice, information governance will typically be linked with and derived from capabilities associated with monitoring the organization and its environment. When not recognized, the result is an incomplete and inadequate data governance solution. An example comes from the financial products and services business sector where the assumption of lack of risk by the organization, in spite of warnings from risk and compliance managers, resulted in a lack of data governance around mortgages and mortgage-based derivatives. Critical information about mortgage collateral and derivative default provisions was left in paper form, following from an implicit assumption that once written, it would never again be needed except in rare and individual situations.

While the practice of business architecture cannot guarantee that appropriate business and technology decisions will always be made, it does place the relationships between all of the organization's capabilities and information concepts on the table for discussion, ensuring that the requirements of compliance and risk managers are not overlooked.

Information provenance is typically linked with capabilities that are strongly dependent on information to perform their functions. Operational data about the organization is key information for operations management and business strategy. These capabilities will want to ensure that the information they receive and act on accurately reflects the state of the business and cannot be manipulated. Techniques such as comparing data obtained from multiple sources and performing historical analysis can be used to detect data manipulation. The joint business/IT choice of such techniques can be recorded as annotations to the information map and capability map.

Data quality assurance is all too frequently left to the information technologist to provide without adequate involvement of business subject matter experts. Information concepts define information types and finite information states, providing a medium of discussion about the requirements for data quality. Capability effectiveness provides additional insights. For example, a capability may be colored red because it has to deal with corrupt data. Data quality is a responsibility of business professionals and is not limited to the deployment of IT data cleansing or related actions. The combination of value streams, capability maps, and information maps makes it possible to consider all of the ways in which corrupt data can enter the IT system and what measures can be taken to reduce its occurrence.

It can be challenging to make knowledge explicit as data, especially when the knowledge is about the behavior and intent of competitors and how clients view the organization and its competition. Mature organizations have typically developed special skills at finding data that

correlates with observed behaviors of clients and competitors. These skills are part of information provenance and are not related to those used for monitoring and compliance. As a consequence, it will often be the case that the resulting data is inadequately managed. Occasionally, this lack of effective data management will contribute to an expensive strategic or tactical mistake. The linkage from information map through capability map to value stream will point out information that has strategic importance.

Benefits of Business Information and Data Architecture Alignment

There are numerous benefits derived from data management organization that comes from the value of information that is revealed in the business architecture. With this in mind, the information map delivers a variety of benefits to organizations seeking to improve data management, data architectures, and IT architectures as a whole. Specifically, information maps deliver:

- A business perspective on information, ensuring that information is not constrained to a given technology, system, or IT architecture
- A comprehensive understanding of all information across a business ecosystem, based on the collective set of capabilities within that ecosystem
- Rationalized, well-defined information concepts to IT that can be used as direct input to data architecture and related management and design work
- Information concept relationships that have been scenario-validated across multiple business units
- Clearly defined information types that provide insights into data integrity, data quality, and data validation efforts
- Formally defined, finite information state definitions that provide clarity to software design and deployment efforts
- Formal relationships between the information concepts used and modified by capabilities, providing a blueprint for defining data usage within application and solution architectures
- The ability to ensure that data, application, and solution architectures and related design work are based on a clear understanding of information used across an organization for a variety of scenarios

This last item is a major benefit. A comprehensive information concept map of a business ecosystem establishes the foundation for deriving conceptual, logical, and physical data models. Deriving data models from information concepts is an important parallel exercise to software

design because it allows software designers and solution architects to leverage the information map and capability map as the basis for specifying data models and data requirements. Information concept definitions provide a consistent perspective on software service data usage because the information concepts and capabilities, the basis for software services, are based on clearly defined, highly rationalized business objects. In addition, the use/modify relationships between capabilities and information concepts provide insights into similar use/modify relationships between software services and data those services require. Additional details on software service design may be found in *BIZBOK® Guide* section 6.5.

Principles of Business Information and Data Architecture Alignment

The following principles guide business information / data architecture alignment work:

1. Information is a business concept defined and owned by the organization.
2. The business value of information can be derived from the business architecture, especially the linkages between information, capabilities, and value streams. Value is enhanced by data management practices that make information explicit, shareable, and of sufficient quality.
3. Information may be explicit or implicit, but is easily shared and leveraged when it is made explicit. Explicit information can be turned into data. A key objective of business information mapping is to identify ways to make valuable, implicit information explicit. The corresponding key objective of data management is to acquire, manage, and share the explicit information.
4. Business information mapping and data management provide the best value to the organization when they actively collaborate.
5. Capabilities impose a point of view on the business information they use and modify. These points of view must be maintained by data management with respect to the corresponding data items.
6. Value streams and their associated capabilities impose a lifecycle on business information. This lifecycle must be respected by data management.
7. The quality of the data associated with business information is jointly stipulated and monitored by the business architect and the data architect.
8. The feasibility, cost, and performance of managed data are determined by the data architect and will have a strong influence on the business architect.

Business Information / Data Architecture Mapping

The organization needs to answer the following questions for data architecture.

- What data is needed by the organization?
- What does this data look like?
- How does data relate to other data?
- Where and how often to get the data?
- Who gets to change or delete the data?
- Who gets to view the data?
- How will the data be presented to various viewers?
- How will the quality of the data be measured and assured?

Most of the content of the answers to these questions can be derived from the information map. The following subsections briefly describe how this is done. By deriving the answers in this way, the analyst can keep the IT architecture aligned with the information map. It is the responsibility of the business architect to ensure that the information map is aligned with the organization.

What Data is Needed by the Organization?

The answer to this question can be taken directly from the information map through the linkage to the capability map. By examining the linkage between the capability map and the organization map, one can determine the organization units that will have interest in the information.

Data Derivation from Information Concepts

The information map is an abstract model of data, created from the universe of business objects acted upon by capabilities. A relational schema can be extracted from an information map by the following procedure:

1. Select an information concept that corresponds to a business entity, based on clearly delineated information concept definitions.
2. Apply the information concept relationships to define the business entity relationships based on the models being defined.
3. Identify the attributes for that business entity – these will become the natural keys.
4. Apply state, type, and information concept usage context to inform data modeling work.

As the data architecture is defined, its elements can be linked back to the information map. The result is a data dictionary derived from the business architecture, which provides business context for the data elements and relations.

Where and How Often to Get Data?

Some business functions create or collect information and make it tangible as data. In the business architecture, these situations are modeled as capabilities that are linked by roles to

classes. These roles can be annotated to indicate that the information represented by the corresponding class and the relationship represented by the role are created by the capability.

For example, when a claims adjudication capability resolves a claim, other capabilities will need to know that this happened in order to make a payment or authorize a repair. In the modern enterprise, this separation of capabilities allows the development of efficiency producing specialization. It also allows the enterprise to scale by adjusting the amount of each kind of skill it can deploy to the capabilities. The enterprise must make the results of adjudication explicit by creating some data about it so that the data can be used by others and used to manage the enterprise. The information containing the adjudication decision is created by the capability and consumed by other capabilities.

It is usually simple to capture operational information (like the preceding example). However, the enterprise also needs to capture information about the market it participates in, the economic environment, and the behavior of customers, suppliers, and partners. Typically, this information is about the state of being and actions of others, or about difficult-to-predict events. Where the data is not directly available, a proxy that correlates well with the information that is sought but not available as data can be used. In other cases, the data may not be known because it would be created in a future that has not yet occurred. In such cases, historical data may be used to predict the future.

Each of these cases involving non-operational data must be analyzed and a sourcing must be determined. The analysis often involves information governance considerations such as privacy, intellectual property rights, and data collection ethics such as the use of third parties. It also involves thinking about information provenance, particularly the reliability of the technique used to proxy the data that is desired.

Who Gets to Change or Delete Data?

The linkages among concepts in the information structure map and capabilities should indicate the nature of use of the concepts and relationships. Just as some capabilities create information, others change it, and others destroy it. In particular, the destruction of data is often not well thought out. This can be difficult – who can know that a discovery a couple of decades ago will lead to a product or service innovation – so there is a temptation to archive information for very long periods.

One way to approach this problem is by recognizing that information is often representative of some physical thing such as a piece of machinery or a customer organization. If that thing ceases to exist, the information item may no longer be needed. If an organization element is closed or sold off, the information about its operations is no longer needed or may be transferred with the

sale. This latter case will show up in a difference in the capability or organization map prior to and after the sale, and the information linkages can be traced to identify the relevant information.

Who Gets to View the Data?

This is also determined by examining the nature of the capability's use of the information. Each capability in a value stream may have a different perspective on the information concepts. For example, a set of product requirements from a customer will be interesting to the product engineering staff, but financial and market information about the customer who created the product requirements will be more useful to the executive who must decide whether to approve the manufacture of a product meeting the requirements.

How Will Data Be Presented to Various Viewers?

The information structure map will contain both base and derived information concepts and should contain the derivation linkages between them. Often business people will speak about groupings of information concepts, e.g., "productivity data". In the alignment work with IT, it will be necessary to completely and unambiguously define what is meant by "productivity data", as this may include both groupings of the corresponding data (e.g., into geographical regions or market segments) and alignment of unconnected information items (such as time series of events that may or may not be causally related). Such detail will not initially be a part of the information structure map but is developed in the course of the alignment process.

How Will the Quality of the Data Be Assured?

A rough assessment of potential data quality problems can be obtained from analyzing the source capability of the corresponding information concept. If the source is known to produce unreliable data, then a second source may be sought and the two sources used to improve the data reliability. If the source capability is implemented by a person, recording errors will occur and the consistency rules from the information structure model can be used to derive checks to be performed. Automated data collection devices must be periodically recalibrated. The exact details of these processes are of no particular concern to the enterprise, but the enterprise must recognize the need to have such functions and understand how to deploy them.

Business Information / Data Model Derivation

Business and IT professionals should have access to a principled, mature, and ecosystem-wide business architecture when defining data, application, and solution architectures. The information map, coupled with related business architecture domain mappings, provides insights that are specifically useful to data architecture teams. If properly crafted, the information map will represent the consensus understanding of the totality of information used across the

business ecosystem, where every business object has a corresponding information concept representing that object.

Data Model Derivation Guidelines

The following guidelines outline how to best leverage business architecture to evolve a data architecture. These guidelines are in no way meant to interfere with or contradict master data management best practices. Data architects should leverage best practices when determining if a given guideline applies to a conceptual, logical, and/or physical data model.

1. Obtain a mature information map, as defined in *BIZBOK® Guide* section 2.5.
2. Start with the assumption that each information concept in the information map as a data entity candidate.
3. Establish and define each data entity, based on each of the information concepts in the information map:
 - Include secondary information concepts as data entities because they will need to be independently accessible regardless of their primary dependency
 - Adopt the information concept definition to establish a unique definition for each data entity
4. Use each information concept-to-concept relationship as a baseline for establishing data entity relationships
 - Validate each relationship against corresponding matching capabilities in the capability map, where business object associations are established
 - Reflect primary-to-secondary relationships, such as a strategy that owns an objective, is captured and incorporated into the relationship analysis
 - Assess various business scenarios to establish and validate data model cardinalities
5. For each derived data entity, build out corresponding data attributes:
 - Examine the fully decomposed capability that defines the business object corresponding to a given data entity
 - For each child capability, determine if the actions performed would require or lead one to believe a data attribute should be added to that data entity
 - Continue attributing each data entity based on best practices and additional subject matter input
6. Leverage information concept “type” and “state” values defined in the information map to specify valid data types and states for the data entity.

7. Leverage subject matter expertise and data modeling and data design best practices to further evolve the corresponding data model.

Data Model Derivation Example

An example helps highlight how the previous mapping guidelines work in practice. Figure 6.6.1 depicts the derivation of a data entity called Agreement, shown to the right, from the corresponding information concept, Agreement, shown to the left.

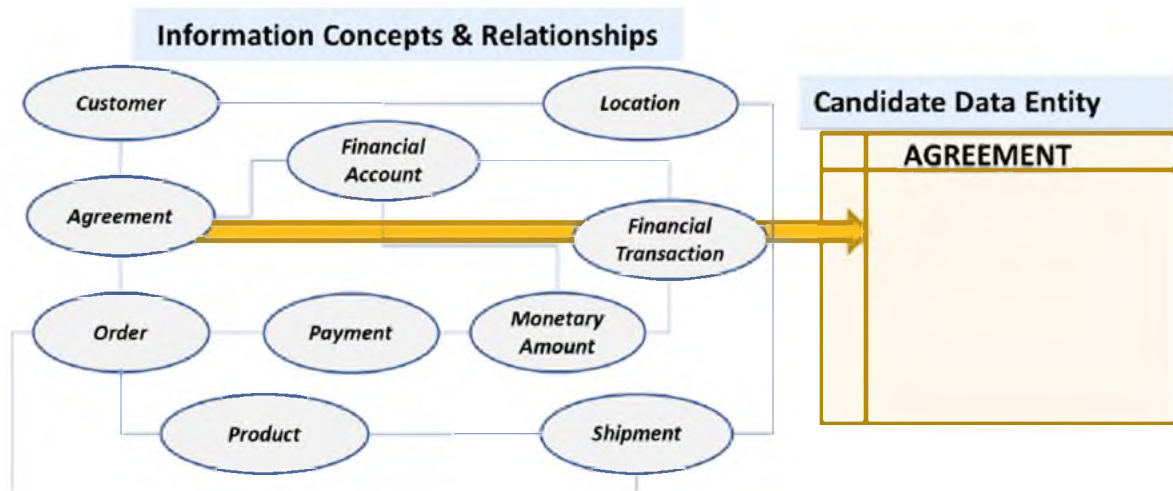


Figure 6.6.1: Data Model Derivation from Information Concepts²

Data architects would derive the agreement data entity definition in figure 6.6.1 from the corresponding information concept. Only one, rationalized agreement object exists in the business ecosystem, regardless of the various agreement types or stakeholders associated with an agreement. The figure 6.6.1 example represents a subset of information concepts and relationships for a corporate customer that contracts with a shipping company to send a shipment.

Once each of the data entities have been set up in the data model, the relationships in the information map shown to the left are used to create the relationship in the data model. Data architects would then establish data model cardinalities based on an understanding of the real-world scenario or scenarios in which these data entities would be used. In the figure 6.6.1 example, data entity cardinalities would be based on the following perspectives.

- A corporate customer has a standing agreement to send multiple shipments over time
- When an agreement is executed, the shipping company sets up a financial account to be debited when an order is created and credited when the customer settles a payment obligation

- The customer may establish multiple agreements, each with unique terms and conditions, as the situation evolves
- When the customer wants to send a shipment, the shipping company:
 - Creates an order associated with the agreement, product dictating terms, and corresponding shipment
 - Debits the financial account based on the fee set on the shipping order
- Periodically, the shipping establishes a payment obligation for the total amount owed in the financial account and communicates the obligation to the customer
- The customer in turn triggers a financial transaction to transfer a monetary amount into its financial account to partially or fully satisfy the payment obligation

Figure 6.6.2 depicts an example of data attribute derivation for the data entity called Agreement by leveraging capabilities under Agreement Management.

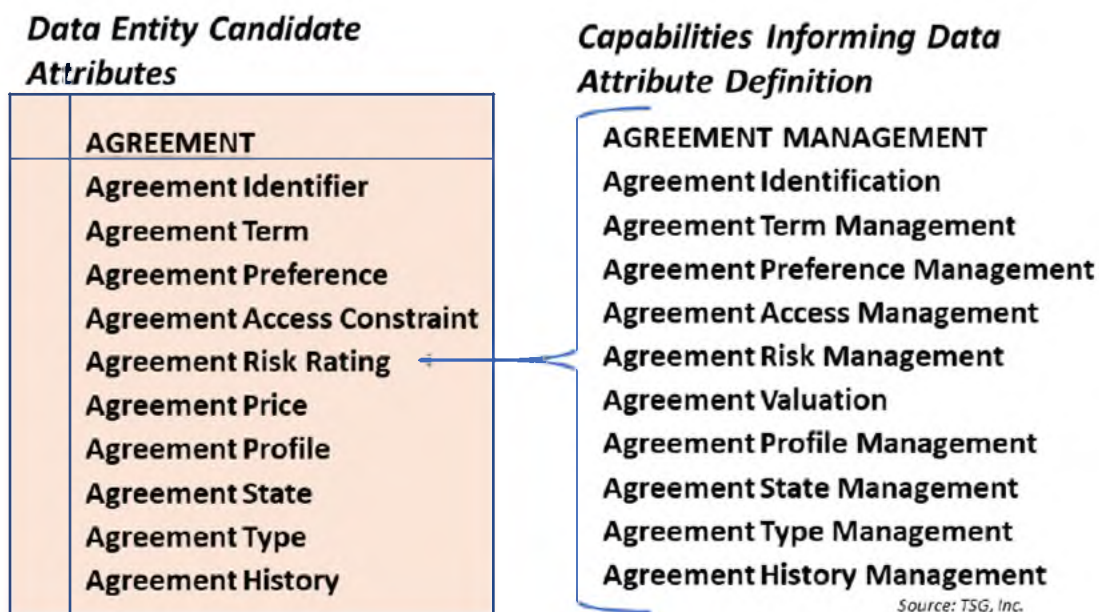


Figure 6.6.2: Data Attribute Derivation from Capabilities³

Data architects leverage the capability map to derive agreement data entity attributes. The Agreement Management child capabilities shown to the right of figure 6.6.2 provide insights into the data entity attributes shown in the table to the left. These include the following.

- Agreement Preference Management capability implies that there should be data attributes to represent agreement-related preferences

- Agreement Access Management capability implies the need to have data attribute representing the security access level required to see or modify the agreement
- Agreement Risk Rating capability implies the need to have data attributes defined to reflect risk ratings
- Agreement Type Management capability would require a data attribute to indicate the type of agreement
- Agreement State Management capability would require a data attribute to indicate the state of agreement, which may be pending, in-force, or terminated
- Agreement History Management capability implies that data architects should create a history tracking ability for an agreement

These are just a few examples of the data attributes that may be derived from capabilities associated with the agreement business object. Profile, for example, may be expanded into multiple data attributes, while data architects may derive additional attributes from other sources.

Essential Information Concept Considerations

As business and data architects and other practitioners proceed with data model derivation, they may encounter information concepts that do not exist in the existing data architectures but do exist in Business Architecture Guild® reference models. These information concepts fall into several categories.

Decision, event, time, work item, and work queue, for example, may seem out of the norm in a data model. Independently, these information concepts support a number of business scenarios. Collectively, these information concepts and corresponding capabilities are essential to designing event-driven, state-based work management solutions in the form of dynamic rules-based routing maps, as detailed in *BIZBOK® Guide* section 3.5. Designing software solutions using dynamic rules-based routing seeks to reduce the need for hand-crafted software that mirrors business process models, which in turn lead to larger software systems that are more redundant, complex, and resistant to change.

Another category where information concepts may be missing from existing data involves finance related concepts, including currency, financial account, financial transaction, monetary amount, payment, and taxes. These information concepts and corresponding capabilities are collectively used to manage finances and, importantly, execute bidirectional payment settlements, eliminating vague, artifact-based approaches that use concepts like invoice or billing.

A third category of information concept that data and solution architects may find odd or otherwise challenging involves concepts unique to a given industry sector but missing from

existing data architectures. Examples include concepts like conveyor, energy, geographic space, infrastructure, operation, route, and trip. These are essential concepts required to manage work in one or more respective industries.

Where the aforementioned information gaps exist, it can signal weaknesses in current state data architectures. These gaps often lead to business professionals having to perform more manual work or to proliferate shadow systems to fill automation gaps, which in turn drive up operating costs and corresponding risks. Data and solution architects should not, therefore, dismiss these information concepts out of hand until they are fully vetted by business architects.

Ongoing Information Map / Data Architecture Reconciliation

Once the data and application architectures are defined, there will be a tendency to neglect the information map, and so business architecture / IT architecture alignment will gradually cease to exist. While information concepts are stable, they can evolve. Therefore, management should establish a policy of periodic or continuous realignment. The former will involve periodic joint audits of the information map and data architecture to reconcile differences. This can be made easier if a history of changes is kept for the IT architecture and the information map in a centralized knowledgebase.

Alternatively, the enterprise may choose a policy of continuous alignment. In this case, the evolution of the information map will precede the evolution of the IT architecture. The IT architecture will be changed according to the alignment with the information map. Either approach may be used; the choice of an approach to alignment is usually determined by each change initiative that is planned by the enterprise.

Summary

This section explored the relationship between information map and data architecture, where the information map defines the information concepts and relationships required by formal data models and designs. Data lifecycle analysis further benefits from understanding how capabilities create, change, reference, and destroy information across various value streams. Analyzing the manner of use of information by capabilities also furthers governance and planning related to information and general security. This section will delve into further details and techniques in future releases of the *BIZBOK® Guide*.

¹ DAMA-DMBOK: Data Management Body of Knowledge: 2nd Edition Paperback, DAMA International,
<https://www.amazon.com/DAMA-DMBOK-Data-Management-Body-Knowledge/dp/1634622340>

² “Defining the Role of Business Architecture in Software Design”, Ulrich W., 2020,
<https://tacticalstrategygroup.com/wp-content/uploads/2020/12/Defining-the-Role-of-Business-Architecture-in-Software-Design-1.pdf>

³ “Defining the Role of Business Architecture in Software Design”, Ulrich W., 2020,
<https://tacticalstrategygroup.com/wp-content/uploads/2020/12/Defining-the-Role-of-Business-Architecture-in-Software-Design-1.pdf>

SECTION 6.7: BUSINESS ARCHITECTURE AND SOLUTION ARCHITECTURE

Solution architecture is a discipline focused on framing automation and technical delivery of targeted business initiatives. This often takes the form of understanding and interpreting business strategy and updating current state system functionality, or designing new solution architectures that go beyond current state architectural perspectives.

This section outlines the use of business architecture to distill and focus business models, policies, strategy, and overall objectives through the lens of core business architecture concepts, including capabilities, value streams, and information, as a means of informing and influencing the solution architecture. As a result, the solution architect's familiarity with business architecture plays a key role in aligning technical solutions to deliver business value.

As such, solution architecture can greatly benefit from the business architecture practice. Section 6.7 introduces the benefits, principles, and summary level guidelines that outline how business architecture can be used in conjunction with solution architecture. Note that this section is best applied in conjunction with other sections within the *BIZBOK® Guide* part 6 that deal with enterprise architecture, SDLC, SOA, data architecture, and business-driven IT transformation. This section is in early stages of development and will be built out further in depth and breadth in future versions of the *BIZBOK® Guide*.

Defining Solution Architecture

Solution architecture is defined as:

*"The discipline of generating a creative and communicable technical design that aligns a feasible business solution with stakeholder expectation within the bounds of mandated delivery parameters."*¹

Solution architects are commonly tasked with determining IT automation approaches that will deliver value within the scope of a defined program or initiative. As the role evolves alongside agile methodologies, the concept of the defined initiative becomes less important, while the team interaction and nimble delivery of the solution architecture take on increased focus.

Benefits of Aligning Solution Architecture to Business Architecture

Business architecture as discussed throughout the *BIZBOK® Guide* is a business discipline that runs independently from any given program or project. Therefore, solution architecture is a primary beneficiary of the structure and content provided by the business architecture. At the same time, if a solution architect effectively aligns to business architecture, successive incremental alignments to the business architecture will be more straightforward and of less impact to affected stakeholders. Finally, during the course of solution definition, creation, implementation, and maintenance, architects may uncover refinements that can be incorporated into the business architecture as a result of more granular analysis into a given business area. In short, aligning solution architecture and business architecture delivers the following benefits:

- Provides a common, pre-approved language of business assets from which solution architecture should be built
- Establishes a framework that exists between application, service, and data-related components to further consistent naming, communication, and reuse of solution components
- Identifies prioritized focal points across value streams, capabilities, and information through the use of heat mapping, impact analysis, and value mapping
- Outlines desired transformation from current state to future state, which can be used to drive IT architecture strategy, direction, focus, and investment
- Prevents the narrow scope of an “IT focus”² when outlining the direction of an IT solution
- Looks beyond a project-by-project focus to ensure that stakeholder value and business unit strategies are addressed holistically³

Principles of Solution Architecture / Business Architecture Alignment

The following principles guide solution architecture / business architecture alignment.

1. Business architecture and solution architecture are distinct and mutually-beneficial disciplines.
2. Business architecture artifacts are of primary importance to solution architecture development and value delivery.
3. The business architecture describes the holistic business ecosystem, absent project scope.
4. Business architecture is absent of technical design and is technologically-agnostic.

5. Solution architecture's goal is to deliver the prescribed value enablement and capability improvement across the business architecture.
6. Solution architecture is focused on delivery of all or part of the identified business capabilities.
7. Solution architecture references the priorities, value, and perspectives provided by business architecture regardless of the project methodology in use.
8. Solution architecture leverages business architecture / IT architecture mapping concepts that pinpoint business architecture perspectives to be automated.

Solution Architecture / Business Architecture Guidelines

The following guidelines represent a draft set of guidelines for leveraging business architecture as input to solution architecture. These guidelines, along with this section, will be refined and expanded in future versions of the *BIZBOK® Guide*.

1. Establish the business architecture as a required business input into solution architecture.
2. Use the business architecture to establish traceability from business objectives and value perspectives through requirements and solution deployments.
3. State business assets in terms of the vocabulary defined by the value streams, capabilities, and stakeholders.
4. Frame the solution architecture, particularly SOA services definition, by the value streams and capabilities of the services to be automated.⁴
5. Verify that the solution architecture does not contradict defined business architecture artifacts; desired or necessary changes to the business architecture should be reviewed and approved by the business architect or business architecture team.
6. As part of a larger, holistic assessment, leverage the business architecture to assess the effectiveness, impacts, breadth, and automation levels of a business capabilities and value streams.⁵

Summary

This section establishes a basic framing of the role of business architecture as it relates to solution architecture. Ideally, business architecture is created prior to solution architecture – in fact, prior to inception of the concept of or need for any given solution. Solution architects should consider

the value streams, value stream stages, capabilities, information, and other components of business architecture as they develop their solution architecture.

After the initial implementation of the solution, an ongoing cycle should be established where the solution architecture is evaluated for potential refinements as the business continues to evolve. The evolution and potential solution architecture impacts are highlighted by and reflective of the business architecture over time. This establishes separate, but symbiotic, areas of concern that continue to leverage each other to increase stakeholder value.

This section will be built out further over time.

¹ John Critchley, "A Definition of Solution Architecture," *Solution Architecture Dot Org*, 2011, <http://www.solutionarchitecture.org/Workshop/Best-practice/a-definition-of-solution-architecture.html>.

² Roy Hunter, "Using Business Architecture to Drive IT/Business Alignment," *Oracle*, Jan. 2011, <http://www.oracle.com/technetwork/articles/entarch/oeaa-busarch-280827.html>.

³ Ibid.

⁴ SOA or services-oriented architecture is discussed in *BIZBOK® Guide* section 6.5.

⁵ *BIZBOK® Guide* section 3.7 provides various performance metrics to deliver this type of analysis.

SECTION 6.8: BUSINESS ARCHITECTURE AND IT ARCHITECTURE TRANSFORMATION

As noted in the introduction to part 6, business/IT architecture alignment is defined as “a state in which business information, capabilities, and value streams are appropriately represented and deployed from an IT automation perspective”. Business/IT architecture transformation is the means of achieving business/IT architecture alignment. The nature of this type of transformation focuses on strategic, business-driven target architectures and typically involves multiple iterations executed over a period of months or years. Section 6.8 outlines the importance of business/IT architecture transformation, provides an overview of the transformation topic, and offers transformation principles, guidelines, usage scenarios, and a transformation framework.

Why Business/IT Architecture Transformation

Many organizations might argue that they are doing transformation today. But transformation involves systemic changes driven by business vision, objectives, and overall strategy. For example, at a multi-line financial services company, which had evolved under a product-centric business model, executives determined the company should shift to a customer-centric business model. Under this new paradigm, the customer becomes the centerpiece and all services and accounts would be viewed through a customer-focused lens. This approach was a major departure from business as usual for this company and, for this business, a major transformational shift.

IT initially stated that “we can build a database and extract and approximate where the same customer has multiple products”. This approach is tactical and not transformative. It is a workaround solution that avoids the need to develop a deeper understanding of systemic architectural limitations and requirements. In this example, IT is not enabling a shift to a customer-centric business model, but rather offering a Band-Aid approach to a strategic business challenge.

Consider the following questions. Would the tactical approach enable the population of customer information and product portfolio information in all customer contact scenarios? Would the tactical approach allow a customer to modify any product in the portfolio through a single common view? Or would the tactical approach enable the business to predict buying patterns or develop special marketing promotions based on a common view of customer? In most cases, the tactical approach would not achieve these business objectives because current state IT architectures cannot accommodate this vision and tactical approaches are architecturally constrained.

To address such questions, transformation efforts must recognize the full breadth, depth, and impact of what the business is trying to achieve. Applying the proposed tactical database solution is unlikely to deliver a definitive, common view of customer, or the ability to recognize the customer immediately in every scenario regardless of what products the customer owns or how the customer engages. This challenge is why it is so important to craft and view business vision in the context of a well-defined business perspective — the business architecture.

One challenge that can stymie transformation efforts is a scenario where business professionals have given up on their vision because getting even small changes through IT is already too difficult. Another challenge is that IT may have long ago decided that it cannot make systemic changes to underlying data and application architectures. IT, in fact, may not even understand those architectures. Yet something must be done because traditional IT approaches are hitting architectural limitations. Traditional approaches include:

- Applying standard enhancement and maintenance changes
- Adding another database or data warehouse
- Tacking on a new subsystem
- Incorporating more system-to-system interfaces
- Plugging in a software package
- Building more user interface layers
- Language and platform transformations
- Myriad technology upgrades

When the above options alone cannot stem the tide of customer or revenue losses, degradation of competitive advantage, or other negative impacts to business results, then executives should investigate alternatives. Alternatives to traditional IT options involve addressing underlying systemic architectural limitations that have traditionally been glossed over or that never needed to be addressed based on past business practices. The overall practice of addressing systemic business challenges is called business/IT architecture transformation and focuses on the business, data, and application architectures as primary targets.

In some cases, business/IT architecture transformation means the identity of application deployments may be absorbed into or replaced by a new service-oriented paradigm as discussed in *BIZBOK® Guide* section 6.5. In addition, underlying data structures are likely to undergo redesign and redeployment. The overall approach requires the use of transformation techniques, interim architecture deployments, and realignment of application architectures to accommodate new business design patterns. One example of new business design patterns may be found under the case management discussion in the *BIZBOK® Guide* section 3.5.

Businesses do not pursue business/IT architecture transformation because they want to but because it is a necessity. Historically, a business is likely to have had one or two major system project failures before turning to a more systemic and sustainable solution to business/IT architecture alignment challenges. Note that the path to business/IT architecture alignment is rarely an easy journey. Many organizations are not even at square one regarding business/IT architecture transformation, often lacking business architecture, aligned vision, and business-driven, target state architecture. The approaches and options that follow offer guidance for defining and pursuing transformation options.

Overview of Business/IT Architecture Transformation

Business/IT architecture transformation requires that the business architecture and the IT architecture evolve in synchronized fashion to address business objectives through the use of IT best practices. Figure 6.8.1 depicts various transformation paths that organizations may pursue to transform business and IT architectures. The uppermost level is the business architecture, automated, in turn, by application and data architectures. Data and application architecture are enabled by the lowest level: the technical architecture. Section 6.1 discussed the importance of and relationships among these architectures. The “rainbow model” shown in figure 6.8.1 is an effective way to discuss transformation concepts.¹

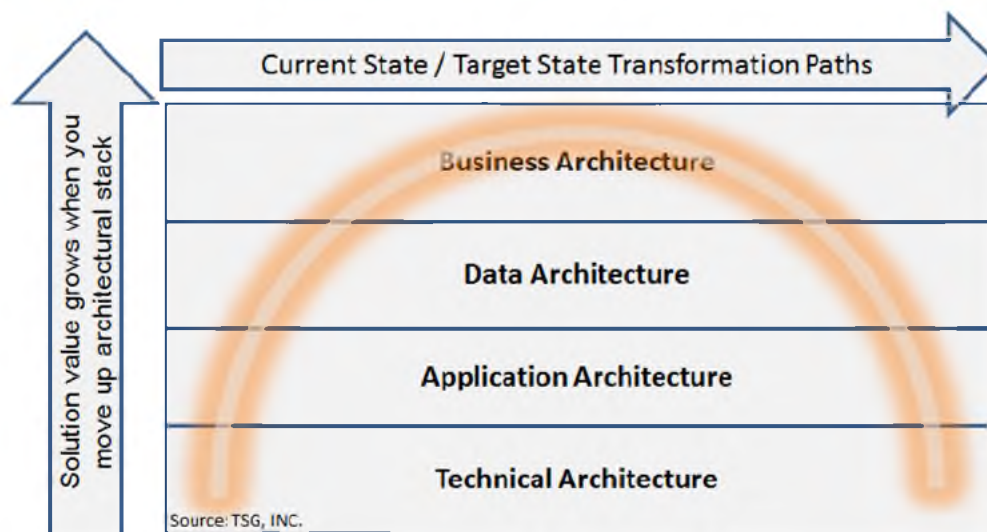


Figure 6.8.1: Business/IT Architecture Relationships Shown in the “Rainbow Model”

A major concept shown in the rainbow model involves current-to-target state transformation. Figure 6.8.1 represents left-to-right, current-to-target transformational paths as shown across the top of the figure. Target state IT architecture is defined by aligning business vision, business architecture, and IT best practices. Paths to achieving target state IT architecture can vary

dramatically and, due to current state architectural complexities, the journey is often taken in a series of phases. For example, evolving an existing set of databases and applications to move the business toward a customer-centric business model could include evolving the current state architecture, defining the replacement architecture, or both. In most scenarios, however, the transformation journey is likely to deliver multiple interim target states prior to reaching the desired target state.

The second major concept depicted in figure 6.8.1 involves cross-impacts on various architectural layers. At the most simplistic level, a technical architecture transformation moves from one technical platform, language, database, and/or other technical implementation to another — with minimal impact on data and application architectures. This approach has minimal business impact and therefore does little to achieve business objectives. Therefore, spending significant amounts of money on technical transformation are hard to justify from a business perspective and leaves the organization with application and data architectures that do not support the business vision.

Consider the following analogy. You have a book written in English, and, by all accounts, it is a terrible novel. You want to improve it, so you translate it into German. Now, you have a terrible novel, only it is written in German. It is still a bad novel. This analogy points to the comparable scenario of moving poor or inadequate data and application architectures to a new target technical architecture. The data and application architectures will still not meet strategic business objectives, but it will be on a better platform. Perhaps IT gains some benefits from the technical transformation, but these benefits are focused on a technical versus business perspective and do not enable business transformation requirements because they were never intended to meet this goal.

To achieve real business value, organizations must drive business changes through data and application architectures. Data and application architectures, as explained in the *BIZBOK® Guide* section 6.1, have a direct relationship to capabilities, value streams, and information concepts. As a result, organizations can define the impact of clearly articulated business objectives on value streams and capabilities and, in turn, related impacts may be interpreted and identified within current state data and application architectures. Once these impacts have been identified, IT architects can craft target state data and application architectures that will enable business transformation to occur.

Applying business/IT architecture transformation concepts to the previously discussed requirement of moving from a product-centric to a customer-centric business model requires applying all aspects of the business/IT transformation framework shown in figure 6.8.2. The transformation framework has four components: business architecture, business architecture-

positioned vision, current state IT architecture, and target state IT architecture. Collectively, these framework components form the foundational perspective needed to pursue business/IT architecture transformation.

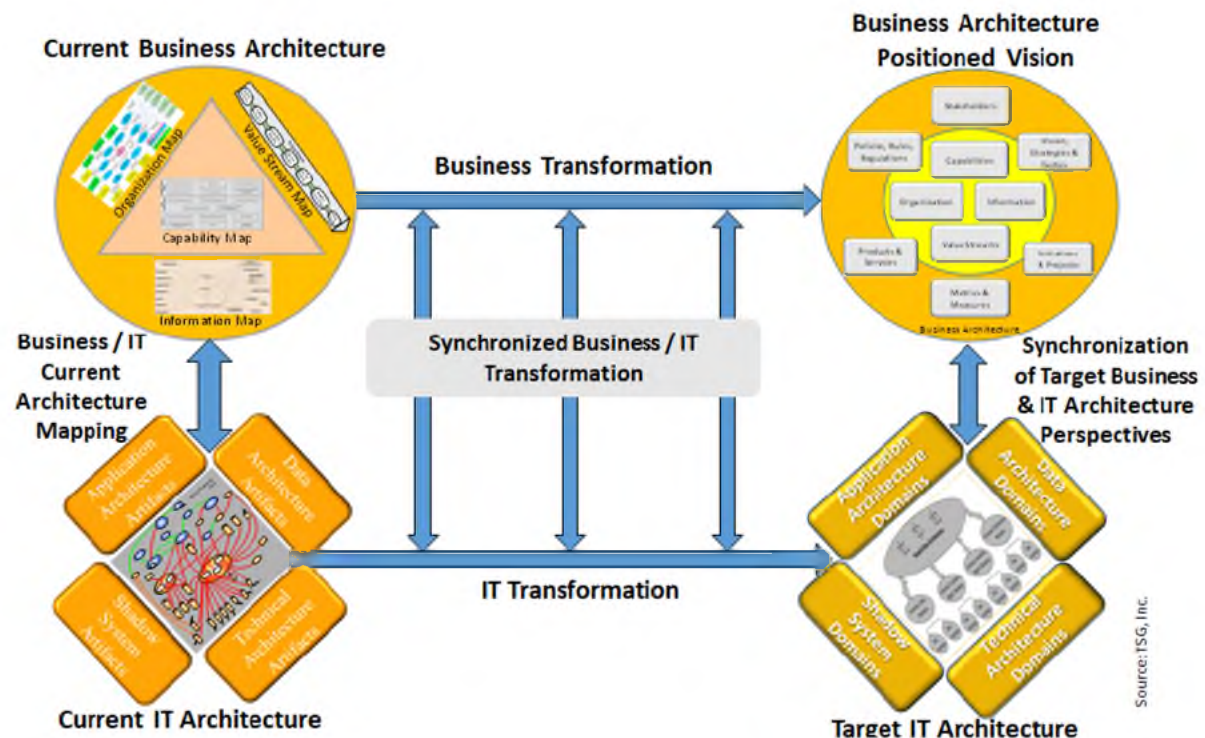


Figure 6.8.2: Business/IT Architecture Transformation Framework™

BIZBOK® Guide parts 2, 3, and 6 provide the basis for establishing the transformation framework shown in figure 6.8.2. The means of establishing the upper left framework component are addressed in sections 2.2 through 2.5, which cover capability, organization, value, and information mapping. The upper right framework component represents how a business would view its strategies, policy impacts, product plans, stakeholders, and initiative investments through the business architecture lens. These topics are covered in sections 2.1, 2.6 through 2.9, and 3.7, with section 3.7 addressing business performance metrics.

The bottom left and right portions of the framework, along with the use of business architecture to help interpret or frame these perspectives, are discussed in sections 6.1 through 6.7. The transformation journey linking the left-hand side current state architecture perspectives and the right-hand side target state perspectives are addressed in this section.

The four components of the transformation framework must be in place to articulate a well-informed, viable solution roadmap that will move the business closer and closer to the business

vision in a way that is realistic and delivers interim business value along the way. Doing so in the absence of these foundational components, which is a surprisingly common practice, delivers solutions that do not achieve business/IT alignment — or fail to deliver anything at all. Undertaking business/IT architecture transformation in the absence of foundational transformation components is like performing complex, multiple surgeries without having done any diagnostic analysis or even understanding what is remotely wrong with the patient.

A successful transformation journey is a key piece of the solution delivery puzzle that many businesses strive for but find difficult to achieve. The transformation journey, depicted by the left-to-right arrows in figure 6.8.2, is realized through a series of coordinated initiatives that move the business from the current state toward the desired target state. During this journey, the architectures represented by the four framework components would evolve in parallel. Applying these concepts in practice requires that the framework-specified approach be superimposed across an existing set of business objectives and related initiatives, resulting in all business and IT transformation investments being synchronized under a common frame of reference.

Most organizations are missing one or more elements of the transformation framework. For example, organizations may lack business architecture entirely or may not have articulated the impact of the business vision on the business architecture. In other cases, current state and target state IT architectures may not exist or have little connection to the business architecture and business vision. Organizations with these deficiencies may need to take a step back and ensure that core components are in place prior to moving toward the next step.

Benefits of Business/IT Architecture Transformation

Business/IT architecture transformation provides organizations with the following benefits:

- Ensures that business goals and IT goals are aligned and synchronized from planning through delivery
- Focuses IT on delivering sustainable business value while avoiding quick fix solutions that serve to increase technical debt and deliver sub-optimal solutions
- Provides a business-driven roadmap to guide IT strategy while ensuring that IT spending aligns to business strategy
- Links IT funding to business-driven strategy, initiatives, and priorities and allows executives to determine where IT spending may not be delivering business value
- Establishes a frame of reference for balancing and aligning technological investments with business priorities

Principles of Business/IT Architecture Transformation

The following principles inform and determine transformation approaches and deployment:

1. Business/IT architecture transformation requires business and IT commitment and sponsorship.
2. Business/IT architecture transformation requires aggregate views of business issues, IT architecture limitations, and a clear direction on how to resolve both.
3. Business/IT architecture transformation is based on well-articulated business architecture, business vision, current state IT architecture, and target state IT architecture.
4. Business architecture crafted business vision communicates business objectives and priorities based on impacts to capabilities, value streams, information concepts, and business units.
5. Current state IT architecture mapping defines how capabilities, value streams, and information concepts are enabled by current state application and data architectures across multiple business units.
6. Target state IT architecture is based on business strategy and objectives, related priorities, policy impacts, and product plans as viewed through the lens of capabilities, value streams, organization, and information concepts.
7. Business/IT architecture mappings and target state IT architecture establish the baseline for creating a business-driven, business/IT transformation roadmap.
8. IT architecture transformation leverages a combination of options and techniques applied to current state and evolving target state IT architectures.
9. IT architecture transformation moves at a pace that allows the business to synchronize shadow systems, manual work, and policy and procedures.

Business/IT Architecture Transformation

There are a variety of approaches that may be leveraged in a business/IT architecture transformation. The discussions that follow provide an overview of options along with a set of guidelines for getting started and moving through the transformation cycle.

Framing a Transformation Strategy

The transformation framework in figure 6.8.2 defines the overall perspective for achieving business value through phased transformation of current state business and IT architectures driven by a well-articulated business vision and target IT architecture. The approach involves:

- Drafting the business architecture shown in the upper left portion of the transformation framework
- Articulating business objective impacts on capabilities, value streams, information concepts, and business units, as represented by the upper right portion of the framework
- Building a baseline understanding of current state IT architecture shown on the bottom left of figure 6.8.2
- Crafting a target state IT architecture required to achieve the business vision, as articulated in the upper right-hand business architecture view, and best practices and technical architecture definition principles

Before discussing specific transformation approaches, it is important to establish a perspective on synchronized business and IT architecture. A business's ability to transform is often constrained by numerous practicalities, meaning the pace of change may need to be tempered or expedited accordingly. Vertical arrows in figure 6.8.3 signify coordinated business and IT transformations from current to target state. These transformations deliver continuous business value through evolutionary business and IT alignment and serve as the focal point for coordinated, synchronized investments that leverage holistic business architecture perspectives.

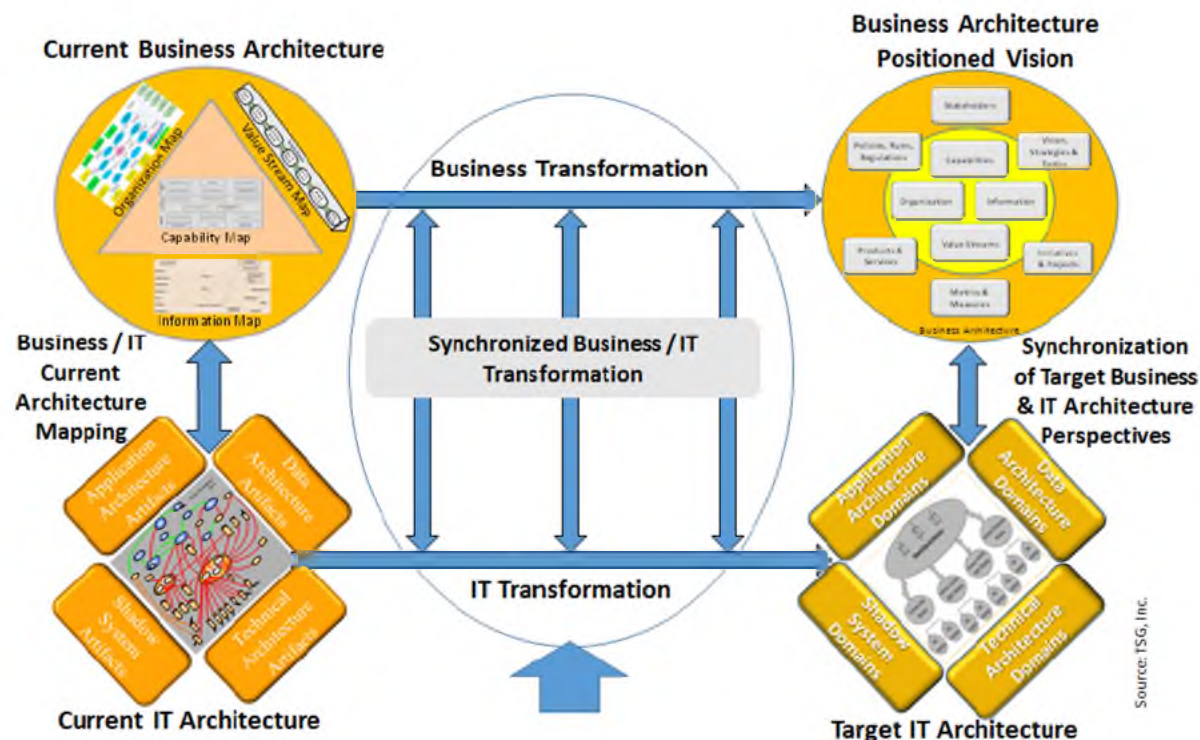


Figure 6.8.3: Major Challenges Center on Current-to-Target State Transformation

To reiterate a previously stated point, all four business and IT architecture framework perspectives shown in figure 6.8.3 should be in place as a basis for executing any aspect of a transformation plan. In other words, businesses must have clearly articulated current state and target state business and IT architectures that guide their collective initiative investments. Framework gaps from a business or an IT perspective can hinder or derail transformation planning and deployment. An absence of perspective means the business either lacks an understanding of its current state or lacks a well-articulated vision, resulting in a business that does not know where it is, where it is going, or both.

Current state business/IT architecture mappings on the left side of figure 6.8.3, depicted by the bi-directional vertical arrow, expose weaknesses in current state IT deployments. For example, capability automations may be highly redundant, fragmented, or missing entirely, constraining or otherwise hindering stakeholder value delivery. Or, business information may be deployed across redundant, fragmented data architectures, or worse, hidden from sight in spreadsheets and other shadow environments. These business/IT alignment architecture issues are often paired with application and technical architecture issues that include embedded legacy-based workflow and state management implemented using archaic status codes highlight transformation challenges.

In the ideal target state architecture:

- Capability automation is optimized, aligned, and consistently deployed across priority value streams
- Information is similarly deployed across clearly defined, non-redundant, and highly transparent data architectures

A second consideration, typically a key aspect of achieving business/IT architecture alignment, involves bringing application and technical architectures into the modern age from a platform and design perspective.

The bi-directional vertical arrow on the right side of figure 6.8.3 represents how the target state architecture is crafted, based on the business architecture articulated business vision, as well as how that vision aligns with the target state IT architecture. The target state IT architecture is based on an aggregated perspective of business vision, business architecture, and best practices. This aspect of transformation relies on mappings articulated in section 6.1 and expanded upon across various part 6 sections. Mapping out a high-level target state IT architecture, coupled with the current state issues and limitations aligned on the left side of figure 6.8.3, sets the stage for crafting a transformation strategy.

While defining foundational components of the transformation framework requires

perseverance, business and IT sponsorship, and talented architects, it is by no means the most difficult part of a transformation effort. The most difficult challenges lie in the portions of the framework depicted by the horizontal arrows, highlighted by the circle in figure 6.8.3. Several things must occur at this stage to successfully map out a viable transformation roadmap, including:

- Scoping the transformation effort from a business perspective, which ensures that all impacted business areas are considered under an overall strategy
- Scaling the overall scope into manageable chunks based on business and IT considerations
- Assessing the business's ability and appetite to absorb change associated with a business/IT transformation roadmap — in pursuit of business objectives
- Determining if the current state data architecture can evolve into the target state incrementally or if a major reworking of the data architecture limits this option
- Examining the opportunities and complexities of decoupling and modernizing the current state application architecture into components that evolve into the target state
- Considering standing up a parallel, target state architecture and migrating the business piecemeal into that architecture
- Seeking and refining alternative hybrid architectural options that would move the business incrementally into the current state
- Crafting and deploying a risk-managed approach for data and application architecture transformation
- Managing phased deployment to the new target architecture
- Accommodating near-term and mid-term business demands as part of the overall effort

The above concepts are based, first and foremost, on the business architecture, business vision, and ability of the business to fund, absorb, and manage change within the business. If these conditions are not viable, other options and approaches must be considered.

Business/IT Architecture Transformation Guidelines

The following points offer a summary level guide to business/IT architecture transformation based on the transformation framework:

1. Ensure the availability of baseline capability, value, and information maps.
2. Define business vision with clear, comprehensive business objectives.
3. Craft business vision and related objectives through the lens of the business architecture.
4. Prioritize deployment of the vision and objectives and refine as time progresses
5. Define and align initiatives based on shared objectives and related capability, value stream, and information impacts on the IT architecture.
6. Map enough of the dependencies of the business architecture on the current state IT architecture to gain an understanding of potential transformation complexities and roadblocks.
7. Define the target state IT architecture based on the business architecture positioned vision and IT architecture best practices.
8. Define transformation roadmap that addresses the business's ability to manage and absorb change as well as the ability of IT to deliver on the overall approach.
9. Deploy the roadmap in phases, refining priorities and approaches on an ongoing basis.

The above guidelines rely on the collective approaches covered to this point in the *BIZBOK® Guide* along with talented architects, transformation specialists, and sponsoring business/IT executives.

Business/IT Architecture Transformation Usage Scenarios

This section previously discussed a usage scenario that considered shifting from a product-centric business model to a customer-centric business model. This scenario is a good example because it involves changing systemic thinking, business concepts, and existing technology deployments on a substantive scale.

A transformation roadmap for this business scenario would very likely be quite comprehensive, depending on the complexity of the business and number of product lines. In summary, one could expect that this scenario would likely require:

- Formulating an agreed upon IT solution architecture that can serve as the target for consolidating instances of capability automations across value streams
- Establishing an agreed upon target state data architecture driven by information mappings, business objects, and other aspects of business architecture and IT best practices
- Leveraging business architecture to drive cross-business, IT solution iterations that

- deploy enhanced or new capability automations on a stakeholder-by-stakeholder basis across value streams
- Migrating multiple data structures into the target state data architecture to reduce overall data redundancies and establish a single source of truth for customer
- Establishing shared SOA services that provide consistent capability automation deployments for account management, customer management, and related capabilities
- Phasing in these new architectural components while phasing out the automations they replace via a series of iterative initiatives funded from a cross-section of the business units engaged in the overall transformation

The above sequencing of tasks represents a very high-level synopsis of one potential approach for the customer business model alignment scenario. This shift in many larger organizations can take years to achieve, but incremental early successes and deployments serve as building blocks for latter stage project deliverables. Lack of a business-driven, sustainable transformation roadmap and coordinated approach, however, will doom this or similar scenarios that require a strategic approach.

To clarify and put a fine point on the above approach, the transformation roadmap associated with this or similar scenarios is not a big bang, single-project approach. It rather represents a series of aligned, incremental initiatives delivered on an ongoing basis to continuously move the business towards a common business vision. Projects may apply agile or other methodological approaches to implement these projects, as long as the vision and roadmap guide the effort.

Other business scenarios could involve digitizing a business ecosystem, shifting to a global business model, divesting or acquiring portions of the business, a merger, or other significant shifts in the business model, vision, or overall philosophy. The *BIZBOK® Guide* scenario and case study sections provide additional insights into various scenarios that may leverage this approach.

Summary

For many organizations, getting to the point where the four components of the transformation framework are in place may take a good deal of effort. In reality, it can take many organizations months or even years to get to the transformation “starting line”. This reality may sound like a long time, but it is not when considering that transformation planning focuses on mid-to-long-term, multi-year strategies that avoid quick fixes and workaround solutions that are already in widespread use.

While many organizations will initially struggle with these timelines, often seeking quick

turnaround on short-term solutions, businesses are reaching a point where they have lost the ability needed to respond to strategic business requirements.

While establishing the four framework components can take some effort, it is not a complicated endeavor if, and only if, the business is politically and culturally onboard with the overall approach. Political and cultural roadblocks are by far and away the greatest constraints to establishing the foundation for business/IT transformation framework.

Can a business sidestep the need to apply the overall transformation perspective outline in herein? That depends. If a business envisions no substantive changes in its business model, regional strategy, go-to-market approach, product demand, or competitive position, then transformation may not be required. But if a business is pushing for any or a combination of the above business demands, coupled with one or more of the commonly defined transformation scenarios, then the business/IT transformation approaches outlined in this section should be considered as an option.

¹ Dr. Vitaly Khusidman, William Ulrich. White Paper entitled *Architecture-Driven Modernization: Transforming the Enterprise*, 2008, <http://www.omgwiki.org/admtf/doku.php>

PART 7: BUSINESS ARCHITECTURE CASE STUDIES

Case studies allow businesses to understand the power of business architecture. They are real-world stories from businesses that have implemented business architecture and derived a variety of benefits from those efforts.

Case studies represent factual situations across a cross-section of scenarios showing how a given organization applied business architecture and shared the experience so that other organizations can generalize and apply lessons learned and best practices. Case studies enable other organizations to envision what is possible with business architecture, particularly as it pertains to deployment of the practice, application of a given approach, and derived benefits. While this approach provides insights to businesses in similar industries, case study lessons learned are also generally applicable to most businesses across most industries.

A collection of industry case studies that member organizations have submitted in order to further the growth and maturity of the practice can be found on the Business Architecture Guild® website. They are:

- **Financial Services Case Study: Design Reviews Using the Business Capability Map**
https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/case_studies/financial_services_case_stud.pdf
- **Government Agency Case Study: Leveraging Business Architecture to Enable Transform**
https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/case_studies/government_agency_case_study.pdf
- **Manufacturing Company Case Study: Addressing Product Management Needs for the Fastest Growing Brand in Europe**
https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/case_studies/manufacturing_company_case_s.pdf
- **Business Architecture Case Study: Taking Our Own Medicine**
https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/case_studies/taking_our_own_medicine_cs_f.pdf
- **Business Architecture Problem Identification: The Foundation for Root Cause Analysis**
https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/case_studies/Root_Cause_Analysis_Finance_.pdf

- **Healthcare Case Study: Technology Modernization Through Business Architecture**

https://cdn.ymaws.com/www.businessarchitectureguild.org/resource/resmgr/case_studies/Healthcare_Case_Study.pdf

Member-submitted case studies will evolve as more case studies are collected, vetted, and published. The Business Architecture Guild® Editorial Board solicits, vets, and packages case studies so they are ready for publication. Case studies are always welcome, and the Guild plans to incorporate additional case studies to its website over time.

PART 8: INDUSTRY REFERENCE MODELS

As business architecture has matured, industry reference models have emerged that align to and reinforce the practices, principles, and blueprints found in the *BIZBOK® Guide*. These reference models include capability maps, value streams, information maps, organization maps, stakeholder maps, and other standard and customized business architecture blueprints. *BIZBOK® Guide* part 8 organizes representative examples of industry reference models by vertical industry sector based on work performed by the Business Architecture Guild® reference model teams and other sources as may be applicable to various industries.

Special emphasis must be placed on the fact that these reference models are developed and enhanced by individuals from a cross-section of industries and represent real world perspectives on these industries. These teams represent the backbone of the reference model content from the Guild. These teams continue to seek industry subject matter expertise from the Guild member community.

Industry reference models are helpful to organizations for three reasons. First, they provide standardized language within a given industry by providing taxonomies that are immediately meaningful, as opposed to being an abstract standard not intuitive to industry-specific practitioners. Second, having readily available, reusable, business architecture patterns and related blueprints to kick-start mapping efforts helps business architects focus less on defining concepts and more on customizing generalized reference models and using those references models to deliver value. Finally, reference models reinforce best practices and principles, ensuring that in-house practitioners align their work to best practices from an overall business architecture perspective.

The reference models defined in each of the sections within part 8 represent work progressing across various vertical industries. While this work has been limited to a subset of vertical industry sectors, additional industry sectors and sections will emerge as work progresses and other industries mature. In addition, the reference models defined in each section will continue to expand in breadth and depth — which includes additional reference model categories that will emerge over time.

Part 8 contains multiple industry reference model sections and one common reference model section. Each industry reference model represents a cross section of industry subsectors. For example, the financial services reference model covers retail banking, wholesale banking, and elements of wealth management and brokerage. Similarly, the insurance reference model covers property and casualty, healthcare, life, disability, and other lines of business related to insurance.

Where certain terminology, a capability, or value stream is unique to a given subsector, it is included based on a principle of creating a superset reference model for that industry. Each industry reference model team continues to strive to address these cross-sections based on contributing member subject matter expertise.

Part 8 reference model sections currently represent financial services, manufacturing, healthcare providers, member-based associations, insurance, transportation, government, telecom, and a common reference model. Each of the vertical sector sections leverages content from the common reference model articulated in section 8.6. The common reference model ensures consistency across industry sectors for strategic and supporting capabilities and industry-agnostic value stream representations.

For example, each industry reference model includes the strategic and supporting level 1 capabilities defined in the common reference model. Examples of these common capabilities include Human Resource Management, Market Management, Plan Management, Information Management, Initiative Management, Strategy Management, and Work Management. An overview of these capabilities may be found in section 8.6, with detailed content posted to the [Guild Store](#).

Similarly, the common reference model articulates value streams for onboarding a human resource, delivering an initiative, executing a marketing campaign, optimizing investment portfolios, and other common end-to-end value delivery perspectives. The common reference model section will continue to grow in depth and breadth along with each of the industry reference model sections.

As time progresses, Guild members can access and review various reference models in two ways.

1. *BIZBOK® Guide* part 8 will continue to represent high-level views of reference models.
2. Downloadable reference models provide more depth and breadth of content than what is shown in various sections in part 8. This downloadable content, which represents the actual reference models versus the abbreviated *BIZBOK® Guide* views, is rolled out and updated incrementally as each team matures content under their domain. Posted reference models can be found in the [Guild Store](#).

Reference model content representation is subject to a given team's resource availability. Use of reference model content is restricted to internal use only per the Business Architecture Guild® reference model policy as posted on the member-only resources page. Members should refer to ongoing Guild newsletters for the latest updates on reference model availability.

Long-term goals for the reference models fall across several categories. First, more industry sectors will ultimately be represented from a Guild team and a reference model perspective. Industry sector participation and reference model maturity is driven by Guild member demand. As a critical mass of Guild members assemble to focus on a given industry, formal teams and reference models will emerge.

Second, the Guild ultimately is seeking to deliver a componentized set of reference models that allows organizations with hybrid business models to create, mix, and match reference models, which, in turn, serves as a baseline or starting point for their organizations. Examples include an insurance company with financial services offerings, a manufacturing company with a retail operation, or a healthcare provider with a healthcare payer (i.e., insurance) division. These companies will need to assemble an interlocking set of reference model content that should ideally align. This longer-term vision is directional and will drive certain decisions moving forward.

Finally, while the reference models are a great way to jump start a newly articulated business architecture or validate and expand an existing business architecture, members often request more usage context. Guild reference model teams continue to work on industry-specific business scenarios to guide the use of these models. These scenarios will be published as independent guides for each reference model. As with all Guild content, these guides will evolve and be released on an ongoing basis as they mature.

Guild members should note that the reference model teams are continuing this journey with content evolving across multiple industries. As discussed, content will mature and be updated and made available, new industries will join the list, and cross-industry alignment of business architectures will continue. If you see the need to further mature content, consider joining a team to help make your vision real.

SECTION 8.2: MANUFACTURING INDUSTRY REFERENCE MODEL

The manufacturing industry refers to any company with key components of the business focused on the assembly, processing, or making of products offered to customers. Such companies span an array of industries, such as apparel, automobiles, aerospace, chemical, defense, healthcare equipment, food products, and software. The reference model does not currently address pure service businesses, mining or other extraction operations, raw material refineries, or monetary products not directly related to manufacturing.

The manufacturing reference model's scope of coverage is intended to cover the following two main types of manufacturing:

Discrete Manufacturing: In this category, identical or near-identical products are duplicated by way of an assembly line, using the same input parts and materials for each job and utilizing a Bill of Materials as the manufacturing instructions. The finished product can be disassembled and its component parts or materials can be used for another commodity. Appliances, vehicles, and electronics are examples of finished goods from discrete manufacturers.

Process Manufacturing: In this category, input materials are blended or mixed in a batch utilizing recipes and formulas, allotted in varying units of measure. The final product cannot be deconstructed into its original forms. Baked goods, pasta sauce, plastics, and vitamins are examples of finished goods from process manufacturers.

The capability map, value streams, information map, and stakeholder map cover a comprehensive perspective of manufacturing-specific and supporting work involved in managing a manufacturing company. The model includes operation design and execution; product design, development, and manufacturing; and customer product acquisition and fulfillment. Product fulfillment relies on certain shipment, conveyor, and route management capabilities. Over time, the model will expand to consider product usage perspectives and other enhancements dictated by industry feedback.

The customer includes end-state users of the product as well as product retailers or wholesalers. The customer does not include a partner as defined herein, but the model does include partner-related capabilities and value streams.

The manufacturing reference model is primarily differentiated by the inclusion of Asset Management, Material Management, and Operation Management as core capabilities. Other differentiators involve having dual product-related value streams — one for product design and development, the other for product manufacturing and deployment.

The complete, fully expanded manufacturing reference model is available from the Business Architecture Guild® in downloadable format. Visit the Business Architecture Guild® website for more information.

Capability Map

Figure 8.2.1 shows the level 1 capability map by tier for the manufacturing industry.

Strategic/Direction Setting						
Brand Management	Business Entity Management	Campaign Management	Intellectual Property Rights Management	Investment Portfolio Management	Market Management	Plan Management
Policy Management	Research Management	Strategy Management				
Customer-Facing						
Agreement Management	Asset Management	Channel Management	Conveyor Management	Customer Management	Dispute Management	Facility Management
Incident Management	Material Management	Message Management	Network Management	Operation Management	Order Management	Partner Management
Product Management	Route Management	Shipment Management				
Supporting						
Competency Management	Content Management	Decision Management	Event Management	Finance Management	Human Resource Management	Information Management
Initiative Management	Inquiry Management	Interaction Management	Job Management	Language Management	Legal Proceeding Management	Location Management
Schedule Management	Submission Management	Time Management	Training Course Management	Trip Management	Work Management	

Figure 8.2.1: Manufacturing Industry Level 1 Capability Map

The strategic and supporting capabilities shown in figure 8.2.1 are largely derived from the Business Architecture Guild's common reference model and transportation reference model. Figure 8.2.2 provides definitions for each level 1 capability across all capability tiers. The fully decomposed set of capabilities are available in the downloadable reference model on the Business Architecture Guild® website.

Tier	Level	Capability	Definition
1	1	Brand Management	Ability to establish, organize, analyze, administer, and report on all aspects of a name, symbol, or design that identifies and differentiates products, offerings, or organizational identities.
1	1	Business Entity Management	Ability to create, structure, and govern the legal body or bodies that comprise a single organization.
1	1	Campaign Management	Ability to identify the need for, plan, design, execute, and measure the effectiveness of an outreach activity that targets a specific population; for example, customers, human resources, partners, and patients, to achieve a certain goal, such as marketing awareness, hiring activities, and health awareness.
1	1	Intellectual Property Rights Management	Ability to define, establish, validate, value, register, obtain, and dispose of legal protections, such as patents, trademarks, and copyrights.
1	1	Investment Portfolio Management	Ability to control, organize, and allocate a set of resources expected to increase in value or provide income, in order to achieve a targeted balance of risk, return, and volatility.
1	1	Market Management	Ability to define, identify, quantify, qualify, analyze, segment, address, and create demand for existing or future products by individuals, populations of individuals, or organizations.
1	1	Plan Management	Ability to define, develop, validate, maintain, and coordinate a set of activities to achieve a result.

Tier	Level	Capability	Definition
1	1	Policy Management	Ability to establish, maintain, comply with, and administer a course or principle of action adopted or proposed by an organization.
1	1	Research Management	Ability to conduct systematic investigation into materials and sources in order to establish facts and reach conclusions that comprise a result.
1	1	Strategy Management	Ability to define and disseminate an integrated pattern and perspective that aligns an organization's goals, objectives, and action sequences into a cohesive whole.
2	1	Agreement Management	Ability to establish, organize, analyze, administer, and report on all aspects of a set of legally binding rights and obligations between two or more legal entities.
2	1	Asset Management	Ability to create, track, report on, dispose of, tangible or intangible property used in the course of doing business, that would be useable in whole or when combined as parts with other assets, and includes equipment, hardware, software, furniture, and other tangibles.
2	1	Channel Management	Ability to establish, analyze, and utilize a digital, analog, or physical conduit through which products, related services, or communications are delivered or received, including the Internet, phone, delivery service, satellite, radio, or physical means.
2	1	Conveyor Management	Ability to design, procure, maintain, and dispose of any variety of an apparatus, whether human- or robot-piloted, that has the capacity to transport people, animals, goods, assets, or other physical items, and includes but is not limited to, trucks, carts, automobiles, rail-based vehicles and assemblies, air-borne craft, water-borne craft, animal-pulled devices, and animal-assemblies.
2	1	Customer Management	Ability to control, predict, process, organize, present, and analyze all information, documents, preferences, experiences, and history related to a legal entity that has, plans to have, or has had an agreement with the organization, or is a recipient or beneficiary of the organization's products or services.
2	1	Dispute Management	Ability to create, track, and resolve an official argument or disagreement among interested parties, or provide a formal written petition for the redress of an injustice.
2	1	Facility Management	Ability to define, describe, maintain, and administer a physical structure.
2	1	Incident Management	Ability to identify, define, and track an unplanned, disruptive, or potentially disruptive experience.
2	1	Material Management	Ability to identify, track, set quality standards for, and equitably distribute matter used in the production and manufacturing of products, directly or indirectly, as well as the powering of physical products, and can include, for example, ore, plating, car bodies, ingredients, parts, subassemblies, oil, fuel, waste, and embedded technologies.
2	1	Message Management	Ability to define, craft, frame, vet, disseminate, and track a verbal, written, recorded, or digitally-represented communication, including missives, notifications, alerts, and other internally or externally targeted communication about the organization's mission, products, plans, activities, and other focal points.
2	1	Network Management	Ability to plan, direct, monitor, organize, control, and report on a set of connected arcs and nodes that may be associated with a system of infrastructure, assets, locations, routes, and other business objects.

Tier	Level	Capability	Definition
2	1	Operation Management	Ability to define, instantiate, run, monitor, report on, control, secure, and evaluate an orchestration of work to achieve a specific objective constrained by time and location that include, for example, factory shifts, loading dock availability, refinery cycles, and service centers.
2	1	Order Management	Ability to define, place, settle, match, split, transfer, and cancel a request by one party to another to buy, sell, or exchange goods or services.
2	1	Partner Management	Ability to identify, engage, and collaborate with, control, predict, process, organize, present, and analyze all information, documents, preferences, experiences, and history related to a legal entity that has, plans to have, or has had some degree of involvement with the organization.
2	1	Product Management	Ability to conceptualize, design, develop, bundle, source, maintain, and retire a named combination of goods and services that can be offered to customers, in whole or in part, to satisfy the customer's overall experience.
2	1	Route Management	Ability to research, define, award, and establish a way or course taken to get from a starting point to a destination, which may include stops along the way.
2	1	Shipment Management	Ability to identify, describe, package, bundle or unbundle, evaluate, and track freight, cargo, baggage, or packages containing a wide range of inanimate or non-human living contents.
3	1	Competency Management	Ability to define, design, profile, rate, and validate the skills and knowledge necessary to do something.
3	1	Content Management	Ability to plan, develop, create, capture, modify, evaluate, catalog, archive, and publish a creative work or other authored item, such as is manifested in audio/visual, still image, textual, experiential, mixed-media, or other forms.
3	1	Decision Management	Ability to define, determine, design, formalize, document, record, and disseminate a conclusion or resolution reached after considering alternative options.
3	1	Event Management	Ability to define, identify, and predict an occurrence that has happened or may happen, especially one of importance, concern or interest.
3	1	Finance Management	Ability to plan, direct, monitor, organize, control, and report on the monetary aspects and resources that an organization is responsible for.
3	1	Human Resource Management	Ability to assess, mentor, compensate, terminate, and otherwise coordinate individuals who have, plan to have, or have had a legal agreement with the organization, which includes compensation and other benefits on a temporary or permanent basis.
3	1	Information Management	Ability to define, organize, structure, secure, protect, and disseminate facts, statistics, attributes, and other types of data about an organization's set of business objects.
3	1	Initiative Management	Ability to organize, plan, direct, and communicate progress against a coordinated collection of temporary endeavors undertaken to create a unique outcome.
3	1	Inquiry Management	Ability to manage a question, request, feedback, or comment that may exist inside or outside of the organization which can be received, identified, harvested, disseminated, classified, and tracked.
3	1	Interaction Management	Ability to define, design, track, activate, terminate, and control access to a set of contemporaneous collaborations or contacts about a given subject, over a span of time, between two or more entities, using one or more channels, at one or more physical or virtual locations such as meetings, interviews, seminars, or consultations.

Tier	Level	Capability	Definition
3	1	Job Management	Ability to identify, define, assign, and manage named category of accountabilities, whether remunerative or non-remunerative, associated with an assigned, specific, and accountable organization duty, role, or function that can be executed by a human or non-human resource.
3	1	Language Management	Ability to define, express, recognize, interpret, and translate a method of communication or dialect variant consisting of units of representation or meaning such as numbers, words, symbols, sounds, or other physical manifestations and gestures, presented in a structured way.
3	1	Legal Proceeding Management	Ability to direct, administer, oversee, respond to, and generally administer all aspects of work related to an activity invoking the power of a tribunal to enforce a law.
3	1	Location Management	Ability to define, calculate, articulate, determine, disseminate, or otherwise track a position or site.
3	1	Schedule Management	Ability to define, develop, arrange, and administer an aggregation of schedule elements.
3	1	Submission Management	Ability to define, facilitate, interpret, acknowledge, validate, route, track, and control access to a container that is used to exchange one or more requests, inquiries, messages, notifications, content, or other objects between parties.
3	1	Time Management	Ability to define, establish, articulate, and monitor a point or duration, in the past, present, or future.
3	1	Training Course Management	Ability to define, conceptualize, create, and convey structured theoretical or practical subject matter in a consumable format, associated with a curriculum, workshop, or seminar.
3	1	Trip Management	Ability to plan, track, prepare for, depart, arrive, and adjust a journey between a starting point location and one or more targeted locations, until a final destination is reached.
3	1	Work Management	Ability to capture, organize, prioritize, route, interpret, disseminate, assign, and administer tasks and task queues.

Figure 8.2.2: Manufacturing Industry Level 1 Capabilities and Definitions

Value Streams

The manufacturing reference model has a variety of value streams specific to manufacturing or derived from the common reference model. Figure 8.2.3 highlights the manufacturing-specific value streams, which focus on product design, creation, and acquisition; operation design and execution; material acquisition and inventory management; asset deployment; and facility maintenance and deployment.

Manufacturing-Focused Value Streams	Manufacturing Usage Context
Acquire Material	Procurement and receipt of parts, raw materials, components, and other materials to be assembled, blended, transformed, and incorporated into product offerings.
Acquire Product	Customer perspective for acquiring a final product from a manufacturing company, including procurement, delivery, and customer receipt of that product.
Deploy Asset	Designing, crafting, configuring, integrating, and readying for use manufacturing equipment, hardware, software, conveyors, and other assets.

Manufacturing-Focused Value Streams	Manufacturing Usage Context
Deploy Facility	Specification, design, and commissioning of modifications to manufacturing facilities, refineries, shipping centers, yards, and other structures.
Design Operation	Planning, designing, specifying, and testing assembly lines or similar operations and related tooling, processes, and resource requirements.
Develop Product	Design, market validation, engineering, and prototyping a product, with the end result a ready-to-built product.
Execute Operation	Planning, initiating, running, staffing, and terminating an assembly line run, shift cycle, or related operating cycle.
Manufacture Product	Initiating the manufacturing cycle, preparing materials, making the product, packaging and final activities to ensure the product is ready to acquire.
Optimize Asset and Material Inventory	Assessing, resupplying, and balancing material inventories and asset inventories, which includes supply analysis and demand forecasting.

Figure 8.2.3: Manufacturing Industry-Specific Value Streams

Figure 8.2.4 depicts diagrammatic views of the manufacturing value streams listed in figure 8.2.3.

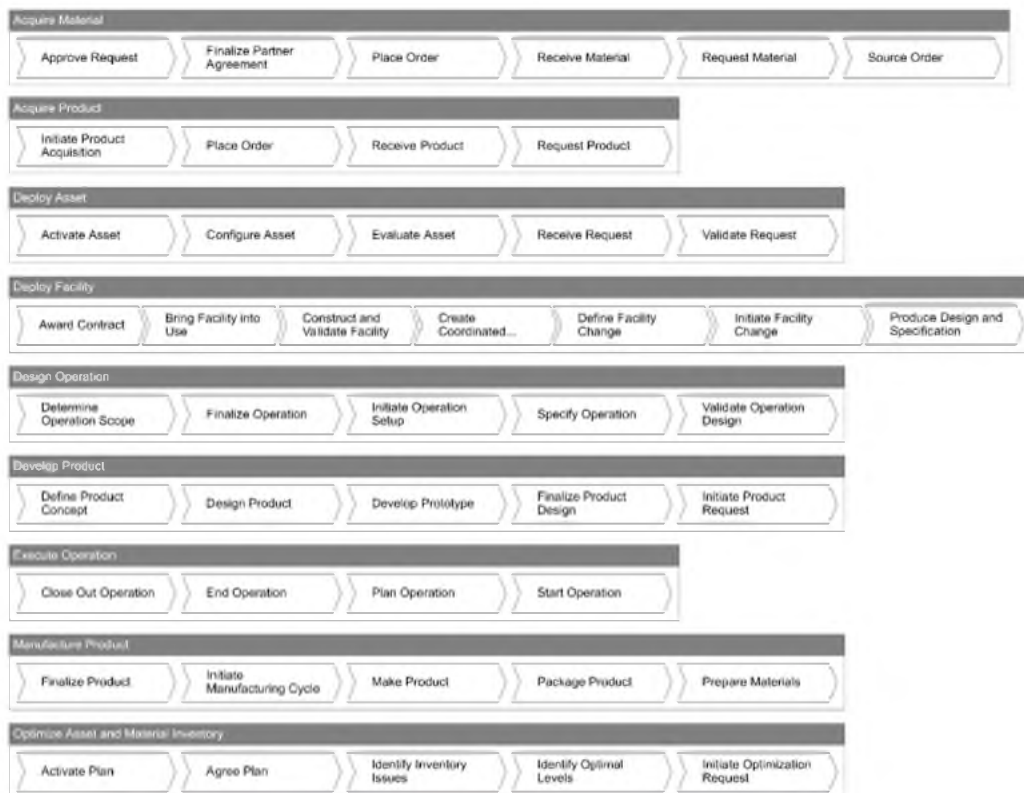


Figure 8.2.4: Manufacturing Industry-Specific Value Stream Diagrams

In addition to the nine manufacturing-specific value streams shown in figures 8.2.3 and 8.2.4, manufacturing organizations require the additional value streams shown in figure 8.2.5. These value streams address additional focal points that target finance, procurement, audit, compliance, human resource, partner, incident, information dissemination, and reporting.

Acquire Asset	Make a Trip
Conduct Audit	Onboard Human Resource
Create Policy	Onboard Partner
Deliver Initiative	Optimize Investments
Deliver Meeting	Optimize Network
Develop Human Resource Career	Deliver Training
Disseminate Information	Respond to Incident
Ensure Policy Compliance	Send Shipment
Establish Agreement	Settle Payment Obligation
Execute Campaign	

Figure 8.2.5: General Value Streams for Manufacturing Industry

The sections that follow further articulate the manufacturing value streams shown in figure 8.2.3. Each value stream includes a description, value proposition, and triggering stakeholder. In addition, the value stream stages include descriptions, entrance and exit criteria, value items, and participating stakeholders.

Acquire Material Value Stream

Figure 8.2.6 depicts the Acquire Material value stream, which is used to procure everything from parts to input materials to tools. This value stream is triggered by the requester.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Acquire Material		The end-to-end perspective of acquiring material, from initiating and approving the material request, to sourcing and processing procurement orders and delivering the material to the requester.	Material acquired.				Operations Manager, Inventory Manager, Planner
	Request Material	The act of submitting a request for a new material.		Material order initiated	Material order acknowledged	Material requested.	Procurer, Inventory Manager, Planner
	Approve Request	The act of validating that the material request meets the procurement, financial, and business justification criteria.		Material order initiated	Material order approved	Material request validated.	Procurer, Finance Manager, Inventory Manager, Operations Manager, Planner
	Source Order	The act of evaluating and selecting the supplier for the material.		Material order approved	Supplier selected	Material order sourced.	Procurer, Supplier
	Finalize Partner Agreement	Optional stage in which a single agreement or master services agreement is established to facilitate an order.		Agreement requested	Agreement executed	Agreement enabling material ordering.	Procurer, Supplier, Inventory Manager, Planner

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Place Order	The act of placing a procurement order to acquire the material.		Supplier selected	Material order placed	Material order processed.	Procurer, Supplier, Finance Controller, Inventory Manager, Planner
	Receive Material	The act of fulfilling the order, receiving the material and accounting for the material.		Material order placed	Material received	Material requester received material.	Inventory Manager, Planner, Inventory Technician

Figure 8.2.6: Acquire Material Value Stream

This value stream is used to acquire material from a partner and works for situations where a master agreement is in place or is to be established in stage 4. In situations that do not require setting up a master agreement, stage 4 may be skipped. The value stream also works in situations that involve a one-time acquisition.

Acquire Product Value Stream

Figure 8.2.7 depicts the customer-triggered Acquire Product value stream.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Acquire Product		The end-to-end perspective of a customer acquiring a product (goods or service) from the company, from the initial request to fulfilling the need.	Product acquired.				Supplier, Customer, Retailer
	Initiate Product Acquisition	The act of determining that a product is needed or desired.		Opportunity established	Inquiry received	Product specification.	Customer, Retailer
	Request Product	The act of validating that a product meets requirements and submitting a request for the product.		Inquiry received	Product selected	Product order submitted.	Customer, Retailer
	Place Order	The act of evaluating and selecting the supplier for the product and placing an order for the product.		Product selected	Product order placed	Product order placed.	Customer, Supplier, Retailer
	Receive Product	The act of fulfilling the order, tendering or receiving the product, and accounting for the product.		Product order placed	Product received	Product recipient received product.	Customer, Supplier, Retailer

Figure 8.2.7: Acquire Product Value Stream

The Acquire Product value stream enables a customer to contact the company, procure a product or products, and take ownership of that product or products. In some cases, a partner may initiate the value stream, acting in a proxy role for that end customer. Scenarios supported by this value stream vary significantly. As a result, the value stream is designed to provide a good deal of flexibility for multiple business models.

Deploy Asset Value Stream

Figure 8.2.8 depicts the internally triggered Deploy Asset value stream, which covers initial installation, configuration adjustments, or subsequent maintenance. For select assets, such as software, it may also involve the creation of the asset.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Deploy Asset		The end-to-end perspective of making an asset available for use within the organization and to the individual(s) requesting the asset.	Asset is made available and ready for use.				Asset Manager, Operations Manager
	Receive Request	The act of receiving the request for installation or maintenance of an asset.		Asset request identified	Asset request acknowledged	Asset request accepted.	Asset Manager, Operations Manager
	Validate Request	The act of authenticating and verifying a request received for asset.		Asset request accepted	Asset request validated	Asset request approved.	Procurer, Finance Manager, Asset Manager, Business Manager, Operations Manager
	Evaluate Asset	The act of assessing performance or suitability of asset.		Valid request, asset identified	Asset performance and scope evaluated	Asset scope of work approved.	Procurer, Supplier, Asset Manager, Tester, Operations Manager
	Configure Asset	The act of initializing, setting up, creating, assembling, validating, or repairing asset in preparation for deployment.		Asset scope of work identified	Asset configured	Asset ready for deployment.	Asset Maintainer
	Activate Asset	The act of making the asset ready for use and closing the request.		Asset ready for deployment	Asset made available for use and request closed	Asset activated for use.	Supplier, Asset Maintainer, Asset Manager, Accountant, Operations Manager

Figure 8.2.8: Deploy Asset Value Stream

The Deploy Asset value stream has a wide variety of uses and includes setting up, repairing, and readying equipment or machinery for use; setting up fixtures or accessories, preparing land use; or making large-scale or complex tools available to workers. This value stream may also be used to deploy conveyors (e.g., vehicles), which are uniquely defined separate and apart from other tangible assets.

Deploy Facility Value Stream

Figure 8.2.9 shows the Deploy Facility value stream, which may be triggered by a facility manager.

Value Stream	Value Stream Stage	Description	Value Proposition	Entry Criteria	Exit Criteria	Value Item	Stakeholder
Deploy Facility		The end-to-end perspective of planning, specifying, designing, and commissioning major or minor modifications to facility, including buildings, refineries, shipping centers, yards, and other structures.	Updated Facility.				Facility Manager
	Initiate Facility Change	The act of requesting new or updated facility.		New or updated facility need identified	New or updated facility requirements identified	Facility needs identified.	Facility Manager
	Define Facility Change	The act of defining facility changes, aligned to policies and analyzed trends, producing conceptual designs and plans, and gaining appropriate approval.		New or updated facility requirements identified	The requirements and relevant policies are reflected in the concept design	Facility plans agreed and approved.	Facility Manager, Engineer, Architect
	Award Contract	The act of tendering and awarding a contract to carry out the work.		Requirements and relevant policies are reflected in the concept design	Tender and award complete	Contract awarded.	Facility Manager, Engineer, Architect, Contract Officer

Value Stream	Value Stream Stage	Description	Value Proposition	Entry Criteria	Exit Criteria	Value Item	Stakeholder
	Produce Design and Specification	The act of producing detailed design and specification for a facility update.		Contract awarded	Designs complete	Facility designs agreed.	Facility Manager, Engineer, Architect
	Create Coordinated Schedule	The act of assessing and agreeing to the best options for scheduling so as to minimize disruptive impacts.		Designs complete	Works scheduled	Work schedule agreed.	Facility Manager, Engineer, Architect
	Construct and Validate Facility	The act of building to agreed designs in accordance with agreed standards and constraints, assuring that the facility meets with those designs and relevant legislation, and is fit to be brought into service.		Works scheduled	Works signed-off	Facility ready for service.	Facility Manager, Engineer, Architect
	Bring Facility into Use	The act of opening the facility to use.		Works signed-off	Facility opened	Facility in use.	Facility Manager, Engineer, Architect

Figure 8.2.9: Deploy Facility Value Stream

The Deploy Facility value stream covers scenarios related to design changes, improvements, or structural upgrades to buildings, factories, maintenance shops, warehouses, shipping centers, and other facilities or structures used in the course of a manufacturing company's business.

Design Operation Value Stream

Figure 8.2.10 shows the Design Operation value stream, which may be triggered by an operations manager seeking to design and set up various manufacturing lines or related operating instances.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Design Operation		The end-to-end perspective of determining the need for, specifying, and setting up an operation, such as setting up or modifying a manufacturing assembly line or similar operation.	To successfully design and set up an operation, readying for a manufacturing run or other operational requirement.				Operations Manager
	Initiate Operation Setup	The act of initiating action to design a new operation.		Operation request received	Operation request validated	Operation request ready to process.	Operations Manager, Finance Manager
	Determine Operation Scope	The act of determining the scope and context of the operation.		Operation request validated	Operation scope and context determined	Operation cost and scope approved.	Operations Manager, Engineer, Machinist
	Specify Operation	The act of defining operation workflow, machine tool specifications, staffing, and other resource levels.		Operation scope and context determined	Operation specifications defined	Operation workflow, tooling, and resources defined.	Operations Manager, Engineer, Machinist
	Validate Operation Design	The act of testing, performing quality reviews, and gaining sign-offs for the operation.		Operation specifications defined	Operation validated	Operation sign-off to proceed.	Operations Manager, Engineer, Machinist, Compliance Officer
	Finalize Operation	The act of preparing all documentation, guidelines, and tooling necessary to initiate the operation.		Operation validated	Operation setup guidelines finalized	Operation ready to proceed.	Operations Manager

Figure 8.2.10: Design Operation Value Stream

The Design Operation value stream initiates and completes an assembly or processing line design, process and equipment design, resource or asset maintenance requirements, shipping operations, and content documentation. In some cases, a collection of smaller operations, contained within an aggregate operation, are designed.

Develop Product Value Stream

Figure 8.2.11 shows the Develop Product value stream, which may be initiated by a marketing manager, product manager, or a partner.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Develop Product		The end-to-end perspective of delivering a ready-to-build design.	Manufacturing-ready design.				Marketing Manager, Product Manager, Partner
	Initiate Product Request	The act of initiating the product delivery effort.		Product requested	Product request validated and approved.	Request approved.	Business Manager, Product Manager, Marketing Manager
	Define Product Concept	The act of defining an initial concept, including the improvement to an existing product.		Approved idea(s)	Requirements defined	Requirements approved.	Product Owner, Product Manager, Product Designer, Engineer, Merchandiser, Market Analyst, Customer, Partner
	Design Product	The act of translating concept requirements into product design specifications.		Defined requirements	Product design specification approved	Approved product design specification.	Product Designer, Engineer, Finance Manager, Quality Auditor
	Develop Prototype	The act of modeling, validating, costing, and testing an approved prototype.		Approved product design specification	Product prototype articulated and validated	Prototype completed.	Product Developer, Engineer, Lab Technician, Certification Authority
	Finalize Product Design	The act of finalizing a bill of materials, manufacturing specifications, and production readiness.		Fully validated and functional prototype	Operations design signoff	Final product design.	Product Designer, Engineer, Product Developer, Technical Designer

Figure 8.2.11: Develop Product Value Stream

The Develop Product value stream in manufacturing is associated with defining the product, including a prototype, to be produced or mass produced at a later point in time.

Execute Operation Value Stream

Figure 8.2.12 shows the Execute Operation value stream, which may be triggered by an operations manager or a partner depending on the situation.

Value Stream	Value Stream Stage	Description	Value Proposition	Entry Criteria	Exit Criteria	Value Item	Stakeholder
Execute Operation		The end-to-end perspective of planning, initiating, running, and terminating an operation.	To successfully complete an operation within agreed performance parameters.				Operations Manager, Partner
	Plan Operation	The act of planning and rostering an operation instance.		Operation triggered	Operation planned	Time bound plan.	Operations Manager, Planner, Partner

Value Stream	Value Stream Stage	Description	Value Proposition	Entry Criteria	Exit Criteria	Value Item	Stakeholder
	Start Operation	The act of provisioning and initiating an instance of an operation.		Operation planned	Operation safety-checked and initiated	Operation running.	Operations Manager, Partner, Human Resource
	End Operation	The act of managing and optimizing an operation while it is running.		Operation safety-checked and initiated	Operation ended	Operation ended.	Operations Manager, Partner, Human Resource
	Close out Operation	The act of demobilizing and evaluating an instance of an operation.		Operation ended	Resources demobilized, post-mortem complete	Operation closed out.	Operations Manager, Partner, Human Resource

Figure 8.2.12: Execute Operation Value Stream

The Execute Operation value stream represents a manufacturer's ability to initiate, plan, run, and shutdown an operation, which may include an assembly line, factory shift, shipping center, or similar time-constrained instance of an operation.

Manufacture Product Value Stream

Figure 8.2.13 shows the Manufacture Product value stream, which may be triggered by an operations manager at a manufacturing plant. The stages have been described to cover many types of manufacturing across discrete, assembly-focused work, and continuous, process-based work.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Manufacture Product		The end-to-end perspective of creating a ready-to-acquire product.	Product assembled or processed to requirements on time.				Operations Manager
	Initiate Manufacturing Cycle	The act of planning for, and start of, a manufacturing cycle for products with sufficient similarity to be made together with relatively minor resource adjustments between instances.		Initiation of the manufacturing cycle	Manufacturing cycle validated and started	Ability to manufacture product.	Product Manager, Operations Manager
	Prepare Materials	The act of final movement and readying of material to prepare for the make product stage.		Manufacturing cycle validated and started	Material in place	Material is readied for product assembly or processing.	Product Manager, Inventory Manager, Operations Manager
	Make Product	The act of making a final product that is not yet fully packaged, which can include multiple, parallel assembly, processing, or mixing sequences.		Material in place	Product assembled or processed	Product in assembled or processed state.	Operator, Quality Reviewer, Asset Maintainer, Operations Manager
	Package Product	The act of preparing a product for market, including trim, documentation, and other readiness.		Product assembled or processed	Product packaged	Product packaged for market.	Quality Reviewer, Product Packager, Operations Manager
	Finalize Product	The act of finalizing a packaged product to be released for subsequent acquisition.		Product packaged	Product ready for acquisition	Product available.	Customer Manager, Product Packager, Inventory Manager

Figure 8.2.13: Manufacture Product Value Stream

The Manufacture Product value stream represents the manufacture of a product – either by

assembly or processing or both -- within a bound time that meets customer needs and is ready for acquisition.

Optimize Asset and Material Inventory Value Stream

Figure 8.2.14 shows the Optimize Asset and Material Inventory value stream which, depending on the inventory type, would be triggered by an asset manager or a material manager.

Value Stream	Value Stream Stage	Description	Value Proposition	Entry Criteria	Exit Criteria	Value Item	Stakeholder
Optimize Asset and Material Inventory		The end-to-end perspective of assessing, balancing, resupplying, and balancing an asset inventory or materials inventory.	Optimally performing asset base.				Asset Manager, Material Manager
	Initiate Optimization Request	The act of receiving and validating a request or trigger for optimization.		Optimization request received	Optimization request received	Optimization request.	Asset Manager, Material Manager, Operations Manager
	Identify Optimal Levels	The act of analyzing supply and demand, and determining optimal availability levels for each asset and material class and appropriate strategies for achieving them.		Optimization request received	Optimal levels defined	Defined optimal levels.	Asset Manager, Material Manager, Operations Manager
	Identify Inventory Issues	The act of monitoring and identifying a predicted or actual availability or stock issue, or non-compliance with a policy or business rule, then validating whether a variance or trend is material or of note.		Optimal levels defined	Inventory issues identified	Asset and material management backlog.	Asset Manager, Material Manager, Operations Manager
	Agree Plan	The act of establishing options and resources for managing and mitigating agreed issues, assessing options and impacts, and determining action to take.		Inventory issues identified	Agreement concerning a plan to manage availability and stock	Asset and material mitigation plan agreed.	Asset Manager, Material Manager, Operations Manager
	Activate Plan	The act of putting a plan into action to manage and mitigate agreed issues, and capture outcomes, the result of which may require a manager to initiate other value streams.		Agreement concerning a plan to manage availability and stock	Expert assessment that the asset base is optimally available and provisioned	Assets and materials optimization plan execution underway.	Asset Manager, Material Manager, Operations Manager

Figure 8.2.14: Optimize Asset and Material Inventory Value Stream

Inventory optimization does not actually procure the materials or assets in question. Procurement value streams — Acquire Material or Acquire Asset — would complete the end-to-end procurement. The optimization value stream entails supply-and-demand analysis, inventory valuation, criticality assessment, delivery analysis, and shelf-life considerations, producing an optimization plan as a result.

Information Map

Figure 8.2.15 depicts a subset of the manufacturing information map, showing the primary information concepts that align with the capability map described in Figure 8.2.1.

Information Concept	Information Concept Definition
Agreement	A set of legally binding rights and obligations between two or more legal entities.

Information Concept	Information Concept Definition
Asset	Tangible or intangible property used in the course of doing business.
Channel	A digital, analog, or physical conduit through which products, related services, or communications are delivered or received, including the Internet, phone, delivery service, satellite, radio, or physical means.
Conveyor	Any variety of an apparatus, whether human- or robot-piloted, that has the capacity to transport people, animals, goods, assets, or other physical items, and includes but is not limited to, trucks, carts, automobiles, rail-based vehicles and assemblies, air-borne craft, water-borne craft, animal-pulled devices, and animal-assemblies.
Customer	A legal entity that has, plans to have, or has had an agreement with the organization, or is a recipient or beneficiary of the organization's products or services.
Facility	A physical structure, which can include manufacturing plants, refineries, shipping docks, and other configurations.
Incident	An unexpected, disruptive, or potentially disruptive, occurrence.
Material	The matter used in the production and manufacturing of products, directly or indirectly, as well as the powering of physical products.
Message	A verbal, written, recorded, or digitally-represented communication, including missives, notifications, alerts, and other internally or externally targeted communication about the organization's mission, products, plans, activities, and other focal points.
Network	A set of connected arcs and nodes that may be associated with a system of facilities, assets, locations, routes, and other business objects.
Operation	An orchestration of work to achieve a specific objective constrained by time and location that include, for example, factory shifts, loading dock availability, refinery cycles, and service centers.
Order	A request by one party to another to buy, sell, or exchange goods or services.
Partner	A legal entity that has, plans to have, or has had some degree of involvement with the organization.
Product	A named combination of goods and services that can be offered to customers, in whole or in part, to satisfy the customers' needs or overall experience.
Route	A way or course taken in getting from a starting point to a destination, which may include stops along the way.
Shipment	Transported items containing a wide range of inanimate or non-human living contents.

Figure 8.2.15: Sample Subset of Manufacturing Information Map

The complete information map, which is available in the downloadable version of the manufacturing reference model, contains all primary and secondary information concepts along with definitions, types, possible states, and relationships to other information concepts.

Stakeholder Map

The stakeholders shown in Figure 8.2.16 represent the personnel or organizations that trigger the primary manufacturing value streams. Additional stakeholders are detailed in the complete, downloadable manufacturing reference model.

Stakeholder Type	Stakeholder Category	Stakeholder	Description
Internal	Human Resource	Asset Manager	An individual or organization that governs a set of assets.
Internal	Human Resource	Facility Manager	An individual or organization that inspects, maintains, and oversees grounds, buildings, and equipment to ensure that a workspace is safe and functional.
Internal	Human Resource	Marketing Manager	An individual who creates and implements marketing budgets, procedures, and campaigns, and supervises, hires, and trains marketing employees.
Internal	Human Resource	Material Manager	An individual who oversees inventory and supplies, manages vendor relationships, assesses supply needs, coordinates delivery schedules, signs purchase orders, and tracks the flow of inventory through the organization's supply chain.
Internal	Human Resource	Operations Manager	An individual who directs an operation.
External	Partner	Partner	An individual or organization that has, or had, an agreement with the organization for the provision of goods and/or services.
Internal	Human Resource	Product Manager	An individual who conceives, defines, determines, and oversees creation and distribution of a product or service on behalf of the business.

Figure 8.2.16: Sample Subset of Manufacturing Stakeholder Map

Future Reference Model Plans

In the future, this section will continue to enhance capability, information, stakeholder and value stream perspectives, add organization maps, incorporate selected cross-mappings, and reference business scenario examples and usage guides. A downloadable version of the complete manufacturing reference model is on the Business Architecture Guild® website.

SECTION 8.6: COMMON REFERENCE MODEL

The common reference model provides a foundational set of standardized business architecture reference model content that applies across industries. Common reference model content is framed outside the context of a specific industry, ensuring that it applies across multiple vertical industry sectors. From this universal model, organizations may strengthen their business architecture by blending common reference model content with vertical industry reference model content.

The common reference model focuses on capabilities, value streams, information concepts, and stakeholders that are commonly found in organizations regardless of their industry. As a result, the common reference model articulates capabilities in the strategic and supporting tiers of the capability map, industry-neutral capabilities in the customer-facing tier of the capability map, related information concepts, common value streams, and related stakeholders.

The common reference model helps increase commonality and reuse across industry reference models, enabling the development of business blueprints in greater depth of content, specifics, and breadth. From a usability perspective, the common reference model works well for the following situations:

- Serves as a baseline starting point for industry sectors where no vertical reference model is available
- Works as a cross-check to augment or improve existing in-house business architectures

The common reference forms the foundation for other Business Architecture Guild® industry reference models, where each of those models incorporates common content in one form or another. It may, however, not always be the starting point for an organization that cannot find a match in the existing set of models. For example, a retail reference model might consider starting with the manufacturing reference model, which has more specifics around products, materials, acquisitions, and related concepts. The common model is, however, an excellent checkpoint for organizations seeking to validate or evolve their in-house business architecture.

Capability Map

Figure 8.6.1 depicts the common reference model level 1 capability map that represents strategic, customer-facing, and supporting capabilities, rationalized across a cross-section of vertical industry business models.

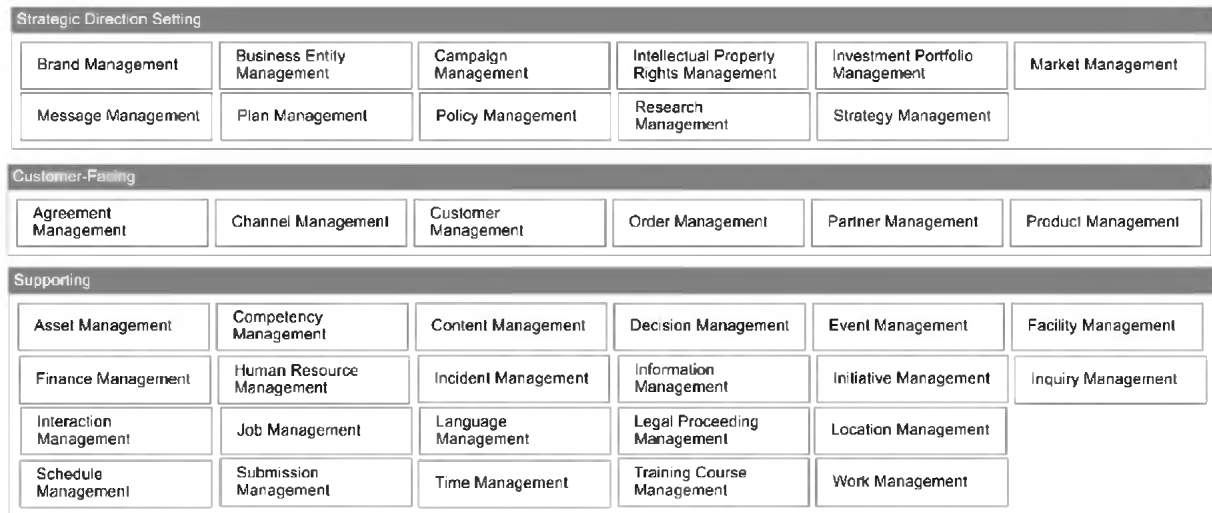


Figure 8.6.1: Common Reference Model Capability Map

Figure 8.6.1 explicitly includes customer-facing capabilities that are common across industries but omits those capabilities that are unique to a particular industry. Note, however, in certain industries, a strategic or supporting capability may be considered core. For example, Asset Management is a supporting capability within most service-based business models, but a manufacturing firm, utility, or transportation provider would represent Asset Management as a core capability.

Expanding on the capability map shown in figure 8.6.1, figure 8.6.2 represents tabular capability map decompositions and related definitions. Figure 8.6.2 uses the standard *BIZBOK® Guide* capability mapping template, which shows the tier, capability level, capability name, and capability definition in columns one through four. Note that the table in figure 8.6.2 only includes level 1 decompositions. Lower-level decompositions can be found in the common reference model downloadable content that is available on the Business Architecture Guild® website.

Tier	Level	Name	Description
1	1	Brand Management	Ability to establish, organize, analyze, administer, and report on all aspects of a name, symbol, or design that identifies and differentiates products, offerings, or organizational identities.
1	1	Business Entity Management	Ability to create, structure, and govern the legal body or bodies that comprise a single organization.
1	1	Campaign Management	Ability to identify the need for, plan, design, execute, and measure the effectiveness of an outreach activity that targets a specific population, for example, customers, human resources, partners, and patients, to achieve a certain goal, such as marketing awareness, hiring activities, and health awareness.

Tier	Level	Name	Description
1	1	Intellectual Property Rights Management	Ability to define, establish, validate, value, register, obtain, and dispose of, legal protections such as patents, trademarks, and copyrights.
1	1	Investment Portfolio Management	Ability to control, organize, and allocate a set of resources expected to increase in value or provide income, in order to achieve a targeted balance of risk, return, and volatility.
1	1	Market Management	Ability to define, identify, quantify, qualify, analyze, segment, address, and create demand for existing or future products by individuals, populations of individuals, or organizations.
1	1	Message Management	Ability to define, craft, frame, vet, disseminate, and track a verbal, written, recorded, or digitally-represented communication, including missives, notifications, alerts, and other internally or externally targeted communication about the organization's mission, products, plans, activities, and other focal points.
1	1	Plan Management	Ability to define, develop, validate, maintain, and coordinate a set of related activities to achieve a result.
1	1	Policy Management	Ability to establish, maintain, comply with, and administer a course or principle of action adopted or proposed by an organization.
1	1	Research Management	Ability to conduct systematic investigation into materials and sources in order to establish facts and reach conclusions that comprise a result.
1	1	Strategy Management	Ability to define and disseminate an integrated pattern and perspective that aligns an organization's goals, objectives, and action sequences into a cohesive whole.
2	1	Agreement Management	Ability to establish, organize, analyze, administer, and report on all aspects of a set of legally binding rights and obligations between two or more legal entities.
2	1	Channel Management	Ability to establish, analyze, and utilize a digital, analog, or physical conduit through which products, related services, or communications are delivered or received, including the Internet, phone, delivery service, satellite, radio, or physical means.
2	1	Customer Management	Ability to control, predict, process, organize, present, and analyze all information, documents, preferences, experiences, and history related to a legal entity that has, plans to have, or has had an agreement with the organization, or is a recipient or beneficiary of the organization's products or services.
2	1	Order Management	Ability to define, place, settle, match, split, transfer, and cancel a request by one party to another to buy, sell, or exchange goods or services.
2	1	Partner Management	Ability to identify, engage, collaborate with, control, predict, process, organize, present, and analyze all information, documents, preferences, experiences, and history related to a legal entity that has, plans to have, or has had some degree of involvement with the organization.
2	1	Product Management	Ability to conceptualize, design, develop, bundle, source, maintain, and retire a named combination of goods and services that can be offered to customers, in whole or in part.
3	1	Asset Management	Ability to create, track, report on, and dispose of tangible or intangible property.
3	1	Competency Management	Ability to define, design, profile, rate, and validate the skills and knowledge necessary to do something.

Tier	Level	Name	Description
3	1	Content Management	Ability to plan, develop, create, capture, modify, evaluate, catalog, archive, and publish a creative work or other authored item, such as is manifested in audio/visual, still image, textual, experiential, mixed-media, or other forms.
3	1	Facility Management	Ability to define, describe, maintain, and administer a physical structure.
3	1	Finance Management	Ability to plan, direct, monitor, organize, control, and report on the monetary aspects and resources that an organization is responsible for.
3	1	Human Resource Management	Ability to assess, mentor, compensate, terminate, and otherwise coordinate individuals who have, plan to have, or have had a legal agreement with the organization, which includes compensation and other benefits on a temporary or permanent basis.
3	1	Incident Management	Ability to identify, define, and track an unplanned, disruptive, or potentially disruptive experience.
3	1	Information Management	Ability to define, organize, structure, secure, protect, and disseminate facts, statistics, attributes, and other types of data about an organization's set of business objects.
3	1	Initiative Management	Ability to organize, plan, direct, and communicate progress against a coordinated collection of temporary endeavors undertaken to create a unique outcome.
3	1	Inquiry Management	Ability to manage a question, request, feedback, or comment that may exist inside or outside of the organization which can be received, identified, harvested, disseminated, classified, and tracked.
3	1	Job Management	Ability to identify, define, assign, and manage named category of accountabilities, whether remunerative or non-remunerative, associated with an assigned, specific, and accountable organization duty, role, or function that can be executed by a human or non-human resource.
3	1	Language Management	Ability to define, express, recognize, interpret, and translate a method of communication or dialect variant consisting of units of representation or meaning such as numbers, words, symbols, sounds, or other physical manifestations and gestures, presented in a structured way.
3	1	Legal Proceeding Management	Ability to direct, administer, oversee, respond to, and generally administer all aspects of work related to an activity invoking the power of a tribunal to enforce a law.
3	1	Location Management	Ability to define, calculate, articulate, determine, disseminate, or otherwise track a position or site.
3	1	Interaction Management	Ability to define, design, track, activate, terminate, and control access to a set of contemporaneous collaborations or contacts about a given subject, over a span of time, between two or more entities, using one or more channels, at one or more physical or virtual locations such as meetings, interviews, seminars, or consultations.
3	1	Time Management	Ability to define, establish, articulate, and monitor a point or duration, in the past, present or future.
3	1	Training Course Management	Ability to define, conceptualize, create, and convey structured theoretical or practical subject matter in a consumable format, associated with a curriculum, workshop, or seminar.
3	1	Work Management	Ability to capture, organize, prioritize, route, interpret, disseminate, assign, and administer tasks, inbound requests, schedules, events, and related decisions.

Tier	Level	Name	Description
3	1	Submission Management	Ability to define, facilitate, interpret, acknowledge, validate, route, track, and control access to a container that is used to exchange one or more requests, inquiries, messages, notifications, content, or other objects between parties.
3	1	Event Management	Ability to identify, define, and predict an occurrence that has happened or may happen, especially one of importance, concern or interest.
3	1	Decision Management	Ability to define, determine, design, formalize, document, record, and disseminate a conclusion or resolution reached after considering alternative options.
3	1	Schedule Management	Ability to define, develop, arrange, and administer an aggregation of schedule elements.

Figure 8.6.2: Common Reference Model – Capability Level 1 Definitions

Value Streams

The common reference model includes the following value streams. These value streams are deemed to be commonly used by most organizations regardless of industry sector.

- Acquire Asset
- Conduct Audit
- Create Policy
- Deliver Initiative
- Deliver Meeting
- Deliver Training
- Deploy Asset
- Develop Human Resource Career
- Disseminate Information
- Ensure Policy Compliance
- Execute Campaign
- Onboard Human Resource
- Onboard Partner
- Optimize Investments
- Settle Payment Obligation

Figure 8.6.3 depicts diagrams of each of the aforementioned 15 common reference model value streams and related value stream stages.

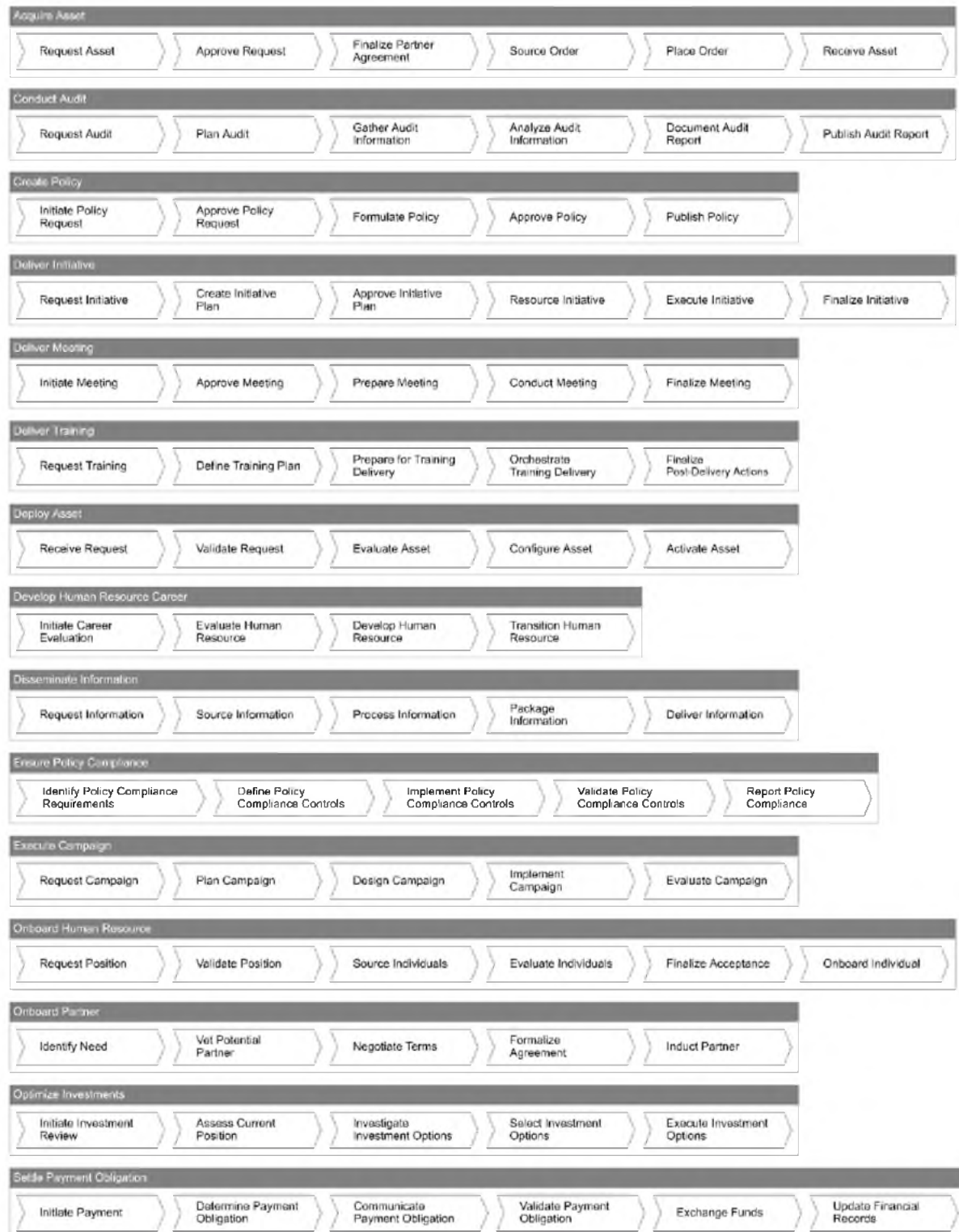


Figure 8.6.3: Common Reference Model Value Stream Diagrams

Figures 8.6.4 through 8.6.18 articulate the common reference model value streams, expanding on their value propositions, descriptions, triggering stakeholders, and value stream stage-related descriptions, entrance and exit criteria, value items, and participating stakeholders.

Acquire Asset Value Stream

Figure 8.6.4 describes the details of the Acquire Asset value stream. This value stream illustrates a procurement-related, end-to-end value delivery perspective through which a requester obtains an asset and has that asset reflected in the financial records.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Acquire Asset		The end-to-end perspective of acquiring an asset, from initiating and approving the asset request, to sourcing and processing procurement orders and delivering the asset to the requester.	Asset acquired.				Asset Owner
	Request Asset	The act of submitting a request for a new asset.		Asset order initiated	Asset order acknowledged	Asset requested.	Procurer, Procurement Team Member, Asset Owner
	Approve Request	The act of validating that the asset request meets the procurement, financial, and business justification criteria.		Asset order initiated	Asset order approved	Asset request validated.	Asset Request Evaluator, Finance Manager, Requester, Procurer
	Finalize Partner Agreement	Optional value stream stage in which a single agreement or master services agreement is established to facilitate an order.		Agreement requested	Agreement executed	Agreement enabling asset ordering.	Asset Owner, Procurement Team Member, Procurer, Supplier
	Source Order	The act of evaluating and selecting the supplier for the asset.		Asset order approved	Supplier selected	Asset order sourced.	Tester, Procurement Team Member
	Place Order	The act of placing a procurement order to acquire the asset.		Supplier selected	Asset order placed	Asset order processed.	Supplier, Accountant, Asset Owner, Procurement Team Member
	Receive Asset	The act of fulfilling the order, receiving the asset, and accounting for the asset.		Asset order placed	Asset received	Asset requester received asset.	Asset Owner

Figure 8.6.4: Common Reference Model Value Stream — Acquire Asset

Conduct Audit Value Stream

Figure 8.6.5 describes the details of the Conduct Audit value stream, which may be triggered internally by a risk officer or externally by a regulator. The value stream does not distinguish between internally and externally triggered or conducted audits but is instead concerned with the stages an organization might go through to evaluate its legal, financial, or other form of compliance and to identify corrective or disciplinary measures required.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Conduct Audit		The end-to-end perspective of determining the degree to which the organization is adhering to established policies and regulations.	The company's compliance is evaluated and any corrective or disciplinary measures are identified.				Regulator, Chief Risk Officer
	Request Audit	The act of requesting an audit.		Audit request initiated	Audit request received	Audit request acknowledged.	Chief Risk Officer, Regulator
	Plan Audit	The act of identifying the audit scope (procedures, controls, measures, etc.) and execution plan.		Audit request received	Audit plan defined	Audit planned.	Manager, External Auditor
	Gather Audit Information	The act of discovering information pertinent to the audit scope.		Audit plan defined	Audit information gathered	Audit information available.	Manager, External Auditor, Employee
	Analyze Audit Information	The act of evaluating the information needed for the audit.		Audit information gathered	Audit information analyzed	Audit information analysis completed.	Manager, External Auditor
	Document Audit Report	The act of compiling the results of the audit.		Audit information analyzed	Audit report documented	Audit report documented.	External Auditor
	Publish Audit Report	The act of publishing the audit.		Audit information analyzed	Audit report published	Audit requester received audit report.	Chief Risk Officer, Regulator, External Auditor

Figure 8.6.5: Common Reference Model Value Stream — Conduct Audit

Create Policy Value Stream

Figure 8.6.6 describes the details of the Create Policy value stream, which may be triggered internally by risk, compliance, and executive officers or externally by regulators or customers. The purpose of this value stream is to create an organizational policy and is concerned with the stages required to formulate and make available a new policy.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Create Policy		The end-to-end perspective of creating and updating policies that govern how the organization operates and how customers and partners engage with the organization or with each other.	Transparent and consistent published governing policies for the benefit and protection of customers, shareholders, and the overall market.				Chief Executive Officer, Regulator, Legal Counsel, Chief Risk Officer, Compliance Officer, Customer, External Auditor

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Initiate Policy Request	The initiation of a policy creation or modification as a result of a request.		Policy need identified	Policy request acknowledged	Policy request is acknowledged and initiated.	Compliance Officer, Chief Risk Officer, Legal Counsel, Regulator
	Approve Policy Request	The collection and analysis of research leading to an approval or denial to proceed with policy formulation.		Acknowledged policy request	Policy request approved	Policy formulation ready to commence.	Customer, Legal Counsel, Regulator, Compliance Officer, External Auditor, Chief Risk Officer
	Formulate Policy	The drafting of a proposed policy or policy modification, collecting comments, editing, and finalizing the policy to submit for review.		Policy request is approved	Policy formulated	Policy draft ready for review and approval.	Compliance Officer, External Auditor, Legal Counsel, Regulator, Chief Risk Officer
	Approve Policy	The official review and legally binding vote by authorized persons (e.g., Compliance Risk Officer) to establish the creation or modification of a policy.		Formulated policy	Policy decision finalized	Policy is approved.	Chief Executive Officer, Chief Risk Officer, Legal Counsel, Compliance Officer
	Publish Policy	The publication of the new or modified policy for consumption by internal stakeholders, customers, and partners as appropriate to the policy.		Approved policy	Published policy	Policy is in force.	Compliance Officer, Chief Risk Officer

Figure 8.6.6: Common Reference Model Value Stream — Create Policy

Deliver Initiative Value Stream

Figure 8.6.7 describes the details of the Deliver Initiative value stream, which is typically initiated or sponsored by a business unit executive. In this end-to-end initiative delivery value stream, an executive sponsor or surrogate requests and funds an investment focused on delivering organizational value. This value stream may be applied to a wide variety of business situations and scenarios.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Deliver Initiative		The end-to-end perspective of planning and executing an initiative.	Initiative outcome is delivered and the new/enhanced capabilities are transitioned to the sponsoring organization(s).				Executive Sponsor
	Request Initiative	The act of requesting that an initiative be commenced.		Initiative request submitted	Initiative request accepted	Initiative request approved.	Executive Sponsor, Program Manager
	Create Initiative Plan	The act of defining the program plan, including program budget and schedule.		Initiative request accepted	Initiative plan created	Initiative plan articulated.	Executive Sponsor, Program Manager

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Approve Initiative Plan	The act of approving the program plan.		Initiative plan created	Initiative plan approved	Initiative plan approved.	Investment Committee, Executive Sponsor
	Resource Initiative	The act of securing program resources (money, people, assets, etc.).		Initiative plan approved	Initiative resources secured	Initiative resourced.	Program Manager
	Execute Initiative	The act of performing the work defined in the program.		Initiative resources secured	Initiative execution completed	Initiative benefits delivered.	Executive Sponsor, Program Manager, Program Team Member
	Finalize Initiative	The act of evaluating program metrics and transferring ownership to the sponsoring organization(s).		Initiative resources secured	Signed initiative acceptance	Initiative work integrated into organization.	Sponsoring Team Member, Program Team Member, Program Manager, Executive Sponsor

Figure 8.6.7: Common Reference Model Value Stream — Deliver Initiative

Deliver Meeting Value Stream

Figure 8.6.8 describes the Deliver Meeting value stream. Meetings are common to all organizations and this value stream portrays a general end-to-end perspective of planning and executing a meeting. It does not distinguish between meetings internal to the organization and those that are held with or for third parties. The value stream portrays activities conducted prior to a meeting, such as conceiving it, all the way through post-meeting activities involved in memorializing and communicating a meeting's results.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Deliver Meeting		The end-to-end perspective of planning and executing a meeting or other interaction.	Meeting is held and the subject matter of the meeting is conducted.				Customer, Partner, Human Resource
	Initiate Meeting	The act of conceiving, advancing, positing, or originating a meeting.		Disposition and ability to deliver interaction	Interaction concept proposed	Meeting proposal.	Customer, Partner, Human Resource
	Approve Meeting	The act of defining the meeting and its subject matter, planning the meeting, budgeting and scheduling the meeting, identifying resources for the meeting, and approving the meeting.		Interaction proposal	Interaction plan finalized	Approved meeting plan.	Customer, Partner, Human Resource
	Prepare Meeting	The act of securing resources, such as people, assets, or facilities for the meeting.		Approved interaction plan	Interaction resources, logistics secured	Meeting resourced.	Customer, Partner, Human Resource
	Conduct Meeting	The act of carrying out the activities defined in the meeting plan.		Resources present, logistics finalized	Interaction concluded	Meeting delivered.	Customer, Partner, Human Resource

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Finalize Meeting	The act of concluding the meeting, which may include activities such as communicating with stakeholders after a meeting, recording or memorializing the meeting subject matter, evaluating the outcomes of the meeting, paying for the meeting, or cleaning up after the meeting.		Concluded interaction	Post-interaction activities complete	Meeting statistics, feedback, and outcomes collected.	Customer, Partner, Human Resource

Figure 8.6.8: Common Reference Model Value Stream — Deliver Meeting

Deliver Training Value Stream

Figure 8.6.9 describes the details of the Deliver Training value stream. This value stream is triggered by a training course requester, which can vary widely based on circumstances and include an internal human resource, partner, or customer.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Deliver Training		The end-to-end perspective of planning, executing, and communicating a training course for the purpose of increasing knowledge.	Learning objectives are achieved.				Customer, Partner, Human Resource
	Request Training	The act of requesting a unit or curriculum of a training course		Training request submitted	Training request accepted	Training course request approved.	Partner, Customer, Training Program Manager, Human Resource
	Define Training Plan	The act of identifying the training course curriculum course options to be delivered to meet the learning, schedule, and budget objectives, and finalizing a plan to proceed.		Training request accepted	Training plan approved	Training content plan articulated and ready for execution.	Training Program Manager, Requester, Training Team Member, Partner, Customer, Human Resource
	Prepare for Training Delivery	The act of scheduling, making arrangements for, resourcing, staging, and readying a training course, according to plan, to prepare for delivery.		Training plan approved	Training course readied, training scheduled, logistics in place	Training course ready for execution.	Procurement Team Member, Facility Specialist, Training Program Manager, Facilitator, Training Team Member
	Orchestrate Training Delivery	The act of imparting a training course whether in real-time, self-paced, or on-demand and ensuring training content has been understood.		Training course readied, training scheduled, logistics in place	Training imparted	Training course understood.	Training Recipient, Training Team Member, Facilitator, Partner, Customer, Human Resource

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Finalize Post-Delivery Actions	The act of evaluating a training course learning content and training event delivery metrics and making that information available to appropriate stakeholders.		Training plan completed	All results gathered, student accredited, lessons captured	Results gathered; lessons learned applied.	Facilitator, Facility Specialist, Training Program Manager, , Training Recipient, Training Team Member, Partner, Customer, Human Resource

Figure 8.6.9: Common Reference Model Value Stream — Deliver Training

Deploy Asset Value Stream

Figure 8.6.10 describes the details of the Deploy Asset value stream. The asset may be any tangible or intangible thing owned, used, or otherwise tracked by an organization. The purpose of this value stream is to make an asset ready for use. It is triggered by an asset owner or requester, who may be any person in an organization requiring the asset to be deployed. The value stream involves a variety of stakeholders concerned with receiving and validating a request for an asset and with evaluating, configuring, and making the asset available. It may include equipment maintenance or something more complex, such as a major computer system upgrade.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Deploy Asset		The end-to-end perspective of making an asset available for use within the organization and to the individual(s) requesting the asset.	Asset is made available and ready for use.				Asset Owner
	Receive Request	The act of receiving the request for installation or maintenance of an asset.		Asset request identified	Asset request acknowledged	Asset request accepted.	Procurement Team Member, Asset Owner
	Validate Request	The act of authenticating and verifying a request received for asset.		Asset request accepted	Asset request validated	Asset request approved.	Manager, Asset Owner, Procurement Team Member, Finance Manager
	Evaluate Asset	The act of assessing performance or suitability of asset.		Valid request, asset identified	Asset performance and scope evaluated	Asset scope of work approved.	Procurement Team Member, Asset Owner, Tester, Supplier
	Configure Asset	The act of initializing, setting up, creating, assembling, validating, or repairing asset in preparation for deployment.		Asset scope of work identified	Asset configured	Asset ready for deployment.	Procurement Team Member, Asset Maintainer
	Activate Asset	The act of making the asset ready for use and closing the request.		Asset ready for deployment	Asset made available for use and request closed	Asset activated for use.	Procurement Team Member, Asset Maintainer, Asset Owner, Supplier, Accountant

Figure 8.6.10: Common Reference Model Value Stream — Deploy Asset

Develop Human Resource Career Value Stream

Figure 8.6.11 describes the details of the Develop Human Resource Career value stream. This human resource-related value stream is triggered when a human resource manager initiates an effort to evaluate an individual's career with a goal of positioning them for success in and maximizing their contribution to the organization. The value stream may involve not only the employee's human resource manager, but their line manager, training managers, analysts, and others involved in developing human resources within the organization.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Develop Human Resource Career		The end-to-end perspective of developing an individual's career, from performance assessment, to skills and experience enhancement and individual redeployment.	Individual is positioned for success, maximizes their contribution, and is committed to the company.				Employee, Manager
	Initiate Career Evaluation	The act of initiating the evaluation of an individual, triggered either by the individual or their manager.		Career evaluation request initiated	Career evaluation request received	Career evaluation request acknowledged.	Career evaluation request initiated
	Evaluate Human Resource	The act of assessing the individual's skills and abilities, identifying potential career opportunities, and defining development plans to support those opportunities.		Career evaluation request received	Career development plan identified	Career development plan defined.	Career evaluation request received
	Develop Human Resource	The act of supporting the individual to execute their development plan and achieve the skills and experience required to meet desired career opportunities.		Career development plan identified	Career development plan executed	Human resource skills and experience improved to match career opportunity.	Career development plan identified
	Transition Human Resource	The act of transitioning the individual into the desired career opportunity, along with adjustment of compensation and rewards as needed.		Career development plan executed	Career development achieved	Human resource career developed.	Career development plan executed

Figure 8.6.11: Common Reference Model Value Stream — Develop Human Resource Career

Disseminate Information Value Stream

Figure 8.6.12 describes the Disseminate Information value stream. It is a general value stream, concerned with capturing, transforming, aggregating, and delivering any required information to any requester of that information.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Disseminate Information		The end-to-end perspective of requesting, creating, and delivering of information products to requester.	Required information is available to requester.				Customer, Partner, Human Resource
	Request Information	The act of requesting information.		Information request submitted	Information request received and validated	Information request communicated.	Customer, Partner, Human Resource
	Source Information	The act of identifying the sources of information required to fulfill the request.		Information request received and validated	Information sources identified	Information found.	Customer, Partner, Human Resource
	Process Information	The act of creating the information product by extracting, transforming, loading, aggregating the sources of information as needed, as well as validating its quality.		Information sources identified	Information prepared and validated	Information created.	Customer, Partner, Human Resource
	Package Information	The act of preparing information for consumption.		Information prepared and validated	Information packaged	Information packaged.	Customer, Partner, Human Resource
	Deliver Information	The act of delivering information to requester.		Information packaged	Information delivered to requester	Information delivered.	Customer, Partner, Human Resource

Figure 8.6.12: Common Reference Model Value Stream — Disseminate Information

Ensure Policy Compliance Value Stream

Figure 8.6.13 describes the details of the Ensure Compliance value stream. In this risk-related value stream, a Risk Officer, Auditor, or External Regulator initiates a review or an audit to determine an organization's level of compliance with regulations, statutes, rules, or other categories of policies.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Ensure Policy Compliance		The end-to-end perspective of ensuring compliance with legislation and organization-driven policies, from identifying compliance requirements, implementing controls, evaluating controls' effectiveness, addressing compliance incidents, and reporting compliance as required.	Organization is compliant with legislation, internally-driven policies, and avoids legal or reputational consequences.				Regulator, Chief Risk Officer, Compliance Officer, Risk Manager

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Identify Policy Compliance Requirements	The act of identifying compliance requirements, either through legislation, organizational policy creation, or maintenance.		Policy compliance need identified	Policy compliance requirements documented	Compliance objectives understood.	Risk Manager, Regulator, Compliance Officer
	Define Policy Compliance Controls	The act of analyzing compliance requirements and identifying safeguards and controls to be put in place to ensure compliance.		Policy compliance requirements documented	Policy compliance controls approved.	Policy compliance controls defined.	Compliance Officer, Risk Manager
	Implement Policy Compliance Controls	The act of implementing people, process, and technology changes and required training to enable the predefined compliance controls.		Policy compliance controls approved	Policy compliance controls implemented	Controls are fully integrated across relevant stakeholders and information systems.	Partner, Risk Manager, Manager, Customer
	Validate Policy Compliance Controls	The act of evaluating compliance controls' effectiveness and proactively managing compliance incidents, including disciplinary actions if required.		Policy compliance controls implemented	Policy compliance controls evaluated	Implemented controls are effectively ensuring compliance to policy.	Risk Manager, Manager, Customer, Partner
	Report Policy Compliance	The act of reporting compliance to the regulatory bodies and organization's management.		Policy compliance controls evaluated	Policy compliance reported	Organization is meeting compliance expectations.	Chief Risk Officer, Regulator, Compliance Officer, Risk Manager

Figure 8.6.13: Common Reference Model Value Stream — Ensure Policy Compliance

Execute Campaign Value Stream

Figure 8.6.14 describes the details of the Execute Campaign value stream. “Campaign” is used very broadly to include any outreach activity by an organization that targets a specific population. For the campaign requester, the value stream produces a message delivered to the campaign targets and an analysis of campaign delivers results that may be used in future campaigns.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Execute Campaign		The end-to-end perspective of executing a campaign, from identifying the need for a campaign, to planning, designing, implementing, and measuring the effectiveness of the campaign.	The campaign message has been delivered to the campaign targets, the effectiveness of the campaign results has been analyzed, and potential future optimization plans have been identified.				Campaign Requester

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Request Campaign	The act of submitting a request for a campaign.		Campaign need identified	Campaign request received	Campaign request acknowledged.	Campaign Requester, Product Manager
	Plan Campaign	The act of defining a campaign plan, including campaign targets and message, delivery channels, implementation schedule, success criteria, and required campaign budget and resources.		Campaign request received	Campaign plan approved	Campaign plans defined.	Product Manager, Campaign Requester
	Design Campaign	The act of defining campaign collateral, including target-specific messaging, graphic designs for each delivery channel.		Campaign plan approved	Campaign execution approved	Campaign execution designed.	Campaign Resource, Campaign Requester
	Implement Campaign	The act of delivering campaign content as planned.		Campaign execution approved	Campaign delivered to targets	Campaign message received by campaign targets.	Campaign Target, Campaign Resource
	Evaluate Campaign	The act of measuring effectiveness of a campaign, identifying possible optimizations for future execution.		Campaign delivered to targets	Campaign results identified and analyzed	Campaign effectiveness measured and optimization plans identified.	Campaign Requester, Product Manager

Figure 8.6.14: Common Reference Model Value Stream — Execute Campaign

Onboard Human Resource Value Stream

Figure 8.6.15 describes the details of the Onboard Human Resource value stream. This human resource-related value stream is triggered when a hiring manager initiates an effort to identify and onboard an individual to contribute to the organization on a full-time or part-time basis.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Onboard Human Resource		The end-to-end perspective of identifying, exploring, and selecting an individual to fill a need within an organization.	A productive individual fills the identified need and is ready to contribute.				Manager
	Request Position	The act of submitting a recruitment requisition for a vacancy required to perform work for the organization.		Recruitment requisition initiated	Recruitment requisition acknowledged	Recruitment requisition opened.	Manager, Recruiter
	Validate Position	The act of verifying that the recruitment requisition's financial and business justification criteria are acceptable.		Recruitment requisition acknowledged	Position validated	Position opened.	Manager, Recruiter

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Source Individuals	The act of finding individuals who may qualify for the open position and validating their interest.		Position validated	Candidate list established	Potential matches for open position identified	Recruiter, Manager, Candidate
	Evaluate Individuals	The act of assessing the potential candidates against the open position requirements and extending an offer to the most qualified individual.		Candidate list established	Offer extended	Match for open position identified.	Manager, Candidate, Recruiter
	Finalize Acceptance	The act of negotiating the employment agreement terms and conditions.		Offer extended	Offer accepted / rejected	Commitment from individual confirmed.	Manager, Recruiter, Candidate
	Onboard Individual	The act of bringing an individual into the organization and providing necessary training and resources for them to effectively start contributing.		Offer accepted	Onboarding completed	Individual is contributing.	Recruiter, Employee, Human Resource Analyst, Manager

Figure 8.6.15: Common Reference Model Value Stream — Onboard Human Resource

Onboard Partner Value Stream

Figure 8.6.16 describes the details of the Onboard Partner value stream. This value stream is triggered when an organization wants to establish or modify a formal relationship with a third party, which may be a private or public sector organization. Partner, as defined in the capability and information maps, covers a wide variety of categories and this value stream establishes relationships with those parties, typically via a formal agreement.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Onboard Partner		The end-to-end perspective of identifying and commencing business with other organizations for mutual benefit.	The delivery of goods and/or services that the organization chooses to deliver through others.				Partner
	Identify Need	The act of defining the business requirements for goods and services that cannot be obtained internally.		Problem or opportunity defined	Need identified	Identified need.	Procurer, Procurement Team Member
	Vet Potential Partner	The act of validating that the potential partner is capable of delivering on the value proposition and meets ethical guidelines.		Need and potential partner identified	Partner vetted	Vetted partner.	Partner, Procurer, Procurement Team Member

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Negotiate Terms	The act of reviewing and negotiating the terms of the contract including such things as cost, scope, and length of engagement.		Partner vetted	Finalized terms	Terms finalized.	Procurer, Legal Counsel, Procurement Team Member, Partner
	Formalize Agreement	The act of reaching final agreement on the terms of the contract.		Finalized terms	Formalized agreement	Agreement formalized.	Procurer, Legal Counsel, Procurement Team Member, Partner
	Induct Partner	The act of onboarding the partner to make them familiar with how they are expected to engage with the organization.		Formalized agreement	Onboarded partner	Partner onboarded.	Procurement Team Member, Procurer, Partner

Figure 8.6.16: Common Reference Model Value Stream — Onboard Partner

Uses for the Onboard Partner value stream may include creating a master agreement with a supplier of materials.

Optimize Investments Value Stream

Figure 8.6.17 describes the Optimize Investments value stream. This finance-related value stream ensures that investments are made in accordance with the strategy of the organization. It is often initiated by an investment or capital investment stakeholder. It is typically triggered by a chief executive or the board of directors and delivered by the chief financial officer, treasurer, analysts, and other related stakeholders.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Optimize Investments		The end-to-end perspective of deciding where to make investments, based on the understanding of the enterprise's goals, strategy, current positions, and external forces.	Company investments are optimal.				Chief Executive Officer, Director
	Initiate Investment Review	The act of understanding the strategy and goals of the enterprise.		Investment review request initiated	Investment review request received	Investment review request acknowledged.	Director, Chief Executive Officer, Chief Financial Officer
	Assess Current Position	The act of gathering and analyzing all relevant information related to transformation of financial and customer goals and objectives.		Investment review request received	Company current position analyzed	Investment needs identified.	Chief Financial Officer, Treasurer

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Investigate Investment Options	The act of recognizing, designing, evaluating and prioritizing actions in accordance with strategy, cause-and-effect linkages, and policies and regulations.		Company current position analyzed	Potential investment options identified	Potential investments identified.	Chief Financial Officer, Financial Analyst, Treasurer
	Select Investment Options	The act of selecting a course of action based on assessment of options.		Potential investment options identified	Investment options identified	Optimal investments identified.	Director, Chief Executive Officer, Treasurer, Chief Financial Officer
	Execute Investment Options	The act of putting an investment plan in motion.		Investment options identified	Investment options executed	Optimal investments in place.	Chief Financial Officer

Figure 8.6.17: Common Reference Model Value Stream — Optimize Investments

Settle Payment Obligation Value Stream

Figure 8.6.18 describes the details of the Settle Payment Obligation value stream, which by definition involves a bi-directional exchange with a customer, partner or human resource. In this value stream, an inbound or outbound request is made for a payment, being an obligation to remit or receive monetary value. It may be applied to a wide variety of business situations and scenarios, which includes settling monthly payroll to an individual, collecting month-end receivables, or remitting payments to partners. The value stream may be triggered by a time-based event or a request (e.g., invoice notice) to one party from another party.

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
Settle Payment Obligation		The end-to-end set of activities necessary for determining, communicating, and settling (exchanging funds against) a payment obligation.	A payment obligation is satisfied in whole or in part.				Customer, Partner, Human Resource
	Initiate Payment	The act of initiating a payment obligation.		Payment obligation initiated	Payment requirement	Need for payment is established.	Partner, Customer, Human Resource
	Determine Payment Obligation	The act of gathering and validating all information necessary and calculating and defining a payment obligation.		Payment requirement	Payment obligation amount determined	Payment obligation amount is fully and accurately determined.	Partner, Customer, Human Resource
	Communicate Payment Obligation	The act of formulating and communicating the payment obligation to the appropriate stakeholder(s).		Payment obligation amount determined	Payment obligation communicated	All necessary stakeholders are aware of the payment obligation.	Partner, Customer, Human Resource

Value Stream	Value Stream Stage	Description	Value Proposition	Entrance Criteria	Exit Criteria	Value Item	Stakeholder
	Validate Payment Obligation	The act of reconciling and validating the legitimacy and accuracy of the payment obligation.		Payment obligation communicated	Payment obligation validated	Payment obligation has been fully verified and reconciled and deemed accurate and valid.	Partner, Customer, Human Resource
	Exchange Funds	The act of transferring funds against the payment obligation.		Payment obligation validated	Exchange of funds completed	Funds are exchanged to fully or partially settle the payment obligation.	Partner, Customer, Human Resource
	Update Financial Records	The act of recording the exchange of funds in financial accounts and updating the status of the payment obligation.		Exchange of funds completed	Account records updated and reconciled	Accounts reconciled and status of payment obligation is correct.	Partner, Customer, Human Resource

Figure 8.6.18: Common Reference Model Value Stream — Settle Payment Obligation

Information Map

The common reference model information map represents information concepts that would be found in most organizations. The information concepts align to the business objects defined in the capability map.

Figure 8.6.19 depicts the common reference model information map, showing both primary and secondary information concept types that align with the capability map described in figure 8.6.2.

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
Agreement	Primary	A set of legally binding rights and obligations between two or more legal entities.	Bilateral, Unilateral, Express, Implied, Executed, Executory, Aleatory	Legal Proceeding, Incident, Asset, Agreement, Customer, Financial Account, Product, Partner, Job, Payment, Order, Message, Inquiry, Decision, Agreement Term, Channel, Policy, Tax, Facility	Pending, In Force, Terminated, Abandoned
Agreement Term	Secondary	Legally enforceable condition set forth within the bounds of an agreement.	Survival, Non-survivable	Agreement, Policy	Pending, In Force, Terminated, Abandoned
Asset	Primary	Tangible or intangible property.	Tangible, Intangible	Interaction, Incident, Agreement, Customer, Location, Investment Portfolio, Product, Partner, Job, Business Entity, Work Item, Plan, Initiative, Financial Transaction,	Requested, In-Preparation, In-Use, Retired, Disposed

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
				Message, Inquiry, Event, Channel, Facility	
Brand	Primary	A name, symbol, or design that identifies and differentiates products, offerings, or organizational identities.	Name, Symbol, Mark, Logo, Tagline, Service Mark, Jingle, Sound	Market, Product, Business Entity, Intellectual Property Rights, Policy, Channel, Partner, Campaign, Incident, Inquiry, Message	Proposed, Accepted, Retired
Business Entity	Primary	A legal body or bodies that comprises or comprise a single organization.	For-Profit, Not-for-Profit, For-Benefit, Corporation, Partnership, Sole Proprietorship, Government Organization	Investment, Job, Asset, Brand, Incident, Inquiry, Market, Message, Financial Forecast	Extant, Non-Extant, Temporary, Information
Campaign	Primary	An outreach activity that targets a specific population, for example, customers, human resources, partners, and patients, to achieve a certain goal, such as marketing awareness, hiring activities, and health awareness.	Internal, External	Product, Market, Location, Brand, Event, Finance, Intellectual Property Rights, Job, Location, Plan, Policy, Initiative, Strategy, Training Course, Customer, Channel, Content	Planned, Designed, Launched, In-Process, Completed, Terminated
Channel	Primary	A digital, analog, or physical conduit through which products, related services, or communications are delivered or received, including the Internet, phone, delivery service, satellite, radio, or physical means.	Digital, Analog, Physical	Incident, Asset, Agreement, Customer, Location, Content, Campaign, Product, Partner, Work Item, Brand, Financial Transaction, Message, Inquiry, Policy, Facility	Active, Inactive
Competency	Primary	The skills and knowledge necessary to do something.	Learned, Intrinsic	Language, Human Resource, Content, Job, Training Course, Plan, Competency, Policy	Identified, Developing, Achieved, Dated
Content	Primary	A creative work, such as is manifested in audio/visual, still image, textual, experiential, mixed-media, or other forms.	Visual, Audial, Text	Language, Location, Content Impression, Content, Campaign, Product, Intellectual Property Rights, Job, Submission, Work Item, Training Course, Research, Initiative, Strategy, Message, Inquiry, Decision, Competency, Channel, Policy	In-Development, Developed, Undeveloped
Content Impression	Secondary	Instance of content consumption.		Content	
Customer	Primary	A legal entity that has, plans to have, or has had an agreement with the organization, or is a recipient or beneficiary of the organization's products or services.	Individual, Organization	Interaction, Legal Proceeding, Language, Incident, Asset, Agreement, Customer, Customer, Location, Human Resource, Campaign, Product, Partner, Plan, Initiative, Strategy, Order, Financial	Suspect, Prospect, Active, Inactive

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
				Transaction, Message, Inquiry, Market, Channel, Policy	
Decision	Primary	A conclusion or resolution reached after considering alternative options.	Binding, Provisional	Objective, Interaction, Legal Proceeding, Incident, Agreement, Goal, Time, Location, Human Resource, Schedule, Investment Portfolio, Content, Product, Partner, Work Item, Training Course, Plan, Research, Initiative, Event, Decision, Market, Policy, Facility	Under-Deliberation, Determined
Event	Primary	An occurrence that has happened or may happen, especially one of importance, concern, or interest.	Planned, Resulting, Triggering, Unplanned	Incident, Asset, Time, Location, Human Resource, Campaign, Work Item, Training Course, Plan, Initiative, Message, Inquiry, Decision, Market, Facility	Past, In-Progress, Future
Facility	Primary	A physical structure at a given place where business is conducted.	Manufacturing, Office, Storage, Services, Sales	Interaction, Asset, Agreement, Location, Human Resource, Training Course, Plan, Event, Decision, Channel, Policy	In-Service, Not-in-Service
Finance	Primary	Monetary aspects and resources.		Financial Forecast, Financial Account, Campaign, Payment, Currency, Strategy, Financial Transaction, Policy, Tax, Monetary Amount	
Currency	Secondary	An agreed medium of value exchange.	Representational, Intrinsic (for example, CAD, USD, GBP)	Finance, Financial Account, Investment Portfolio, Monetary Amount	Historical (Retired), Current (In-Use), Future / Intended / Planned
Financial Account	Secondary	A named container of monetary value transactions that are typically organized into assets, liabilities, income, expense, equity, and other related categories.	Asset, Liability, Income, Expense, Equity/Capital (Suspense)	Finance, Agreement, Financial Account, Location, Partner, Payment, Business Entity, Currency, Initiative, Financial Transaction, Message, Inquiry, Policy, Tax, Monetary Amount	Pending, Open/Current, Closed, Suspended/Frozen
Financial Forecast	Secondary	A prediction of a future financial aspect of the organization.	Straight-Line, Moving Average, Linear Regression, Multiple Linear Regression	Finance, Business Entity	Current, Historical, Being-Prepared, Prepared/Completed
Financial Transaction	Secondary	An instance of a monetary amount movement or related exchange across businesses, agreements, or financial accounts.	Sale, Purchase, Receipt, Payment, Deposit, Withdrawal	Incident, Finance, Asset, Customer, Financial Account, Investment Portfolio, Partner, Payment, Order, Message, Inquiry, Channel, Monetary Amount	Historical/Executed, Pending/Current, Rejected, Cancelled

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
Monetary Amount	Secondary	A representation of value as expressed in a given currency.	Negative, Positive, Zero	Finance, Financial Account, Payment, Currency, Financial Transaction, Tax	Determined / Actual / Known, Estimated, Undetermined / Unknown
Payment	Secondary	An obligation to remit or receive a monetary amount between an organization and a customer, partner, or other external party.	Inbound, Outbound	Finance, Agreement, Financial Account, Human Resource, Investment Portfolio, Submission, Financial Transaction, Monetary Amount	Paid, Unpaid, Cancelled, In-Flight
Tax	Secondary	A compulsory contribution of monetary value to governing bodies.	Income, Sales, Property	Finance, Agreement, Financial Account, Monetary Amount	Historical (Retired), Current (In-Use), Enforced, Future Planned, Assessed/Levied, Paid/Deducted
Human Resource	Primary	An individual who has, plans to have, or has had a legal agreement with the organization, which includes compensation and other benefits, on a temporary or permanent basis.	Contractor, Employee	Interaction, Legal Proceeding, Incident, Customer, Location, Partner, Job, Payment, Work Item, Training Course, Plan, Research, Work Queue, Initiative, Message, Inquiry, Event, Decision, Competency, Policy, Facility	Former, Current, Future
Incident	Primary	An unplanned, disruptive, or potentially disruptive, experience.	Critical/Severe, Emergency, Major, Minor	Interaction, Legal Proceeding, Incident, Asset, Agreement, Customer, Human Resource, Product, Partner, Business Entity, Work Item, Training Course, Work, Initiative, Brand, Strategy, Financial Transaction, Inquiry, Event, Decision, Channel, Policy	Imminent, Ongoing, Past
Initiative	Primary	A coordinated collection of temporary endeavors undertaken to create a unique outcome.	Strategic, Tactical, Operational	Interaction, Incident, Asset, Customer, Financial Account, Human Resource, Schedule, Investment Portfolio, Content, Campaign, Partner, Training Course, Plan, Research, Strategy, Message, Inquiry, Event, Decision, Policy	Proposed, In-Flight, Paused, Completed, Cancelled
Inquiry	Primary	A question, request, feedback, or comment that may exist inside or outside of the business, which can be received, identified, harvested, disseminated, classified, and tracked.	Question, Feedback, Request	Interaction, Incident, Asset, Agreement, Customer, Financial Account, Human Resource, Content, Product, Partner, Business Entity, Submission, Training Course, Research, Work, Initiative, Brand, Strategy, Financial Transaction, Message, Event, Channel, Policy	Formulating, Formulated

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
Intellectual Property Rights	Primary	Legal protections, such as patents, trademarks, and copyrights.	Patent, Copyright, Trademark, Trade Secret	Business Entity, Product, Brand, Campaign, Legal Proceeding, Content	Incipient, Applied-for, Granted
Interaction	Primary	A set of contemporaneous collaborations or contacts about a given subject, over a span of time, between two or more entities, using one or more channels, at one or more physical or virtual locations such as meetings, interviews, seminars, or consultations.	Consultation, External, Internal, Interview, Meeting, Seminar	Incident, Asset, Customer, Location, Human Resource, Schedule, Campaign, Product, Partner, Training Course, Plan, Initiative, Strategy, Message, Inquiry, Decision, Market, Facility	Planned, In-Progress, Post
Investment Portfolio	Primary	A set of resources expected to increase in value or provide income.	Financial Instrument, Property	Strategy, Plan, Asset, Payment, Policy, Research, Business Entity, Currency, Initiative, Financial Transaction, Decision	Pending / Planned / Considered, Purchased / Acquired, Sold / Matured / Expired
Job	Primary	A named category of accountabilities, whether remunerative or non-remunerative, associated with an assigned, specific, and accountable business duty, role, or function that can be executed by a human or non-human resource.	Permanent, Temporary	Asset, Agreement, Human Resource, Content, Campaign, Business Entity, Work Item, Plan, Research, Strategy, Competency, Policy	Open, Closed
Language	Primary	A method of communication or dialect variant consisting of units of representation or meaning, such as numbers, words, symbols, sounds, or other physical manifestations and gestures, presented in a structured way.	Receptive, Expressive, Pragmatic	Language, Customer, Location, Content, Partner, Training Course, Competency	Recognized, Unrecognized
Legal Proceeding	Primary	An activity invoking the power of a tribunal to enforce a law.	Civil, Criminal, Administrative	Legal Proceeding, Incident, Agreement, Customer, Human Resource, Intellectual Property Rights, Partner, Research, Strategy, Message, Information, Decision, Policy	Pending, Ongoing, Post
Location	Primary	A position or site.	Point, Area, Space	Interaction, Language, Asset, Customer, Financial Account, Location, Human Resource, Content, Campaign, Product, Partner, Training Course, Plan, Event, Decision, Market, Channel, Policy, Facility	Known, Unknown
Market	Primary	Individuals, populations of individuals, or organizations constituting the demand for existing or future products and services.	Regional, Conceptual, Locational, Non-Locational	Brand, Location, Campaign, Customer, Event, Product	Latent, Explicit

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
Message	Primary	A verbal, written, recorded, or digitally-represented communication, including missives, notifications, alerts, and other internally or externally targeted communication about the organization's mission, products, plans, activities, and other focal points.	Internal (Inbound), External (Outbound)	Asset, Brand, Event, Human Resource, Inquiry, Legal Proceeding, Policy, Initiative, Strategy, Work, Agreement, Customer, Channel, Partner, Product, Financial Account, Financial Transaction, Content	In-Formulation, Formulated
Order	Primary	A request by one party to another to buy, sell, or exchange goods or services.	Buy, Sell, Exchange	Agreement, Customer, Product, Partner, Financial Transaction, Information	Open, Closed
Partner	Primary	A legal entity that has, plans to have, or has had some degree of involvement with the organization.	Supply, Distribution, Support	Interaction, Legal Proceeding, Language, Incident, Asset, Agreement, Customer, Financial Account, Location, Human Resource, Product, Partner, Plan, Initiative, Brand, Strategy, Order, Financial Transaction, Message, Inquiry, Decision, Market, Channel	Potential, Actual, Past
Plan	Primary	A set of related activities to achieve a result.	Strategic, Tactical, Operational	Asset, Investment, Policy, Initiative, Strategy, Training Course, Campaign, Competency, Customer, Event, Facility, Human Resource, Job, Product, Research, Location	In-Formulation, Formulated
Policy	Primary	A course or principle of action adopted or proposed by an organization.	Formal, Informal, Temporary, Permanent	Policy, Location, Content	Draft, Proposed, Adopted, Rescinded
Product	Primary	A named combination of goods and services that can be offered to customers, in whole or in part.	Good, Service	Interaction, Incident, Asset, Agreement, Customer, Location, Content, Campaign, Product, Intellectual Property Rights, Partner, Training Course, Plan, Research, Brand, Order, Message, Inquiry, Decision, Market, Channel	Planned, Offered, Discontinued
Research	Primary	A systematic investigation into materials and sources.	Primary, Secondary, Qualitative, Quantitative	Initiative, Product, Human Resource, Inquiry, Investment, Job, Legal Proceeding, Strategy, Market	Planned, Ongoing, Concluded
Schedule	Primary	An aggregation of schedule elements.	Public, Private	Interaction, Time, Training Course, Initiative, Decision, Schedule Element	In-Development, Developed
Schedule Element	Secondary	A line item that aligns time and one or more other objects, including work item, human resource, payment, event, or location.		Schedule	

Information Map					
Information Concept	Information Concept Category	Information Concept Definition	Information Concept Types	Related Information Concepts	Information Concept States
Strategy	Primary	An integrated pattern and perspective that aligns an organization's goals, objectives, and action sequences into a cohesive whole.	Product, Market, Operation	Strategy, Research, Market, Policy	Planned, Ongoing, Concluded
Vision	Secondary	An imagined future state of being.	[to be further contextualized by the business verticals as needed]	Goal	Developing, Current, Superseded, Abandoned
Goal	Secondary	An end toward which effort is or should be directed.	Strategic, Tactical, Operational	Objective	Defined, Undefined, Abandoned
Objective	Secondary	A quantitative, measurable result that defines strategy.	Financial, Operational, Organizational, Cultural	Objective, Action Item	Defined, Undefined, Abandoned
Action Item	Secondary	A specific course to be taken to achieve an objective.	Financial, Operational, Organizational, Cultural		Proposed, Pending, Initiated, Closed, Rejected
Submission	Primary	A container that is used to exchange one or more requests, inquiries, messages, notifications, or other content between parties.	Email, Mail, Online Form, Phone, Physical Form	Content, Payment, Work Item, Message, Inquiry	Incomplete, Complete
Time	Primary	A point or duration, in the past, present, or future.	Second, Minute, Hour, Day, Week, Month, Year, Decade, Century	Schedule, Information, Event, Decision	Historical, Current, Projected
Training Course	Primary	The structured theoretical or practical subject matter in a consumable format, associated with a curriculum, workshop, or seminar.	Curriculum, Seminar, Workshop	Interaction, Language, Incident, Location, Human Resource, Schedule, Content, Campaign, Product, Business Entity, Plan, Initiative, Inquiry, Event, Decision, Competency, Facility	Preparatory, Ongoing, Completed
Work	Primary	Tasks and task queues.		Incident, Work Item, Work Queue, Message, Inquiry	
Work Item	Secondary	A defined, well-bounded task that may be assigned to a stakeholder or corresponding asset.	Mental, Physical	Incident, Asset, Human Resource, Content, Job, Submission, Work Queue, Work, Event, Decision, Channel, Policy	Open, In-Progress, Completed
Work Queue	Secondary	A container to hold, sequence, filter, structure, and present a set of work items.	Independent, Dependent	Human Resource, Work Item, Work	Open, In-Progress, Completed

Figure 8.6.19: Common Reference Model – Information Map

Stakeholder Map

The common reference model stakeholder map in figure 8.6.20 shows a set of stakeholders common to most organizations. The stakeholder mapping approach, defined in section 2.3 of the *BIZBOK® Guide*, identifies all triggering and participating stakeholders that would engage internally or externally within the business ecosystem.

Stakeholder Mapping			
Stakeholder Type	Stakeholder Category	Stakeholder	Description
Internal	Human Resource	Accountant	An individual who records, tracks, analyzes, and reports on the finances of the organization.
Internal	Human Resource	Asset Maintainer	An individual or organization that repairs, restores, cleans, operates, or otherwise keeps an asset ready for use.
Internal	Human Resource	Asset Owner	An individual or organization that has title to an asset.
Internal	Human Resource	Asset Request Evaluator	An individual or organization that assesses or approves a request for an asset.
Internal	Human Resource	Campaign Requester	An individual who initiates a campaign on behalf of a business.
Internal	Human Resource	Campaign Resource	An individual or organization that supplies material or assistance to a campaign.
Internal	Customer	Campaign Target	An individual who is the intended recipient of the message of a campaign.
Internal	Human Resource	Candidate	An individual who has the potential to be an employee.
Internal	Human Resource	Chief Executive Officer	An individual who makes decisions affecting a business as a whole and who represents the business to the public at large.
Internal	Human Resource	Chief Financial Officer	An individual who manages the finances of a business, including cash flow and financial planning.
Internal	Human Resource	Chief Risk Officer	An individual who defines and assesses financial, reputational, legal, market, or other kinds of risk that the organization may undertake.
Internal	Human Resource	Compliance Officer	An individual who ensures that a company complies with its outside regulatory and legal requirements and internal policies and bylaws.
Internal	Human Resource	Content Developer	An individual who researches and prepares material for consumption by an audience.
External	Human Resource	Content Provider	An individual from outside the organization who researches and prepares material for consumption by an audience.
External	Customer	Customer	An individual or organization that purchases a product.
Internal	Human Resource	Data Analyst	An individual who obtains and analyzes data for a business in order to provide information and knowledge to assist with decision making.
External	Human Resource	Director	An individual who is elected to represent shareholders.
Internal	Human Resource	Employee	An individual who performs services for a business pursuant to an employment contract.
External	Partner	Executive Sponsor	An individual or organization that is responsible for obtaining or paying for sponsors of a meeting.
External	Partner	External Auditor	An individual that gathers, reviews, analyzes, and reports on the financial, legal, or other records of the organization, on behalf of the organization's board of directors.
Internal	Human Resource	Facilitator	An individual who helps enable groups during the course of an event to achieve specific objectives.
Internal	Human Resource	Facility Specialist	An individual who identifies, oversees, and provides support for matters specific to the operation or oversight of a venue or location.
Internal	Human Resource	Finance Controller	An individual who oversees the preparation and publication of financial statements.
Internal	Human Resource	Finance Manager	An individual who administers a finance business unit and has a delegated authority to approve financial transactions to a specified limit.
Internal	Human Resource	Financial Analyst	An individual who performs calculations on and evaluates a business's monetary facts.
Internal	Human Resource	Human Resource	An individual who is employed by the organization.

Stakeholder Mapping			
Stakeholder Type	Stakeholder Category	Stakeholder	Description
Internal	Human Resource	Human Resource Analyst	An individual who identifies and assesses the current and future needs of the organization for individuals to perform work.
Internal	Human Resource	Investment Committee	An organization responsible for identifying, communicating with, evaluating, and contracting with investors.
Internal	Human Resource	Legal Counsel	An individual who oversees, identifies, and advises on legal issues in all departments and their interrelation.
Internal	Human Resource	Manager	An individual who oversees the work for a business unit.
Internal	Human Resource	Mentor	An individual who provides ongoing assistance, training, and instruction to employees.
External	Partner	Partner	An individual who has, or had, an agreement with the organization for the provision of goods and/or services.
Internal	Human Resource	Procurement Team Member	An individual who assists or enables the organization to source and acquire assets.
Internal	Human Resource	Procurer	An individual who directs, mentors, evaluates, and assigns asset acquisition-related work to other individuals in the organization.
Internal	Human Resource	Product Manager	An individual who conceives, defines, determines, and oversees creation and distribution of a product or service on behalf of the business.
Internal	Human Resource	Program Manager	An individual who creates, plans, oversees, and evaluates one or more projects in support of a general business goal.
Internal	Human Resource	Program Team Member	An individual who assists the program manager.
Internal	Human Resource	Recruiter	An individual who identifies and obtains employees.
External	Partner	Regulator	An individual or organization that supervises a particular industry or business activity.
Internal	Human Resource	Requester	An individual who, on their own behalf or on behalf of others, makes a request for a good or service.
Internal	Human Resource	Risk Manager	An individual who assesses and mitigates danger, damage, or loss to the business.
External	Partner	Sponsoring Team Member	An individual who represents and works on behalf of a sponsor.
External	Partner	Supplier	An individual or organization that provides goods and/or services to the organization.
Internal	Human Resource	Tester	An individual who subjects a product or service to an assessment of suitability or worth.
Internal	Human Resource	Training Program Manager	An individual who oversees and approves training programs.
Internal	Human Resource	Training Recipient	An individual who participates in a training course.
Internal	Human Resource	Training Team Member	An individual who provides instruction to employees.
Internal	Human Resource	Treasurer	An individual who oversees and manages the assets of a business.

Figure 8.6.20: Common Reference Model – Stakeholder Map

Figure 8.6.20, shows internal and external stakeholder categories, which are linked to business objects defined in the capability and information maps. Individual stakeholders are listed in column 3, with descriptions in column 4.

Future Reference Model Plans

Future releases of the BIZBOK® Guide will evolve the common reference model based on ongoing

development, feedback, and review with members of related industry reference model teams. Offering insights into a small sampling of usage scenarios for the common reference model can provide additional details and enable a more thorough analysis and understanding of the strengths and weaknesses of each element of common corporate functions. Future plans include mapping refinements and the addition of other domain mappings and cross-mappings.

APPENDIX B.1: STRATEGY EXECUTION FRAMEWORK: BUSINESS ARCHITECTURE ROLE DEFINITION

The strategy execution framework and business architecture's role within it are introduced in part 1 of the *BIZBOK® Guide* and framed in detail in section 3.11. The strategy execution framework provides a general perspective as to how strategies are formulated and realized leveraging business architecture from beginning to end.

Appendix B.1 describes the five steps or phases within the strategy execution framework, including the inputs, entrance criteria, exit criteria, participating stakeholders, and value items for each. It also breaks down the specific business architecture-related actions, deliverables, and roles required for each step. *Note: Additional actions and deliverables performed by other teams are not listed. In other words, this is not intended to provide a full strategy execution perspective across all disciplines, but rather a focus from a business architecture perspective only. Also note that business architecture actions within a step can occur simultaneously or in different sequences, so while generally listed sequentially here, when they occur may vary in practice.*

This framework is based on the assumption that the core business architecture domains are in place prior to beginning, but may evolve along with the extended domains as required by a given scenario and business focal point.

Step: Establish Business Strategy

- **Step Definition:** Refines business strategy, formalizes business objectives and related metrics and courses of action, and disseminates business direction
- **Inputs:** Formulated strategy and supporting documentation; business goals, objectives, metrics and courses of action documentation; new or evolved business model(s)
- **Entrance Criteria:** Need to establish or refine strategy in relation to one or more business opportunities or issues
- **Exit Criteria:** Prioritized set of objectives in relation to an overall business strategy
- **Stakeholders:** C-Level Executive, Strategist, Business Leader, Business Subject Matter Expert (SME), Strategic Planner, Business Architect
- **Value Item:** Defined Strategy with Measurable Objectives

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
Business Performance Assessment	Ability to examine and incorporate effectiveness (heat map), impact, and related performance metrics into strategy formulation and strategic planning	Business Performance Assessment	A heatmap view of business effectiveness (e.g., effectiveness and level of automation metrics or other business metrics) and importance (e.g., business impact and breadth of coverage metrics) framed within a value stream and capability context.	Business SMEs
Strategy Definition	Ability to identify and articulate what the business wishes to gain or achieve in clear, concise terms	Strategy Traceability Definition May also include other deliverables such as Strategy Map or Hoshin Kanri.	The traceability of a strategy to its related objectives, and the traceability of objectives to their related metrics and courses of action. May include multiple levels of decomposition for objectives, metrics, and courses of action.	C-Level Executives, Business Leaders, Strategists
Objective Definition	Ability to articulate a quantitative, measurable result that defines strategy			
Metric Definition	Ability to articulate the specific metrics and Key Performance Indicators (KPI) which will measure the outcomes of an objective			
Course of Action Definition	Ability to articulate a specific course of action to be taken to achieve an objective			
Objective/Metric Matching	Ability to ensure that objectives are associated with the metrics needed to measure their results			
Objective/Course of Action Matching	Ability to ensure that quantifiable, measurable results are associated with actions needed to achieve those results			
Objective Tradeoff Analysis	Ability to analyze the pros and cons of what a business wants to achieve based on limited resources (time, people, and money) and	Objective Impact Analysis	An analysis of the impact of each objective, framed through the business architecture domains, used to inform decisions and tradeoffs.	Business Leaders, Strategists, Business SMEs, Strategic Planners

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
	establish clear priorities of one objective over another			
Objective Prioritization	Ability to prioritize a set of related business objectives in context of an overall strategy	Prioritized Objectives; refined Strategy Traceability Definition	A short list of the prioritized objectives. Also includes an updated Strategy Traceability Definition to reflect the priority objectives and any other changes to the traceability as applicable.	C-Level Executives, Business Leaders, Strategists, Strategic Planners
Strategy Dissemination	Ability to communicate strategy to the appropriate stakeholder	Strategy Traceability Definition; other custom documentation	The full package of documentation used to communicate strategic direction to stakeholders, which may include the formulated or refreshed strategy itself (from leaders and/or strategy team), the Strategy Traceability Definition and other presentation materials as applicable.	C-Level Executives, Business Leaders, Strategists

Figure B.1.1: Establish Business Strategy Definitions

Step: Assess Business Impact

- **Step Definition:** Based on the objectives identified in the prior stage, perform an objective-driven business impact analysis using the business architecture as a frame of reference
- **Inputs:** Strategy Traceability Definition
- **Entrance Criteria:** Prioritized set of business objectives in relation to an overall business strategy and related tradeoffs
- **Exit Criteria:** All business architecture impacts for all business objectives and courses of action identified
- **Stakeholders:** Business Leader, Business Strategist, Business SME, Business Architect, IT Architects (Application, Data and Technical)
- **Value Item:** Business Objective Impact Analysis Through Business Architecture Lens

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
Business Scenario Definition	Ability to interpret business needs and derive a postulated sequence of events that can frame assessment efforts and a related analysis plan	Business Scenario Definition	A list of business scenarios and their definitions applicable to the defined business direction.	Business Leaders, Business SMEs
Course of Action Definition	Ability to refine previously defined action items based on business and IT architecture impacts	Updated Strategy Traceability Definition (courses of action updated)	See previous definition.	Business Leaders, Strategists, Business SMEs
Business Objective / Value Stream Impact Analysis	Ability to determine the impact of various business objectives on value streams and value stream stages	Strategy Traceability Definition and Strategy Impact Analysis	An expansion of the Strategy Traceability Definition which describes the impact of objectives on value streams and capabilities as well as other impacted business architecture domains and IT architecture domains.	Business SMEs
Business Objective / Capability Impact Analysis	Ability to determine the impact of various business objectives on business capabilities			Business SMEs
Business Objective / Information Impact Analysis	Ability to determine the impact of various business objectives on business information concepts			Business SMEs
Business Objectives / Business Unit Impact Analysis	Ability to determine the impact of various business objectives on business units and third parties			Business SMEs
Business Objective / Product Impact Analysis	Ability to determine the impact of various business objectives on formal product and service offerings			Business SMEs (including product experts as applicable)
Business Architecture / IT Architecture Impact Analysis	Ability to assess scenario impacts on IT applications and software services and data architectures through value stream, capability, information, and business unit perspectives			Business SMEs, IT Architects
Current State Architecture Visualization	Ability to depict the current state environment and the aggregate impact of objectives and courses of action on business	Current State Business Architecture	A representation of the current state of impacted business architecture domains, along	Business Leaders, Business SMEs, IT Architects

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
	architecture and IT architecture	<i>Note: The intent of this deliverable is to represent the current state business architecture and frame any relevant operational details as well.</i> Current State IT Architecture	with additional information necessary for communication (e.g., contextual details, overlay of effectiveness or level of automation ratings, etc.). A representation of the Current State IT Architecture framed with business architecture.	

Figure B.1.2: Assess Business Impact Definitions

Step: Architect Business Solution

- **Definition:** Leverage business architecture and related business analysis and design disciplines to develop a business solution that can address priority business objectives
- **Inputs:** Strategy Traceability Definition and Strategy Impact Analysis
- **Entrance Criteria:** Impact analysis of business objectives on business architecture and IT architecture
- **Exit Criteria:** Defined business changes needed framed by business and IT architecture, business design solutions, and a recommended approach to deploying and transitioning to those design solutions
- **Stakeholders:** Strategic Planner, Business Architect, IT Architects (Application, Data and Technical), Transformation Architect, Business SME, Business Designer, Solution Architect, Business Analyst
- **Value Item:** Defined Business Solution to Meet Business Objectives

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
Architecture Change Analysis	Ability to describe specific changes to the business and technology environments, based on and framed by the business and IT architecture domain impacts identified previously	Business Architecture / IT Architecture Change Definition	An inventory of changes to the business and technology environment, framed by business architecture and IT architecture perspectives. From a business architecture perspective, the framing focuses on impacts to capability behavior for one, multiple, or all capability instances – or in some cases the creation of a new capability.	IT Architects
Target State Architecture Visualization	Ability to depict the target state business and IT architecture as it has been designed to address the defined objectives and courses of action and frame where operational improvements are planned with architecture focal points	Target State Business Architecture <i>Note: An organization's baseline business architecture including value streams and capabilities rarely "changes". As a result, the intent of this deliverable is typically to represent where operational improvements are planned, framed through business architecture focal points.</i>	A representation depicting where operational changes are planned framed by business architecture focal points and in rare cases planned changes to business architecture domains.	Business Leaders, Business SMEs
Business-Driven IT Architecture Definition	Ability to leverage business architecture to influence and refine target state data, application,	Target State IT Architecture	A representation of the target state IT architecture framed by the business architecture.	Business Leaders, Business SMEs, Application Architect, Data Architect, Solution Architect

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
	and solution architectures			
Target State Option Analysis & Finalization	Ability to develop various target state solution options for meeting priority business objectives	Target State Option Analysis Updated Target State Business Architecture and IT Architecture	A comparison and analysis of target state solution options and implications, used to inform decision-making about target architecture and solution approaches. See previous definition.	Business Leaders, Business SMEs, IT Architects, Solution Architects, Business Designers, Strategic Planners
Business Architecture / Case Management Design	Ability to build business architecture influenced design solutions for coordinating work by organizing all relevant pieces into one place	Rules Based Routing Map	The creation of an event-based representation of work for a defined initiative or scope of the business, framed by value streams, and informed by other business architecture perspectives such as capabilities and stakeholders. <i>Note: This deliverable is created by Business Analysts and/or Solution Architects with Business Architect partnership and oversight.</i>	Business SME, Business Analyst, Solution Architect
Business Architecture / Business Process Design	Ability to build business architecture influenced design solutions that leverage business process analysis and design techniques	N/A – in this step business architecture guides the development or updating of process models in the Business Process Management discipline	The creation of process diagrams, descriptions, and other deliverables to design or redesign processes as needed, scoped by business architecture perspectives such as value streams and capabilities. <i>Note: This deliverable is created by Business Analysts and/or Process Designers with Business</i>	Business SME, Business Analyst, Business Designer (process)

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
			<i>Architect partnership and oversight.</i>	
Current State / Target State Transformation Analysis	Ability to establish a transformation approach, roadmap, and plan based on the change between the existing and target architectures and design	Transformation Approach Transformation Roadmap	An approach that discusses how the transition would evolve, include new design, retraining, retooling, and incremental perspectives. A roadmap and high-level plan that provide the phases, sequence, and general timeline for the transformation effort.	Business Architect, Application Architect, Data Architect, Solution Architect, Transformation Architect, Business Designer

Figure B.1.3: Architect Business Solution Definitions

Step: Establish Initiative Plans

- **Definition:** Establishes and prioritizes initiatives and related investments required to achieve business objectives
- **Inputs:** Inventory of business architecture and IT architecture changes
- **Entrance Criteria:** Availability of business and IT architecture impacts, design solutions, and transformation approach
- **Exit Criteria:** Availability of defined, prioritized, and funded business initiatives and cross-initiative impacts
- **Stakeholders:** Strategic Planner, Business Leader, Business SME, Business Architect, IT Architects (Application, Data and Technical) Solution Architect, Portfolio Manager
- **Value Item:** Identified Initiatives and Related Investments Coupled into an Overall Plan

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
Initiative Definition	Ability to identify and define initiatives* that can be used to address priority business objectives, framed within a business architecture context	Initiative Definition	A definition of each initiative including overall description information, alignment with	Business Leaders, Business SMEs, IT Architects, Solution Architects,

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
	<i>* Note: The business architecture input provides prioritized and organized groups of work called initiatives. Other roles (e.g., Strategic Planners, Program Managers, Project Managers) take this input and break it into concrete programs, projects, sprints, etc. in other steps not shown here.</i>	Strategic Roadmap	business direction, and necessary business and technology changes described using business and IT architecture focal points. A visual representation of business architecture framed initiatives for a defined scope, based on the Initiative Definition, which visualizes the duration, sequence, and other aspects.	Strategic Planners
Initiative Measurement Criteria Creation	Ability to identify measurement criteria for each potential initiative or opportunity	Initiative Definition (reference to metrics) Updated Strategy Traceability and Strategy Impact Analysis (metrics updated as applicable)	See previous definition.	Business SMEs, Strategic Planners
Actionable Objectives / Initiative Mapping	Ability to map initiatives to identified objectives (either strategic or tactical)	Updated Strategy Traceability and Strategy Impact Analysis (initiatives added)	See previous definition.	Business SMEs, Strategic Planners

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
Initiative Tradeoff / Decision Definition	Ability to develop tradeoff/decision criteria and cost/benefit analysis as a basis for determining which initiatives are best suited to achieve the business objectives in a timely, effective manner	Initiative Option Analysis	An analysis of key aspects of initiatives (e.g., cost/benefit analysis, business value), used to inform prioritization decisions and tradeoffs.	Business Leaders, Business SMEs, IT Architects, Solution Architects, Strategic Planners
Initiative Mapping	Ability to analyze cross-impacts of planned and inflight initiatives based on common impacts across capabilities and value streams	Cross-Initiative Analysis	A heatmap or other views that reflect initiative alignment to business direction and capabilities and value streams, to highlight strategic or business misalignment as well as initiative gaps and overlaps.	Portfolio Managers, Business Leaders, Business SMEs, IT Architects, Strategic Planners

Figure B.1.4: Establish Initiative Plan Definitions

Step: Deploy Solution

- **Definition:** Manage solution development, deployment, transformation, and success determination
- **Inputs:** Initiative definition
- **Entrance Criteria:** Availability of defined, prioritized, and funded business initiatives
- **Exit Criteria:** Successfully deployed solution
- **Stakeholders:** Business Architect, Business Analyst, Business SME, IT Architect (Application, Data and Technical) Solution Architect, Portfolio Manager, Program/Project Manager, Business Leader, Developer/Engineer
- **Value Item:** Desired Solution Delivered

Note: The primary role for business architecture is upstream through initiative definition. As a result, the role in this final step is minimal, reflecting a focus on consulting and governance.

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
Deployment Team Engagement	Ability to identify, assemble, engage, manage, and coordinate implementation teams for the purpose of successful deliverable deployment required to realize benefits outlined in the tradeoff/decision criteria	Team Deployment Recommendations Architectural Briefing	A set of recommendations to inform team prioritization and structure, based on Initiative Definitions and Strategy Traceability and Strategy Impact Analysis. May be provided formally through a deliverable and/or informally through ongoing consulting and engagement. A briefing(s) for deployment teams on the overall business and IT architecture target state direction and changes along with how they align with defined business direction.	Program/Project Managers, IT Architects, Solution Architects
Deliverable Deployment	Ability to implement a particular deliverable or series of deliverables associated with a specific solution which may or may not include new organizational changes, business design concepts, third-party involvements, and/or IT options	Business Architecture-Framed Requirements	The creation of requirements for an initiative, based on the business architecture framing provided through the Initiative Definition. Also includes cross-mapping from requirements to capabilities and other business architecture	Business Analysts, Business SMEs

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
			perspectives (e.g., value streams and stakeholders). <i>Note: This deliverable is created by Business Analysts with Business Architect partnership and oversight. The business architecture and/or requirements repository should reflect the cross-mapping.</i>	
Current State / Target State Transformation Management	Ability to transition from the current state environment to the target state environment while minimizing disruption and maximizing value	Architecture Governance Analysis	An analysis describing to what degree an initiative(s) is aligned with the defined business and IT architecture changes and target architecture, and recommendations for any adjustments necessary. May be provided formally through a deliverable and/or informally through ongoing consulting and engagement.	Program/Project Managers, Business SMEs, Business Analysts, IT Architects, Solution Architects, Business Developers/Engineers
Success Evaluation	Ability to measure and evaluate the success of a particular deliverable deployment	Initiative Success Analysis	An analysis describing to what degree an initiative met its	Portfolio Managers, Program/Project Managers, Business

Business Architecture Action	Business Architecture Action Definition	Business Architecture Deliverable	Business Architecture Deliverable Definition	Participating Roles (in addition to Business Architect)
			stated business objectives and metrics, reflecting back upon the Initiative Definition and Strategy Traceability and Strategy Impact Analysis.	Leaders, Business SMEs

Figure B.1.5: Deploy Solution Definitions

APPENDIX B.2: BUSINESS ARCHITECTURE ROLES AND COMPETENCIES

Business Architect Competencies by Role

The following two-page table lists the competencies required for each role in a business architecture practice, with *BIZBOK® Guide* examples of where they can be applied.

Role	Competency	Type	BIZBOK® Guide Application
Business Sponsor	Decision Making	Professional	
Business Sponsor	Promoting	Behavioral	Build support across the business
Business Sponsor	Influencing	Behavioral	Help with holistic adoption of business architecture
Business Sponsor	Regulating	Professional	Avoid lopsided sponsorship of business architecture views
Business Architecture Team Leader	Institution Building	Professional	Establish robust business architecture with common vocabulary
Business Architecture Team Leader	Using Power	Professional	Reporting responsibility in the business
Business Architecture Team Leader	Overseeing	Professional	Not dictate direction, content or approach
Business Architecture Team Leader	Representation	Professional	Spokesperson, ability to become the "face" the team
Business Architecture Team Leader	Facilitation	Behavioral	Business architecture working session facilitator
Business Architecture Team Leader	Leadership	Professional	External team collaboration and management
Business Architecture Team Leader	Relationship Management	Behavioral	Build credibility with the business, communication with executives
Business Architecture Team Leader	Motivating	Behavioral	
Business Architecture Team Leader	Enabling	Behavioral	
Business Architecture Team Leader	Policy Making	Professional	
Business Architecture Team Leader	Decision Making	Professional	
Business Architecture Team Leader	Analysis	Knowledge	Advanced mapping skills
Business Architecture Team Leader	Negotiation	Behavioral	
Business Architecture Team Subject Matter Expert	Institution Building	Professional	Establish robust business architecture with common vocabulary
Business Architecture Team	Representation	Professional	Mainstream business unit representation

Role	Competency	Type	BIZBOK® Guide Application
Subject Matter Expert			
Business Architecture Team Subject Matter Expert	Analysis	Knowledge - Qualification	Draft L1 & L2 Capabilities
Business Architecture Team Subject Matter Expert	Facilitation	Behavioural	Business architecture working session facilitator
Business Architecture Team Subject Matter Expert	Subject Matter Expertise	Knowledge - Experience	Knowledge of major aspects of the business
Business Architecture Team Subject Matter Expert	Consultation	Knowledge - Experience	Consulted on any item that crosses their area
Architecture Mapping Expert	Tooling	Knowledge - Experience	Enterprise architect with tools and techniques knowledge, tool knowledge appropriate to blueprint mapping and knowledge base governance
Architecture Mapping Expert	Analysis	Professional	Mapping, creation of formal and ad-hoc blueprints for stakeholder communication
Architecture Mapping Expert	Institution Building	Professional	Assembly and organization of analysis results into formal knowledge base
Architecture Mapping Expert	Alignment	Knowledge - Experience	Ability to expand views so they align with extended views of business architecture e.g., business unit aspects
Architecture Mapping Expert	Governance	Professional	Governance expertise
Architecture Mapping Expert	Relationship Management	Behavioral	Rapport building
Business Architect	Analysis	Professional	Ability to look beyond traditional business concepts and drill to the heart of given concept
Business Architect	Relationship Management	Behavioral	Communication skills to create and socialize the business architecture
Business Architect	Institution Building	Professional	The drive to introspectively challenge traditional terminology when it does not accurately depict an aspect of the business, is misleading or inconsistent
Business Architect	Collaboration	Behavioral	Patience to work collaboratively to ensure that the business architecture truly reflects the business
Business Architect	Subject Matter Expertise	Knowledge	Business subject area expertise appropriate to the role and areas being mapped
Business Architect	Architecture	Professional	Basic understanding of blueprint structures necessary for capability, organization, value, and information mapping
Mentor	Consultation	Knowledge - Experience	Not heavily involved in mapping effort, does not facilitate business architecture Working Sessions
Mentor	Overseeing	Professional	Heavily involved in capability mapping
Mentor	Steering	Behavioral	Keeps efforts focused
Mentor	Influencing	Behavioral	Behind the scenes guidance

Business Architect Competency Model – Core Selection

The next two-page table represents the selection of core competencies for a business architect. This evolving selection has been created based on the *BIZBOK® Guide*, as well as leveraging skills specified by the SFIA¹ framework. The model can be enhanced by the subsequent extended competencies and skills palette, to create customized business architect role definitions that support specific business contexts, maintain transferability of skills, and highlight areas where personnel development is needed. While it is not the purpose of the model to act as a career path, it certainly can contribute to one.

Executive Value Statement (Business Value)	Business Outcome	Business Activity	Business Architecture Core Competency (BIZBOK® Guide)	BIZBOK® Guide-Based Competency Sample Statements	Core Skills Required (SFIA)	Entry Proficiency	Max Proficiency
I need to decide which customer demand to satisfy	Decision Alignment	Clarify business decisions	Collaboration	Can work collaboratively to clarify the nature of decisions and the necessary decision tree using the business architecture	Consultancy	2	5
		Facilitate Executive decisions	Subject Matter Expertise	Can advise executives on available options during decision making using the business architecture	Business risk management	2	5
		Communicate decisions	Relationship Management	Can perform business relevant socialization of the business architecture	Stakeholder relationship management	2	5
I need to satisfy my customer demand	Strategic Business Alignment	Align Business Unit strategies	Architecture	Can architect the implementation alignment of business unit strategies using the business architecture	Sustainability assessment	2	5
		Align business change/ initiatives		Can architect the delivery alignment of business change/initiatives using the business architecture	Enterprise and business architecture development	2	5
		Align business operations		Can architect the performance alignment of the business operation using the business architecture	Business process improvement	2	5
		Align business governance	Institution Building	Can architect the institutional alignment of governance bodies to optimize the governance tree using business architecture	Business risk management	2	5

Executive Value Statement (Business Value)	Business Outcome	Business Activity	Business Architecture Core Competency (BIZBOK® Guide)	BIZBOK® Guide-Based Competency Sample Statements	Core Skills Required (SFIA)	Entry Proficiency	Max Proficiency
I need to understand my key customer and business pain points	Business Transparency	Establish causality	Analysis	Can look beyond traditional business concepts and drill down into the business architecture	Business modeling	2	5
		Establish line of sight		Can understand and identify business critical straight-line links between elements in the business architecture		2	5
I need my people to buy into and execute my decision	Stakeholder Satisfaction	Clarify stakeholder concerns	Collaboration	Can work collaboratively to ensure the business architecture reflects the reality of the business	Requirements definition and management	2	5
		Facilitate mitigation of concerns	Relationship Management	Can enable challenge of business perspectives and engineering of business remedies using the business architecture	Stakeholder relationship management	2	5

Business Architect Extended Competencies and Skills Palette

The following are additional competencies and skills that may apply to the business architect role, based on the business context that the role needs to operate in. This list will be further developed in future *BIZBOK® Guide* releases.

- Analytical thinking
- Architecture development
- Business and technology alignment
- Business case development
- Business case development awareness
- Business modeling
- Capability assessments
- Change design and delivery methods
- Commercial and financial awareness
- Communication (written and verbal)
- Cultural awareness
- Customer service
- Design thinking
- Estimating techniques
- Framework development
- Gap analysis
- Influencing and persuading
- Investment planning
- Planning and organizing
- Planning, tactical and strategic
- Presentation and story-telling
- Problem solving
- Problem solving methods and tools
- Project management and development methodology awareness
- Project shaping and scoping
- Relationship building and diplomacy
- Resource planning
- Results orientation
- Risk management
- Simplifying complex concepts
- Strategic thinking (big picture awareness)
- Team work

¹ Skills Framework for the Information Age, www.sfia-online.org

APPENDIX B.3: BUSINESS ARCHITECTURE MATURITY MODEL®

This appendix presents a framework for measuring the maturity level of an organization's in-house business architecture and deployment progress, along with criteria and evidence necessary to evaluate the maturity of business architecture practice and governance. The Business Architecture Maturity Model® (BAMM®) is based on the *BIZBOK® Guide* and will continue to evolve as the guide continues to mature. An overview, principles, and guidelines for applying the BAMM® in practice can be found in section 3.9. The most recent downloadable version of the BAMM® is available in the [Guild store](https://www.businessarchitectureguild.org) at www.businessarchitectureguild.org. The tool is designed for business architecture practitioners and stakeholders to assess, score, and communicate the maturity of a business architecture practice.

The downloadable version of the BAMM® includes an overview, aggregated scoring summary, and overall or summary rating criteria, in addition to detailed evaluation and scoring criteria for the following categories.

- Governance
- Strategy Linkage
- Management Involvement
- Architecture Process
- Business Strategy
- Capability
- Organization
- Value
- Communication
- Tools
- People
- Business / IT Architecture Alignment
- Policy
- Stakeholder
- Business Requirements Alignment
- Process Alignment
- Case Management Alignment
- Lean Six Sigma Alignment
- Business Performance Management
- Customer Experience Design
- Information
- Initiative
- Product

In order to claim a level of maturity for a certain category, an organization must meet *all* criteria within that level. For example, an organization must satisfy all level 3 criteria to be considered a level 3 of maturity, not simply have satisfied the level 2 criteria.

Please visit the [Guild store](https://www.businessarchitectureguild.org) to download the complete and latest version of the BAMM®.

APPENDIX B.4: BUSINESS ARCHITECTURE METAMODEL

The underlying business architecture metamodel as described in the *BIZBOK® Guide* will evolve in terms of detail and breadth of coverage. The metamodel is governed by the Business Architecture Guild® metamodel team, which has produced a metamodel guide. Version 1.0 of this guide is accessible on the Guild website and here: [The Business Architecture Metamodel Guide](#).

The metamodel guide and *BIZBOK® Guide* section 5.1 reflect the relationships defined in *BIZBOK® Guide* parts 2, 3, and ultimately 6, each of which provide much greater detail than the overview in section 5.1. Future white papers will create subsequent versions of the metamodel guide. Updates will be posted to the Business Architecture Guild® whitepaper page on its website and, as future releases allow, will be referenced in this appendix.

Finally, where appropriate, this appendix will reference industry standards work that aligns in part to the Guild metamodel as those standards are published and this section is updated.

APPENDIX B.5: DYNAMIC RULES-BASED ROUTING MAP EXAMPLES

The routing map examples in the figures below are enlarged versions of the figures shown in *BIZBOK® Guide* section 3.5.

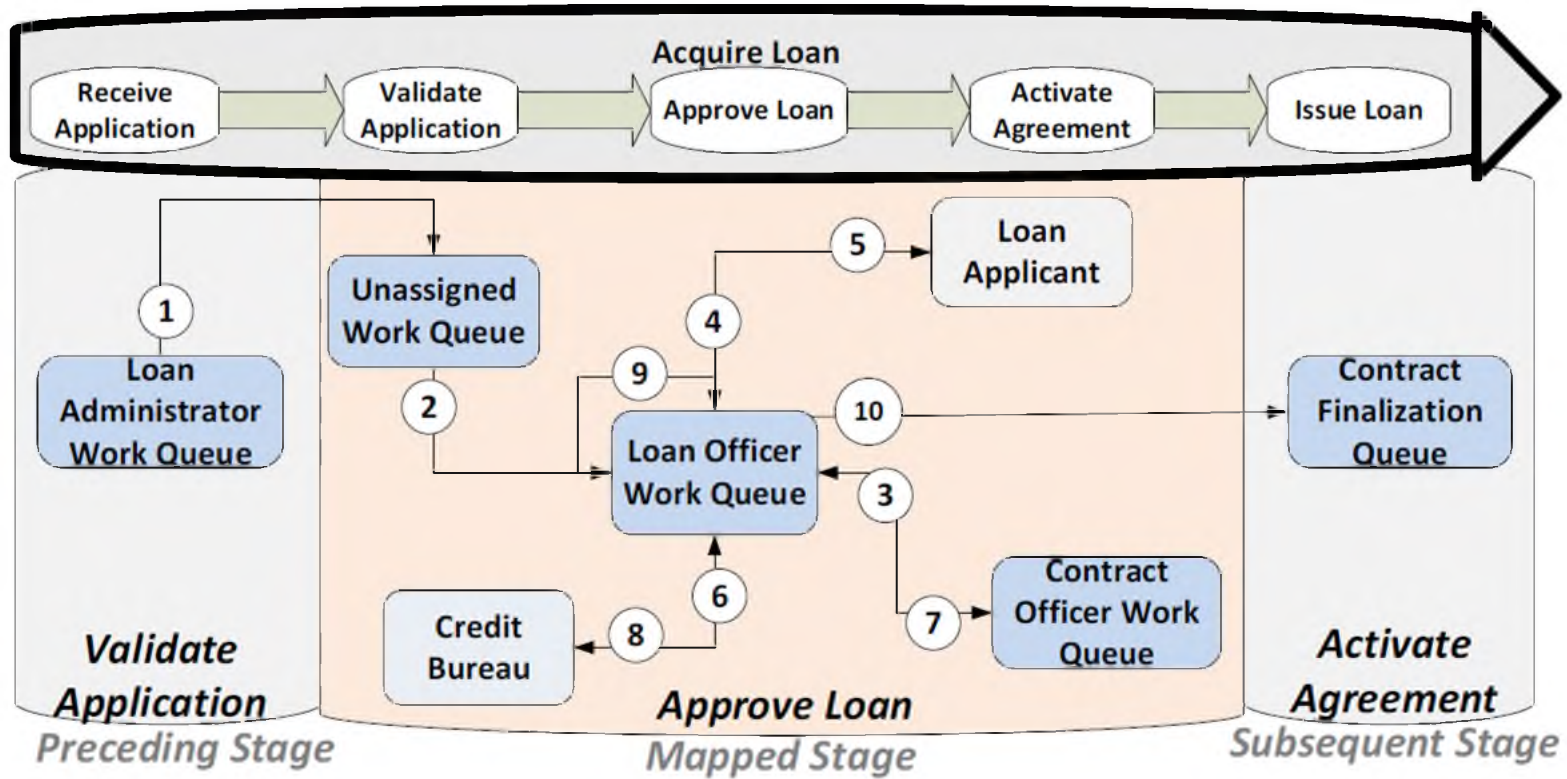


Figure B.5.1: Dynamic Rules-Based Routing Map Example

Event Information			Work Transition Sending Source				Work Transition Receiving Source				State Transition		Pre- and Post-Conditions		
Event #	Triggering Event	Action to be Taken	Value Stream	Stage	Work Queue	Work Queue Filter View	Value Stream	Stage	Work Queue	Work Queue Filter View	Current State	Next State	Pre-Condition	Post-Condition	Requirement #
1	Loan request (i.e., inquiry) validated	Move loan request to Unassigned loan queue	Acquire Loan	Validate Application	Loan Administrator	Under Review	Acquire Loan	Approve Loan	Unassigned	Awaiting Assignment	Inquiry under review	Inquiry validated	Inquiry reviewed	Inquiry validated	1010
2a	Superior assigns loan to loan officer	Assign loan to loan officer, Move to Work in Progress queue	Acquire Loan	Approve Loan	Unassigned	Awaiting Assignment	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Inquiry unassigned	Inquiry assigned	Inquiry validated	Loan assigned to loan officer	1011
2b	Loan officer pulls loan to work on	Assign loan to loan officer, Move to Work in Progress queue	Acquire Loan	Approve Loan	Unassigned	Awaiting Assignment	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Inquiry unassigned	Inquiry assigned	Inquiry validated	Loan assigned to loan officer	1012
3	Loan officer requests contract review	Send loan and inquiry to contract officer	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Contract Officer	Review Request	Loan under review	Contract review pending	Loan officer reviewed application	Contract officer has pending loan agreement	1013
4	Loan officer sends applicant inquiry for information	Generate notice to applicant, Move loan to Awaiting Response queue	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Awaiting Applicant Response	Loan under review	Awaiting response	Loan under review	Request sent to applicant	1014
5	Loan applicant replies to inquiry	Post response, Move case to Work in Progress queue	Acquire Loan	Approve Loan	Loan Officer	Awaiting Applicant Request	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Awaiting response	Loan under review	Response requested	Response received	1015
6	Loan officer requests credit verification	Send credit check to credit bureau, Move loan to Awaiting Credit Check queue	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Awaiting Credit Check	Loan under review	Awaiting response	Loan under review	Credit check inquiry sent to credit bureau	1016
7	Contract officer approves contract	Move loan to Loan Officer Work in Progress queue	Acquire Loan	Approve Loan	Contract Officer	Review Request	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Contract review pending	Contract review complete	Loan sent to contract officer	Contract officer completes review	1017
8	Credit bureau responds to inquiry	Post response, Move case to Work in Progress queue	Acquire Loan	Approve Loan	Loan Officer	Awaiting Credit Check	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Awaiting credit response	Credit response received	Request sent to credit bureau	Response received from credit bureau	1018
9a	Loan officer completes credit review	Update credit risk rating	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Credit review pending	Credit review completed	Credit information in hand	Credit check completed, Risk rating updated	1019
9b	Loan request rejected	Reject loan, terminate review, move to rejected state	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Approve Loan	Loan Officer	Rejected Loan	Loan under review	Loan rejected	Loan officer review pending	Loan rejected, value stream terminated	1020
10	Loan request accepted	Move case to loan supervisor	Acquire Loan	Approve Loan	Loan Officer	Work in Progress	Acquire Loan	Issue Second Approval	Loan Supervisor	Work in Progress	Loan review pending	Loan review completed	Loan officer review pending	Loan moved to supervisor for review	1021

Figure B.5.2: Dynamic Rules-Based Routing Map Worksheet Example

APPENDIX B.6: ALTERNATIVE VALUE MAPPING APPROACHES

Because value is so central to understanding an organization, it has been the focus of multiple value mapping approaches. All of these approaches share the core characteristic of framing value delivery, but each emphasizes different aspects of how value is exchanged between an organization and its stakeholders. These differences are driven by particular organizational motivations for the value analysis such as understanding where differentiation is being created, understanding which activities are core to a particular stakeholder, or understanding the entire set of value exchanges with a stakeholder for a variety of purposes. In addition, some approaches are inwardly facing while others are outwardly facing.

These variations have resulted in four relatively different approaches to mapping value creation and delivery. The first approach is the business architecture value stream discussed at length in *BIZBOK® Guide* section 2.4. This appendix discusses the remaining three approaches, each of which align to business architecture in unique ways. This appendix provides an overview and brief discussion of alignment with business architecture for the Porter value chain, the value network, and the lean value stream.

Porter Value Chain

The value chain is the oldest of the value mapping approaches. Value chains were originally outlined in 1985 by Michael Porter of the Harvard Business School in his book *Competitive Advantage: Creating and Sustaining Superior Performance*. Porter suggested that “Every firm is a collection of activities that are performed to design, produce, market, deliver, and support its product”.¹ Value chains provide a framework for identifying the distinction between value creating and supporting activities.

Figure B.6.1 depicts the traditional view of the Porter value chain, where a business is represented as a collection of inbound, operational, and outbound logistics, which is coupled with marketing and sales to deliver services. The horizontal perspectives at the top of the figure address supporting business units including human resources, procurement, and information technology. This value chain represents a traditional business unit view of an enterprise with a focus on measuring and maximizing margins as shown to the right.



Figure B.6.1: Porter Value Chain²

To help organizations distinguish between value-creating and value-supporting activities, and identify strategic advantage in relation to those activities, Porter suggested that differentiators be associated with each of the core processes. These differentiators, such as distribution capabilities, partner alliances, or regional access, are the key factors that customers see and use to distinguish one product or service offering from another.

For example, a medical supply firm found that it had a distinct advantage compared to its competitors because of its ability to integrate sales that were created through web, direct, and in-house sales channels. This scenario is a classic example of Porter's Channel Linkages differentiator. By gathering these differentiators, Porter suggested that organizations could help formulate a cohesive picture of their position in the market along with which activities in the value chain were integral to supporting this position. The essence of formulating competitive strategy is relating a company to its environment.³

Porter's original value chain focused on creating a generic pattern with five core activities: Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, and Service. This model was a good fit for organizations where there was a well-defined customer and where the business focused on the creation of a well-defined, discrete product and family of supporting products and services. In this model, core business activities and their relationship to various stakeholders was fairly static. Value was added largely in the delivery of the final product and increases in value were driven primarily by internal performance and innovation. In summary, the competitive advantage oriented value chain primarily focused on incremental differentiation and optimization of the supply chain.

The Porter Value Chain and Business Architecture

The role the Porter value chain plays in a business architecture context is in strategic planning. *BIZBOK® Guide* section 2.1 discusses how strategic planning gathers input from an analysis of external forces and internal strengths and weaknesses. Businesses can use Porter's value chain to provide insights into strategic plans to target measurable objectives. Business architecture provides further insights into the business impacts of these objectives on core business architecture domains and assesses impacts on a business' operating model. As an organization delivers business-driven initiatives, the Porter value chain is one way to assess resulting operational improvements.

Value Network

Many organizations have certain value exchanges that are less formally structured than those represented by the business architecture value stream. In these situations, the value stream can be augmented by value network. In the value network approach, there can be any number of people or organizations involved as stakeholders. Stakeholders derive some value from the way in which they interact with a given organization in the network. The network as a whole, however, creates value that is greater than the sum of its parts. The idea of customer is less clear because value may be given by and derived from multiple client organizations for many stakeholders.⁴

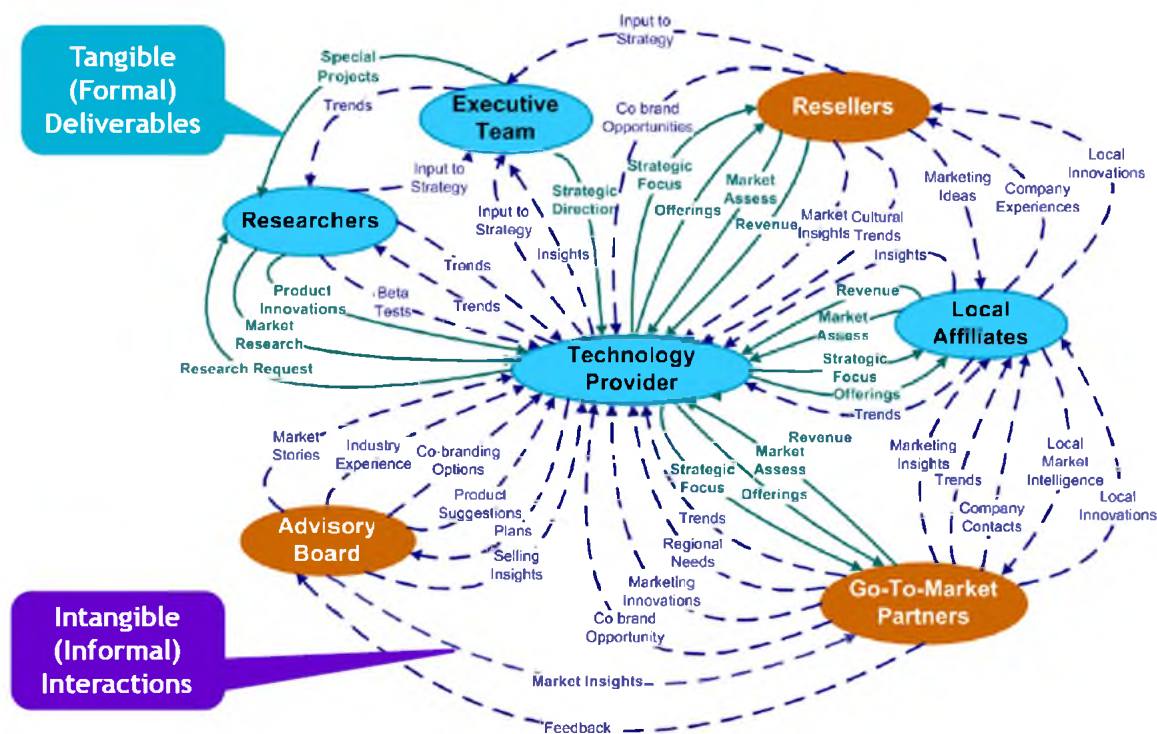


Figure B.6.2: Value Network Example⁵

Figure B.6.2 depicts a value network showing the stakeholders in the value map. However, this value network depicts only the various value exchanges that take place among the stakeholders, not the activities associated with them. This approach is used when the emphasis is on understanding the set of value exchanges to determine if certain exchanges can be enhanced or if there are opportunities to add to or remove any of the existing value exchanges.

The example in figure B.6.2 depicts two different kinds of lines to differentiate formal, contractual deliverables (tangible) from informal or non-contractual interactions (intangible). These different line styles represent various types of value exchange and are one approach to capturing the exchange of non-structured or informal value.

Areas with unexpected concentrations of intangible value exchange are often targets for further value mapping or process based-analysis techniques. By not focusing explicitly on flows in this example, the value network avoids the transactional issues that other approaches encounter. This networked approach allows the value network to take a more holistic view of value than can be accomplished with the other value techniques.

Value network mappings can be combined or augmented using table structures to produce a much more robust value analysis. Figure B.6.3 is an example of several analysis variations that are used with value network analysis. In this example, there is an emphasis on resource consumption and asset utilization. Value items are accrued through network interactions and are broken into the various views as shown in figure B.6.3. These network interactions include deliverable-related tangible and intangible value items, as well as a summary of benefits on a transaction by transaction basis.

Transactions				Value Creation Internal Cost/Benefit							
Deliverable	Nature of Deliverable Intangible Tangible	Comes From (Role)	Goes To (Role)	What activities does the output require?	Costs in terms of financial assets and resources		Costs for intangible assets Human Competence (HC) Internal Structure (IS) Business Relationships (BR)			Overall cost/risk	Overall benefit for our company and customers
					Resources	Revenue	HC	S	BR		

Transactions				Value Creation External Cost/Benefit							
Deliverable	Nature of Deliverable Intangible Tangible	Comes From (Role)	Goes To (Role)	External Tangible or Intangible Costs/Risks			External Tangible or Intangible Benefits			Overall external cost/risk	Overall External Benefits
				Industry	Society	Environment	Industry	Society	Environment		

Figure B.6.3: Sample Value Network Analysis Tables⁶

The two categories shown across the two tables in figure B.6.3 represent value creation for internal cost/benefits and value creation for external cost/benefits. These views essentially serve as the value items for this value mapping approach.

Value Networks and Business Architecture

Value networks tie into business architecture by augmenting the value stream perspective. As such, value streams and value networks may be used in conjunction with each other. The link between a value stream, which is stage-based, and value network, which is organizationally based, is the value item and value proposition. Value items are accrued along the way for both a value stream and a value network. For example, if an organization is using a value network to envision value delivery within a supply chain and wishes to link a value stream to its role or roles within that value network, the value item provides a common denominator upon which to make this association.

In addition, a value stream may have an end goal value proposition that aggregates through the value network. For organizations using value streams for end-to-end stakeholder value definition and value networks for an expanded perspective across a supply chain, the value item provides the common element between these two perspectives. The idea here involves value aggregation. A value stream's value proposition, which is an aggregation of value items, may simply represent one value item in a value network. A given company may, for example, deliver a product to one or more companies in the network, each of which represents a value proposition from that company's perspective. This value proposition, which is essentially an aggregated set of value items, contributes to value items in the value network, which in turn aggregate to an overall value proposition for the network as a whole.

Value items are one mechanism for capturing the way in which value streams intersect. A stakeholder delivers a value item through at least an implied value stream used to deliver the value item. Because value items do not expose *how* they are produced, complex multi-stakeholder value streams can be modeled separately with the value items acting as the only

point of contact. For example, a Default Loan value stream would have an implicit dependency on the value delivered if a Modify Loan value stream resulted in terminating the loan's path to a default.

Value items are also the way in which a business can represent and analyze how value streams and value networks intersect. In a value network approach, value items are shown as being passed between stakeholders without the explicit display of their relationship to a value stream or value stream stage. This approach is simply a way of representing a set of value streams that are related by aggregations of value items, essentially hiding the value stream and value stream stages. In other words, the value item is the common business architecture concept that links the value network and the value stream.

The Lean Value Stream

While the lean value stream approach contains the word “value”, this approach has a different take on value than the other three approaches. In fact, lean value streams can probably be best thought of as a technique for pursuing the optimization of operational processes. This general understanding is why lean value streams are often seen being used in combination with one of the other popular approaches for operational process optimization: Lean Six Sigma. Lean Six Sigma is a commonly practiced business discipline used to improve business process and overall business performance. Lean value streams focus on what is variously called: Accounting Value, Economic Value, or Accretive Value.

Each of these concepts are used to describe the *resource consumption* (in the broad sense) associated with an activity. Business architecture can provide significant guidance to aligning lean efforts so that a strategic context informs investments in resource reduction by considering stakeholder value across various business units and value delivery perspectives.

Lean Value Streams and Business Architecture

In practice, business architecture value streams are a foundational perspective used to organize lean initiatives. For example, organizations that have launched multiple, parallel lean efforts across overlapping business units and product lines have used business architecture value streams to synchronize lean efforts, particularly when it came to identifying business/IT alignment and value stream automation requirements. Once this alignment is established, standard value stream / capability mapping techniques are used to ensure that lean work is tied back to a capability-based view of the business. This effort, in turn, allows for alignment of the business process discipline to business architecture, showing how processes enable business capabilities.

The *BIZBOK® Guide* devotes the entirety of section 3.6 to a discussion on how business architecture is used in conjunction with Lean Six Sigma and the lean value stream. Practitioners are encouraged to explore this section in detail as appropriate to their needs.

¹ Michael Porter, *The Competitive Advantage: Creating and Sustaining Superior Performance* (New York: The Free Press, 1985).

² Ibid.

³ Ibid.

⁴ Verna Allee, “A Value Network Approach for Modeling and Measuring Intangibles” (White Paper presented at Transparent Enterprise, Madrid, November 2002).

⁵ Verna Allee, “Value Network Analysis and Value Conversion of Tangible and Intangible Assets”, *Journal of Intellectual Capital*, 9, no. 1 (2008): 5-24.

⁶ Verna Allee, “Value Networks and the True Nature of Collaboration”, *ValueNet Works*, 2010, www.valuenetworksandcollaboration.com.

APPENDIX B.7: BUSINESS ARCHITECTURE TOOL EVALUATOR™

This appendix features the Business Architecture Tool Evaluator™ (Tool Evaluator), which provides business architecture practitioners and stakeholders an objective means of assessing, scoring, and selecting an appropriate tool to support their business architecture practice.

The Tool Evaluator includes a comprehensive set of evaluation criteria. Evaluation criteria are organized into four major categories as defined in the *BIZBOK® Guide* section 5.2 — Business Architecture Tooling Options — along with two additional categories to assess the strength of the vendor and the total cost of ownership. Practitioners should consult the *BIZBOK® Guide* for additional explanation that may be required using the reference information provided.

The Tool Evaluator uses a pre-defined weighting scale for each category and for each item within a category, which (in both cases) add up to 100 when given the maximum possible score. The Tool Evaluator will be updated to reflect the ongoing evolution of the practice and the *BIZBOK® Guide*. The latest version of the Tool Evaluator (available as a Microsoft® Excel spreadsheet) is available in the [Guild store](http://www.businessarchitectureguild.org) at www.businessarchitectureguild.org.

The Guild makes no implied or explicit warranties or guarantees for the Tool Evaluator. Users apply it at their own risk and are solely accountable for their tool selection decision.

Completing an Assessment

To evaluate a business architecture tool, review the detailed criteria listed within each section of the Tool Evaluator. Place a score between 0 and 4 (see “Scoring” below) for each evaluation criterion in the scoring column. In the final section (Total Cost of Ownership), enter the amounts as specified by each criterion. Aggregate scores for each category are collated at the bottom of the worksheet.

When comparing two or more tools, divide the Total Cost of Ownership by the Weight Adjusted Score to give a final Value Score. In this cost per point comparison, the lower Value Score indicates the more cost-effective solution (assuming the tool meets all mandatory criteria).

Scoring

Figure B.7.1 provides a scoring mechanism to use with the Tool Evaluator.

Score	Evaluation	Description
0	Not Applicable or Fails to Meet	The requirement/criterion is not relevant to your analysis; or, no evidence is provided to demonstrate the requirement/criterion
1	Barely Meets	Barely meets the requirement/criterion; minimal evidence is provided and the depth of the content in the response is insufficient
2	Meets Some	Some level of the requirement/criterion has been met; information/evidence is provided and the depth of content in the response is limited
3	Meets Most	Nearly meets all the requirement/criterion; information/evidence is provided with a good depth of content
4	Meets All or Exceeds	Exactly meets or exceeds the requirement/criterion with depth of information and evidence to support it

Figure B.7.1: The Business Architecture Tool Evaluator™ Scoring Mechanism

For details, check out the latest Tool Evaluator in the Guild Store.

APPENDIX C: STUDY QUESTIONS

The *BIZBOK® Guide* provided a list of study questions prior to the version 6.5 release. As the Business Architecture Guild® shifts to increased digital presence, as well as to meet the demands of the cutting-edge nature of the Certified Business Architect (CBA)® program, the study questions are no longer provided in this text. Instead, the Guild encourages members to access the online CBA® Study Guide and Study Group Forums. These resources are available at https://www.businessarchitectureguild.org/resource/resmgr/CBA_Study_Guide_v2.2_FINAL.docx.

APPENDIX D: VERSION HISTORY

Changes in version 12.0 (March, 2023)

- Copyright Page
 - Updated copyright information.
- Table of Contents
 - Renamed section 3.4.
- Part 1: Introduction
 - Added an example of an “elevator pitch”.
 - Changed title of section 3.4.
- Section 2.1: Strategy Mapping
 - Deleted line under Design Approach topic that starts as “higher-level objectives often take the form of vision and mission statements...”, implying that objectives can be vague and non-actionable, running counter to the *BIZBOK® Guide* definition.
 - Under Distilling Strategy via Objective Mapping, clarified that use of a formal objective map linking perspectives is one approach to strategy mapping.
 - Deleted note under figure 2.1.12 – it is incorrect, given that goal is shown in template.
 - Replaced figure 2.1.14; updated relationship between objective and change and revised figure for readability.
- Section 2.2: Capability Mapping
 - Updated referenced source for definition of “business object” (a member-posted issue).
 - Remove “Agreement Needs Determination” capability from the text above figure 2.2.10 (it is not a viable capability).
 - Minor formatting improvements for figure 2.2.12.
 - Enhanced capability instance-based planning language that follows figure 2.2.15 to add clarification.
- Section 2.3: Organization Mapping
 - Updated benefits discussion, including adding a benefit related to the use of organization maps in mergers, acquisitions, and reorganizations.
 - Revised mapping principle #5 to say “organization map is constrained by the boundaries of the business ecosystem”, adding the term “ecosystem”, as defined in section 1.
 - Added new mapping principle #9 stating “Organization maps represent collaborative teams”, a concept previously omitted from the principles.

- Added language to business unit type discussion clarifying that mapping teams may apply customized terms such as division, department, or other recognizable business unit terminology.
- Updated the example shown in figure 2.3.6 to depict customized business unit types.
- Standardized references to “business capability” to just say “capability”, in keeping with the evolution of other sections.
- Highlighted how the example in figure 2.3.10 shows capability instances cross-mapped to business units.
- Updated a cross-mapping guideline on color coding to change “commodity” to “supporting”.
- Updated figures 2.3.11 and 2.3.12 to:
 - Reflect standardized capability names for strategy, investment portfolio, human resource, and partner
 - Standardize relationships across the two diagrams
- Streamlined the capability instance discussion underneath the knowledgebase figure 2.3.14.
- Added collaborative team to knowledgebase summary text item #3 to fully show business unit types.
- Section 2.4: Value Mapping
 - Under Value Proposition section:
 - Clarified that the triggering stakeholder is the beneficiary of the value accrued
 - Clarified value proposition as an aggregate of value items from a value stream
 - Under figure 2.4.3, added language as to how multiple, parallel value streams may contribute to overall value proposition.
 - Added new section on value consumption / value creation leveraging Metamodel Guide 2.1 whitepaper content.
 - Inserted a new figure 2.4.4 to highlight consumption/creation perspective.
 - Incremented succeeding figures in the section to accommodate the new figure.
 - Updated value stream navigation discussion along with figure 2.4.7 (now 2.4.8).
 - Updated figure 2.4.7 (now 2.4.8) to revise business object-based orientation.
 - Added section to bring out the importance to the “binding object” in navigation.
 - Updated language on value stream interdependencies and shared business object state dependencies.
 - Added section headers for mapping template and stage articulation discussions.
 - Added clarifications on the role of the mapping template in figure 2.4.12 (formerly figure 2.4.11) regarding:

- General activities being descriptive vs. a normative aspect of business architecture.
- Additional aspects of the mapping template including stakeholders and capabilities.
- Added clarifying language under capability cross-mapping pattern discussion to specify utilitarian capabilities.
- Section 2.5: Information Mapping
 - Added reference for business object definition and corrected double word grammar issue.
 - Updated mapping principle #9 to clarify the difference between a business object and an information concept.
 - Updated information map figure 2.5.4 to align title to standard template, “Information Map”.
 - Updated information map example in figure 2.5.5 to align title to template and refresh examples from financial services.
 - Clarified language following figure 2.5.6 on limiting information concepts for formally defined business objects, not artifacts or technical data terms.
 - Updated text in mapping guideline #2 on aggregating objects and information concepts.
 - Updated metamodel figure 2.5.13 to separate ‘modifies’ and ‘uses’ relationships (no text updates were required).
 - Updated language under figure 2.5.6 to draw a distinction between information concept and business artifacts.
- Section 2.7: Product Mapping
 - Streamlined the first definition of product to read *“A good, idea, method, information, object, or service that meets a need or satisfies a want”* and re-sourced it to Forrester Research because original secondary source can no longer be found.
 - Updated product mapping guideline statement on scope from “business” to “business ecosystem”.
 - Updated figure 2.7.14 to correct the relationship between capability and capability instance (it was previously reversed).
 - Updated relationship summaries under figure 2.7.14 to align to figure update.
- Section 2.8: Stakeholder Mapping
 - Clarified stakeholder guideline #3, which refers to adding third party partners to the stakeholder map.
 - Replaced figure 2.8.5 to update relationships and updated subtext to accommodate the following changes:

- Moved Decision Management, Event Management, Schedule Management, and Submission Management capabilities from level 2 to level 1.
- Updated capability definitions for Decision Management, Incident Management, Infrastructure Management, Language Management, Legislation Management, and License Management.
- Value Streams
 - Added the Execute Operation value stream to Figures 8.9.3 and 8.9.4.
 - Expanded figure 8.9.5 to reflect the current model.
 - Added Execute Operation Value Stream section with figure 8.9.12.
 - Moved Optimize Network Value Stream figure to figure 8.9.13.
- Information Map
 - Moved information map figure to figure 8.9.14.
- Appendix A: Glossary
 - Added definitions for:
 - Course of Action
 - Customer Experience
 - Customer Journey
 - Goal
 - Updated source for Experience Design.
 - Updated definition of Touchpoint.
- Appendix D: Version History
 - Update to reflect changes in *BIZBOK® Guide* v12.0
- Appendix E: Editorial Board and Contributors
 - Added new primary and secondary contributors
 - Updated Editorial Board and Board of Directors lists

Changes in version 11.0 (March, 2022)

- Copyright Page
 - Updated citation information.
 - Updated information regarding prior printed versions of the *BIZBOK® Guide*.
 - Added trademark information for 360 Enterprise Connect.
- Table of Contents
 - Renamed Section 3.5

- Added reference to new Section 8.9
- Renamed Appendix B.1
- Part 1: Introduction
 - Repositioned and rebranded the strategy execution path to the “strategy execution framework”
 - Revised figure 1.5 to simplify the name of the first step
 - Renamed section reference 3.5 title to highlight “dynamic rules-based routing”
 - Added new section reference for Section 8.9: Telecom Industry Reference Model
 - Renamed Appendix B.1 to reflect rebranding of strategy execution path to the strategy execution framework
 - Revised figure quality for all figures
- Section 2.1: Strategy Mapping
 - Standardized and replaced figure 2.1.8
- Section 2.2: Capability Mapping
 - Clarified capability instance to focus on business unit occurrence
 - Changed example reference under figure 2.2.4
 - Under capability mapping guideline #1, added language on avoiding spurious business object utilization based on the 2 common traps mapping teams often encounter
 - Under capability mapping guideline #2, updated examples to align more closely to common mapping practices
 - Refined and expanded capability definition building guidelines, including definition language constraints
 - Replaced Capital Management definition example with Human Resource definition example
 - Updated Customer Management definition example to align to best practices
 - Updated Agreement Management definition example to align to best practices
 - Under Work Management capability decomposition language to clarify the concept and use of “aggregating” capabilities
 - Replaced figure 2.2.12 and supporting text with an updated Work Management example that aligns more closely to industry best practices
 - Clarified language around a “submission” being a container in the context of the Submission Management capability example
- Section 2.3: Organization Mapping
 - Replaced link in footer related to Chaordic organizations
- Section 2.4: Value Mapping
 - Updated figure 2.4.4 and supporting language to more closely align to industry best practices

- Updated figure 2.4.5 and supporting language to more closely align to industry best practices
- Updated figure 2.4.7 and supporting language to more closely align to industry best practices, including tightening up object state transitions as basis for entrance and exit criteria
- Updated figure 2.4.8 and supporting language to more closely align to industry best practices and clarify value stream navigation impacts of shared business object state transitions
- Clarified value stream drafting guideline 2 to replace “external facing” term with “externally triggered” term, with the new term being the correct framing
- Clarified value stream drafting guideline 4 to highlight that the term definition in a value stream, while templates may use the term description in some situations
- Clarified value stream drafting guideline 4 to highlight the need for entrance and exit criteria to reference business object states
- Refined additional drafting guidelines
- Updated figure 2.4.9 to depict that description and definition are interchangeable in a value stream mapping template
- Updated figure 2.4.10 value stream mapping example to align more closely to best practices, including updating the value stream name
- Updated figure 2.4.11 and supporting language for usage context and clarity
- Updated figure 2.4.12 value stream mapping example to align more closely to best practices
- Updated figure 2.4.13 value stream mapping example to align more closely to best practices
- Updated figure 2.4.14 value stream cross-mapping example to align more closely to best practices
- Updated figure 2.4.15 value stream cross-mapping example and supporting language to align more closely to best practices, including changing the value stream used for the example
- Section 2.8: Stakeholder Mapping
 - Updated examples in section overview
 - Clarified stakeholder mapping principle 4 to clarify information concept relationship
 - Clarified stakeholder category mapping articulation and use, including the use of a category to trigger a value stream
 - Revised figure 2.8.3 to align to best practices and ensure that no duplicate stakeholders appear in template column 3
 - Updated figure 2.8.5 model to add capability to value stream stage relationship
- Section 3.4: Business Architecture and Business Process Modeling and Management

- Contains summary level capability map, value streams, and information map
- Glossary
 - Updated definition for Capability Instance
 - Added Process Outcome
- Appendix B.1: Strategy Execution Framework: Business Architecture Role Definition
 - Revised title of section to align to framework branding update
 - Revised strategy execution framework step 1 name to align to revision in part 1
- Appendix B.3: Business Architecture Maturity Model®
 - Removed screen shots – content can be access via the Guild Store
 - Added customer experience category
- Appendix B.4: Business Architecture Metamodel
 - Replaced Metamodel Guide link to point to v2.0 on Business Architecture Guild website
- Appendix B.5: Dynamic Rules-Base Routing Map Examples
 - Updated figures to align to updates in section 3.5
- Appendix B.7: Business Architecture Tool Evaluator™
 - Removed snapshot images of the Tool Evaluator as these images can get out of date with the posted store version
 - Adjusted text to correspond to these edits and specifically direct members to the Guild Store
- Appendix D: Version History
 - Updated to reflect changes in *BIZBOK® Guide* v11.0
- Appendix E: Editorial Board and Contributors
 - Added new primary and secondary contributors
 - Updated Editorial Board and Board of Directors lists

Changes in version 10.0 (March, 2021)

- Table of Contents
 - Added references to new sections 3.12 and 3.13
- Part 1: Introduction
 - Added references to new sections 3.12 and 3.13
- Section 2.1: Strategy Mapping
 - Enhanced language on using value streams and capabilities to target objectives and courses of action on operating model perspectives
 - Standardized language on “course of action” vs. “action item” across section
 - Updated figure 2.1.11 strategy map example
 - Updated figure 2.1.12 strategy impact analysis template
 - Updated figure 2.1.13 strategy impact analysis example

- Added new knowledgebase model figure 2.1.14
- Updated business architecture knowledgebase discussion for strategy
- Section 2.2: Capability Mapping
 - Clarified language on capability outcome in capability mapping guideline #3
 - Added guidance on capability decomposition guideline #4
 - Updated and refined business architecture knowledgebase capability discussion
 - Added new knowledgebase model figure 2.2.19
- Section 2.3: Organization Mapping
 - Updated business architecture knowledgebase organization discussion
 - Added new knowledgebase model figure 2.3.14
- Section 2.4: Value Mapping
 - Streamlined discussion on value stream / business process mapping, removing figure 2.4.17
 - Added new knowledgebase model figure 2.4.17
 - Updated business architecture knowledgebase value stream discussion
- Section 2.5: Information Mapping
 - Added introductory language clarifying context of an information concept
 - Refined language on extracting information concept from a capability
 - Moved original knowledgebase information model figure to figure 2.2.13, which resulted in figure renumbering across the section
 - Moved down and refined business architecture knowledgebase information discussion
- Section 2.6: Initiative Mapping
 - Updated business architecture knowledgebase initiative discussion
 - Replaced knowledgebase model figure 2.6.16 with revised initiative model diagram
- Section 2.7: Product Mapping
 - Revised example discussing product-to-product mapping at figure 2.7.4
 - Updated business architecture knowledgebase product discussion
 - Replaced knowledgebase model figure 2.7.14 with new simplified diagram
- Section 2.8: Stakeholder Mapping
 - Updated business architecture knowledgebase stakeholder discussion
 - Added new knowledgebase model figure 2.8.5
 - Refined language related to capability/stakeholder cross-mapping
- Section 2.9: Policy Mapping
 - Added business architecture knowledgebase policy discussion
 - Added new knowledgebase model figure 2.9.3
- Part 3.0: Business Architecture Practice Guide
 - Added references to recently added sections 3.11, 3.12, and 3.13

- Replaced domain cross-mapping table with a link to the Business Architecture Metamodel Guide, which will be updated periodically to reflect metamodel extensions and refinements
- Version History
 - Updated to reflect changes in *BIZBOK® Guide* v10.0
- Editorial Board and Contributors
 - Added new primary and secondary contributors
 - Updated Editorial Board and Board of Directors lists

Changes in version 9.0 (July, 2020)

- Table of Contents
 - Revised section titles in part 6 as required by overall set of updates
- Part 1: Introduction
 - Updated business architecture actions in Figure 1.5
 - Updated definition of Appendix B.1
 - Revised section titles in part 6 as required by overall set of updates
- Section 2.2: Capability Mapping
 - Updated principle #7 to improve examples
 - Updated figure 2.2.4 capability example to align to best practices
 - Updated figure 2.2.8 capability example to align to best practices
 - Updated figure 2.2.12 capability example to align to best practices
 - Added matching guideline clarifying the role of the “controlling object” in context of a value stream’s use of the concept of a “binding” object
 - Updated figure 2.2.18 example to align to best practices
 - Updated capability knowledgebase relationships to add capability instance, add capability behavior, and clarify the capability uses/modifies information concept relationship
- Section 2.5: Information Mapping
 - Replaced metamodel figure 2.5.2 with a “user friendly” relationship model source to the Guild’s Business Architecture Metamodel Guide paper
 - Updated corresponding language for figure 2.5.2
 - Under information mapping principle #7, clarified the capability-related “modifies” and “uses” relationships to information concept
 - Corrected arrows for the uses/modifies relationships in figure 2.5.12, along with related text
 - Updated information concept knowledgebase relationships to stakeholder and to business object
- Section 3.4: Business Architecture and Business Process Modeling and Management