

The Business Architecture Metamodel Guide

***Defining a business architecture knowledgebase founded
on formal principles***

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1. ABSTRACT

Businesses are faced with a myriad of threats to manage, weaknesses to improve, strengths to leverage, and opportunities to pursue. As organizations seek to address these issues, one finds a major common obstacle:

A commonly cited reason for failing to execute on strategy is an inability to act in a coordinated fashion, with a widely understood set of objectives, across multiple business units and levels of management, toward a common goal and an integrated solution.

Executives seeking to address this challenge must define and execute coordinated cross-business strategies based on clear, consistent business perspectives that scale across teams, projects, business units, and partners. This whitepaper outlines how to leverage business architecture to identify and capture unique organizational perspectives, and the relationships among those perspectives.

This whitepaper provides an essential guide to organizations seeking to formalize and scale business architecture as a basis for executing complex strategies, performing root cause analysis, responding to business challenges, and delivering more effective solutions in less time and for less money.

This whitepaper introduces the business architecture knowledgebase, which allows organizations to establish multidimensional views of what it does and how it delivers customer and related stakeholder value. In order for a business architecture knowledgebase to accurately represent an organization and scale effectively, it must base its knowledgebase upon a formally defined “metamodel”.

For readers new to the metamodel concept, one can think of it as a model describing a model used to make abstract concepts into something concrete within a specific context. Specifically, a metamodel is defined as an “abstract syntax of a class of models.” Therefore, a metamodel enabling implementation of a business architecture knowledgebase sets out the rules of how to define “things” within a business. This whitepaper provides a simplified, practitioner-friendly view of the business architecture metamodel. Through its ongoing work with a professional standards organization, the Business Architecture Guild® and its partners are formalizing this metamodel in more detail, using standard modeling techniques.

The whitepaper discusses how to get started modeling an organization from a variety of vantage points without having to expose readers to the finer details commonly found in an actual metamodel. The resulting business architecture knowledgebase enables an organization to create a foundation from which to decouple and clarify entangled terms and concepts that can overwhelm planning, design, operations management, program management, and technology deployment. The clarified perspectives that result help further clear-minded analysis, business planning, and strategy execution.

The reader would greatly benefit from studying the concepts and principles behind business architecture and corresponding metamodel, which can be found in *A Guide to the Business Architecture Body of Knowledge®* (“BIZBOK® Guide”).ⁱ

This paper does not represent a formal metamodel. The Business Architecture Guild® is maturing a formal, business architecture metamodel and readying it for submission to an international standards organization for adoption. The discussion and related figures presented in this whitepaper depict

conceptual models of various associations among business architecture domains and certain detailed elements within those domains.

The intent of these representations is to provide practitioners and infrastructure support teams a basis for associating business architecture domains to support a viable practice. The examples provided for each domain category also allow the practitioner to envision how to apply business architecture in a live context.

Finally, the whitepaper establishes a basis for associating business architecture domains with related disciplines. These disciplines include, for example, strategic planning, operating model optimization, program management, customer journey mapping, IT architecture, and related practices. Future white papers will explore these extended perspectives and their associations with business architecture.

2. INTRODUCTION

Philosophers have since pre-history struggled with the dilemma of *appearance* and *reality*. Modeling is an ancient technique supporting the act of analysis. The 20th century analytical philosophers together understand the term analysis to mean "the decomposition of something into its constituents".ⁱⁱ Modelers take something from the real world and represent it with a symbol. This simple act can quickly become very complicated when one refers to an abstract 'thing' like a 'business'.

In the physical world, a 'business' is not a real thing; it is an abstract concept. The problem with such a concept is that it is rare for two individuals to share the same mental picture or meaning of the term. Figure 1 depicts how an object such as an apple can trigger two very different mental abstractions.

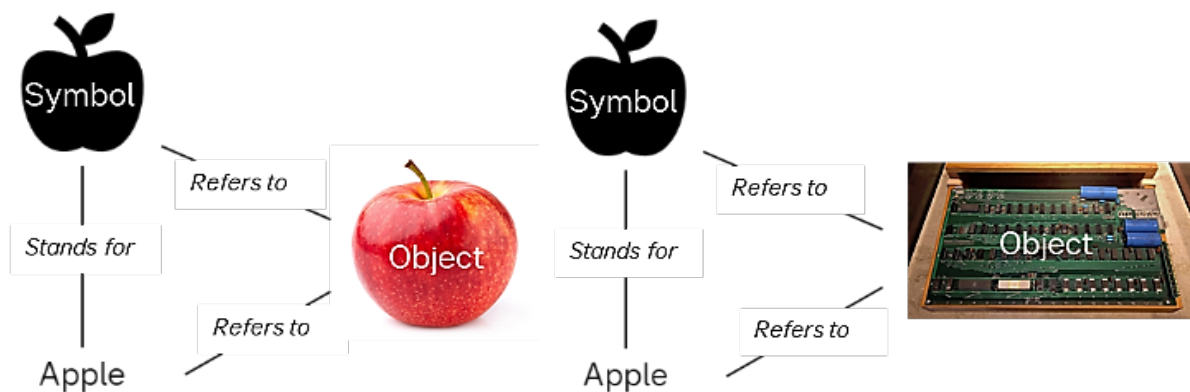


Figure 1: The Philosopher's Dilemma: Appearance and Reality

Outside of the real world, we need to make the abstract into something concrete, something for which we can share a mental picture. One such popular technique is through describing things in terms of business objects. The context, scope, or thing we intend to describe is an organization, framed by the business ecosystemⁱⁱⁱ in which it exists. Business object definition, along with the ability to represent actions performed against those business objects, is foundational to understanding and representing a business ecosystem. Business objects play a critical role in value delivery.

A model of a business ecosystem describes the rationale of how an organization creates, delivers, and captures value. Two critical aspects of a business that should be represented in a business ecosystem include:

1. The act of "producing" (value creation and deployment).
2. The act of "consumption" (customer consumption of the value created by the organization).

The key players behind a business are the *producer* (provider) and the *consumer* (customer, partner, and internal stakeholders).

One way of looking at this value exchange concept is that customers have some need which they seek to fulfill, while the provider provides a need fulfillment to satisfy the customer's wants or needs with an offer that will alleviate that need. If the fulfillment offered – the provider's value proposition – meets the customer's wants or needs, there will be an exchange of value (often money for goods and services). Figure 2 highlights these value creation consumption perspectives.

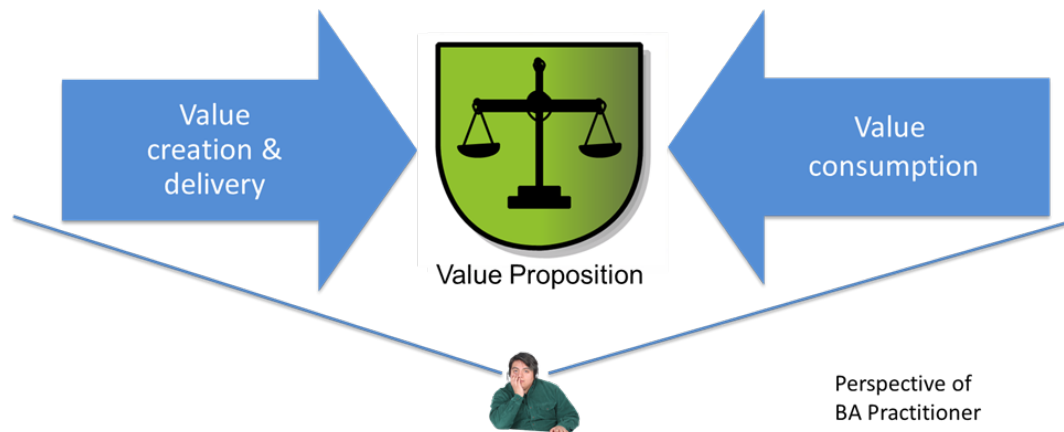


Figure 2: Business Architecture's Primary Focus: Stakeholder Value Delivery

The value concept is central to business architecture. The business architecture practitioner takes great interest in what is necessary to create and provide a value proposition for the customer. Business architecture modeling focuses on the provider side of the value proposition equation. This focus is an *outside-in perspective* and is the opposite view of the perspective taken by many organizations today.

The business architecture practitioner uses the business architecture knowledgebase to articulate and leverage a wide variety of organizational perspectives, including value creation and value consumption, to enable visual thinking and storytelling as a means of defining challenges and framing shared solutions.

While a heavy emphasis is placed on value creation and consumption, the knowledgebase must also incorporate views of the business capabilities, information, business units, strategies, policies, products, and initiatives. Capabilities and information concepts are the primary vehicle for representing the collective set of business objects that represent a business ecosystem. Collectively, these business views or business architecture “domains” enable the practitioner to clearly articulate the impacts of business objectives, perform root cause analysis, define cross-organizational solutions, and successfully and confidently execute a wide range of business strategies.

The following sections of this whitepaper provide an overview of business architecture and introduces the business architecture framework, which includes the business architecture knowledgebase, business blueprints derived from the knowledgebase, and the scenarios that frame business-specific contexts for using business architecture in practice. The main body of the whitepaper provides a detailed breakdown of each business architecture domain, relationships with other domains, and real-world examples.

3. BUSINESS ARCHITECTURE OVERVIEW

In the past, 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”. In collaboration with various industry associations, this definition matured into the following:

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.^{iv}

The Business Architecture Guild® has formalized the business architecture discipline, defined sets of guiding principles, documented best practices, formalized techniques, and established an execution framework. The *BIZBOK® Guide*, an industry body of knowledge, formalizes the business architecture discipline for practitioners. This whitepaper provides a guide to the underlying metamodel that forms the foundation for the business architecture knowledgebase that enables a practice.

Business architecture is framed around the ten formally defined domains as shown in figure 3. These domains represent business ecosystem abstractions, which are formalized and realized in practice in the Guild metamodel.

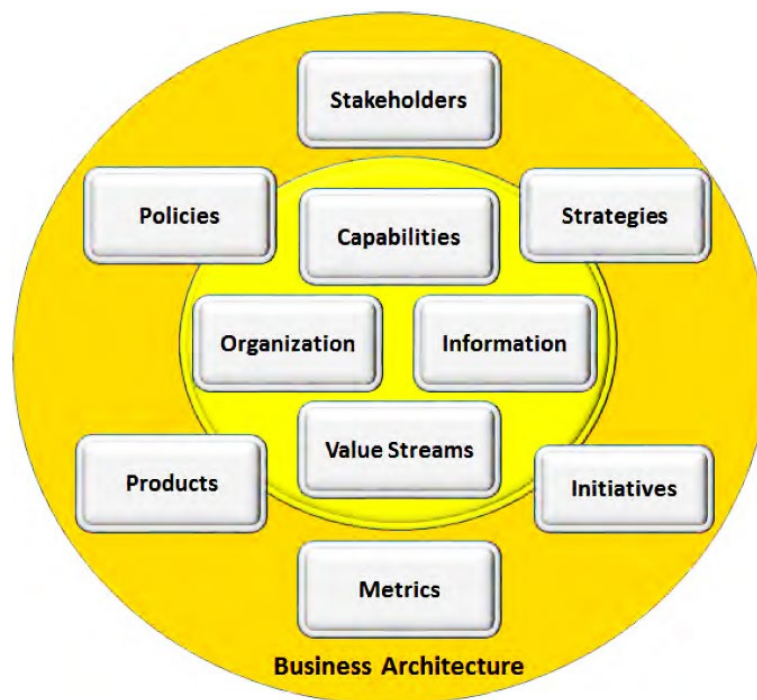


Figure 3: Business Architecture Domains

The ten domains shown in figure 3 form the basis for the establishing, applying, and managing business architecture. This paper provides details on each domain, related sub-elements, and relationships to other domains.

Figure 3 shows four core domains in the center circle. The reason behind these four domains being called out from the other domains is that they provide the foundation for a business architecture. The outer circle depicts the extended domains, which play a role in the practice of business architecture. For example, strategy is engaged during strategy planning, while initiative would be used in program and project planning and execution.

Figure 4 depicts the concept of capability playing a central role in business architecture.

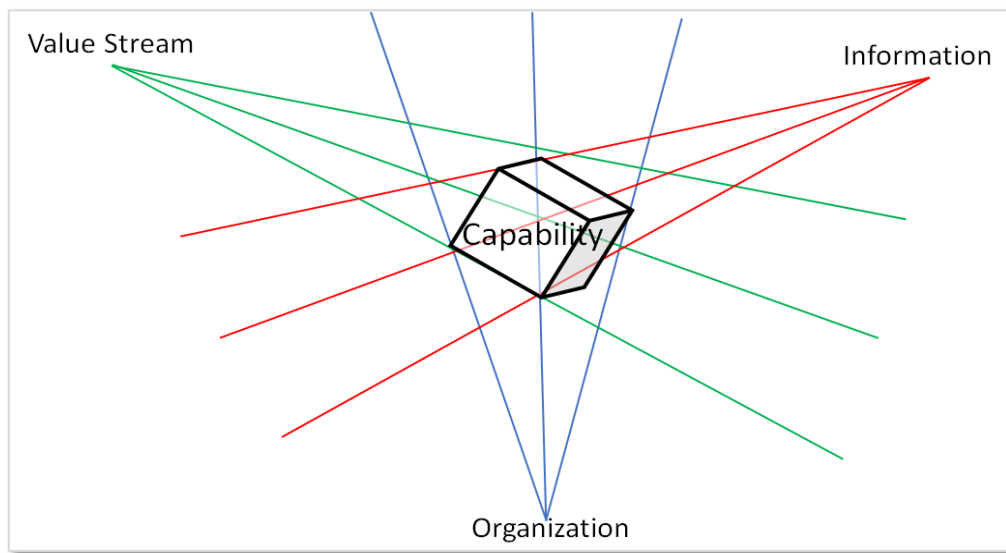


Figure 4: Capability: Business Architecture Focal Point

Figure 4 highlights the important perspective of capability being the central focal point of business architecture. For example, capability provides the link between the other core domains of value stream, information, and organization. If one wanted to understand the information relevant to customer value delivery in a value stream, those views would be derived from the association between the capabilities and information they require and modify, and the capabilities and value streams they enable. The following sections provide more details on the relationships among these core domains, and between these core domains and the extended domains.

4. THE BUSINESS ARCHITECTURE FRAMEWORK

The business architecture framework provides the basis for practitioners of all types to leverage business architecture. The framework, shown in figure 5, is comprised of the business architecture knowledgebase, business blueprints or visualizations extracted from the knowledgebase, and the business scenarios that determine the type and scope of those blueprints.

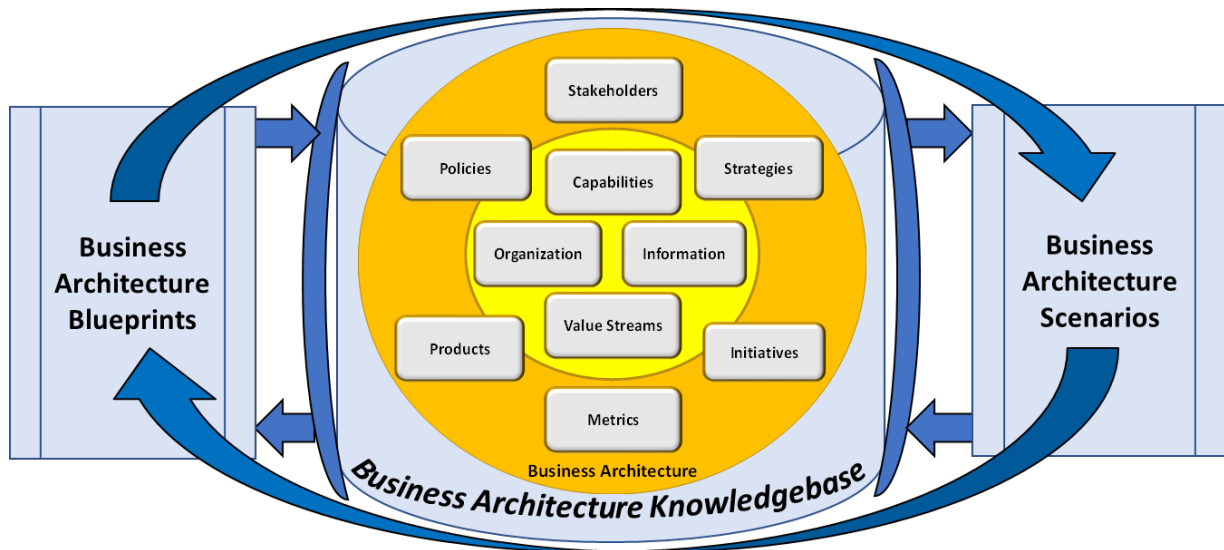


Figure 5: Business Architecture Framework & Knowledgebase

4.1 THE BUSINESS ARCHITECTURE KNOWLEDGEBASE

Whether formalized or not, most practicing organizations have a mechanism in place for capturing and managing their business architecture. However, not all organizations have captured their business architecture in a formal business architecture knowledgebase, explicitly using principle-based, highly actionable definitions of their business.

To realize the value of business architecture, an organization must deploy a formal framework^v for capturing, managing, and leveraging its business architecture. This framework rests upon a knowledgebase and metamodel that formalizes common perspectives in a way that is readily applicable to planning, analysis, design, operational improvement, and deployment.

The business architecture metamodel introduced herein is based on the framework illustrated in figure 5. While the overall framework is defined and detailed in the *BIZBOK® Guide* (including details on principles, guidelines, best practices, and usage scenarios), this whitepaper provides the formal metamodel perspective for defining the underlying mechanics needed to establish and manage the knowledgebase. Before delving into the knowledgebase and underlying metamodel, the following sections summarize the blueprint and scenario concepts.

The bulk of the remainder of this whitepaper details the metamodel-derived domains and relationships that comprise the overall business architecture knowledgebase. These detailed perspectives serve as both a practical guide to deploying a knowledgebase as well as insights into how the various elements of business architecture interconnect and may be applied in practice.

4.2 BUSINESS ARCHITECTURE BLUEPRINTS

The *BIZBOK® Guide* is a principle-based body of knowledge and, while providing useful blueprint examples, it offers the business architect a foundation for developing their own blueprints and related scenarios. One can think of the *BIZBOK® Guide* as a cookbook containing recipes and detailed instructions on how to prepare a dish, rather than prescribing a predefined menu. As such, the *BIZBOK® Guide* may be applied to an ever-growing list of business scenarios that range from strategic planning through solution deployment.

Business planners and executives create blueprints to answer a wide variety of questions and address a multitude of challenges. The business architect requires blueprints or maps to represent core capability, value stream, information, and organization domains, relationships across these core domains, and a wider set of associations between core and extended domains.

A blueprint showing associations between two or more business architecture domains is called a “cross-mapping”. Cross-mapping is the technique of relating multiple business architecture domains to each other or to related business and IT disciplines. This technique, which is represented in the metamodel via associations, allows the practitioner to connect multiple artifacts in a way that more effectively represents real-world relationships. Cross-mapping is always between domains and not terminology used to associate elements within a domain. For example, capability instance relationship to capability behavior is an intradomain association, not highlighted in cross-mapping.

The recommended minimum starting point for a business architecture baseline includes commonly engaged and customer-initiated value streams, a capability map, and an information map. Organizations will prioritize extending these perspectives based on specific business scenarios as the use of business architecture begins to scale.

Experience has found that specific industries share value streams and capabilities to a great extent. The Guild provides industry reference models to accelerate efforts to establish a baseline business architecture. These reference models are specialized for various industries including financial services, insurance, transportation, government, manufacturing, and healthcare, as well as a common or generic business architecture baseline. Industry-specific business architecture mappings are formed around the same principles applied to defining the business architecture metamodel. As a result, organizations seeking to apply and benefit from these reference models should establish a knowledgebase that aligns to the metamodel defined in this whitepaper.

4.3 BUSINESS ARCHITECTURE SCENARIOS

A business architecture knowledgebase and its associated blueprints can be used to consider and understand a range of different business scenarios. The knowledgebase cannot be restricted to single-use situations, meaning that the knowledgebase must not only be principle-based but intentionally architected to enable a wide range of known and unknown business scenarios. Populating core and extended business architecture domains, cross-mapping the captured knowledge, representing those views in various blueprints, and applying those blueprints to a given business scenario, turns the captured knowledge into wisdom and insights needed to improve strategy execution.

For example, understanding the capabilities that a business has is a single dimension of knowledge. Understanding the business units within a business ecosystem, including those of partners, creates more knowledge. Cross-mapping capability and organizational domains provides insights into how best to address a specific business issue or scenario. Imagine a scenario where a business has outsourced certain capabilities to a supplier and that supplier is the victim of a ransomware attack. Knowing which business units relied on the capabilities provided by the supplier would allow the organization to quickly assess the impact of that event and to respond accordingly. The same multi-dimensional view could be used for other business scenarios too, such as business unit consolidation or even divestiture when an outsourced capability no longer adds value.

One of the most important cross-mapping blueprints is the value stream/capability cross-mapping. This blueprint pinpoints the specific capabilities that enable value delivery at each stage of a value stream. If a value stream that delivers customer value is underperforming, the value stream/capability cross-mapping enables analysts to rapidly decipher the underlying capabilities responsible. While providing a rapid means of targeting weaknesses in one specific, value-delivery situation, the cross-mapping perspective also allows a rapid “fanning out” of how this same underperforming capability may be impacting customer value within other value streams.

By cross-mapping different core domains, combining two or more dimensions into a new combined blueprint, a host of complex questions can be answered confidently and quickly. By using these cross-dimensional views of the business architecture, organizations can shine light on a range of scenarios that might be encountered, including but not limited to, business model realignment, digital transformation, globalization, and merger and acquisition analysis.

The remainder of this paper will present the domains defined by the Guild metamodel, showing how to attain the above-described features.

5. BUSINESS ARCHITECTURE DOMAIN ASSOCIATIONS

The ten domains in our knowledgebase are related to each other. The metamodel elements and relationships are defined in the metamodel to represent the knowledge stored in the knowledgebase. This section explains the domains and the connections between those domains.

5.1 INTRODUCING THE BUSINESS ARCHITECTURE METAMODEL

Figure 6 provides a high-level overview of the relationships among nine of the ten business architecture domains: capability, value stream, information, organization, stakeholder, initiative, product, strategy, and policy.

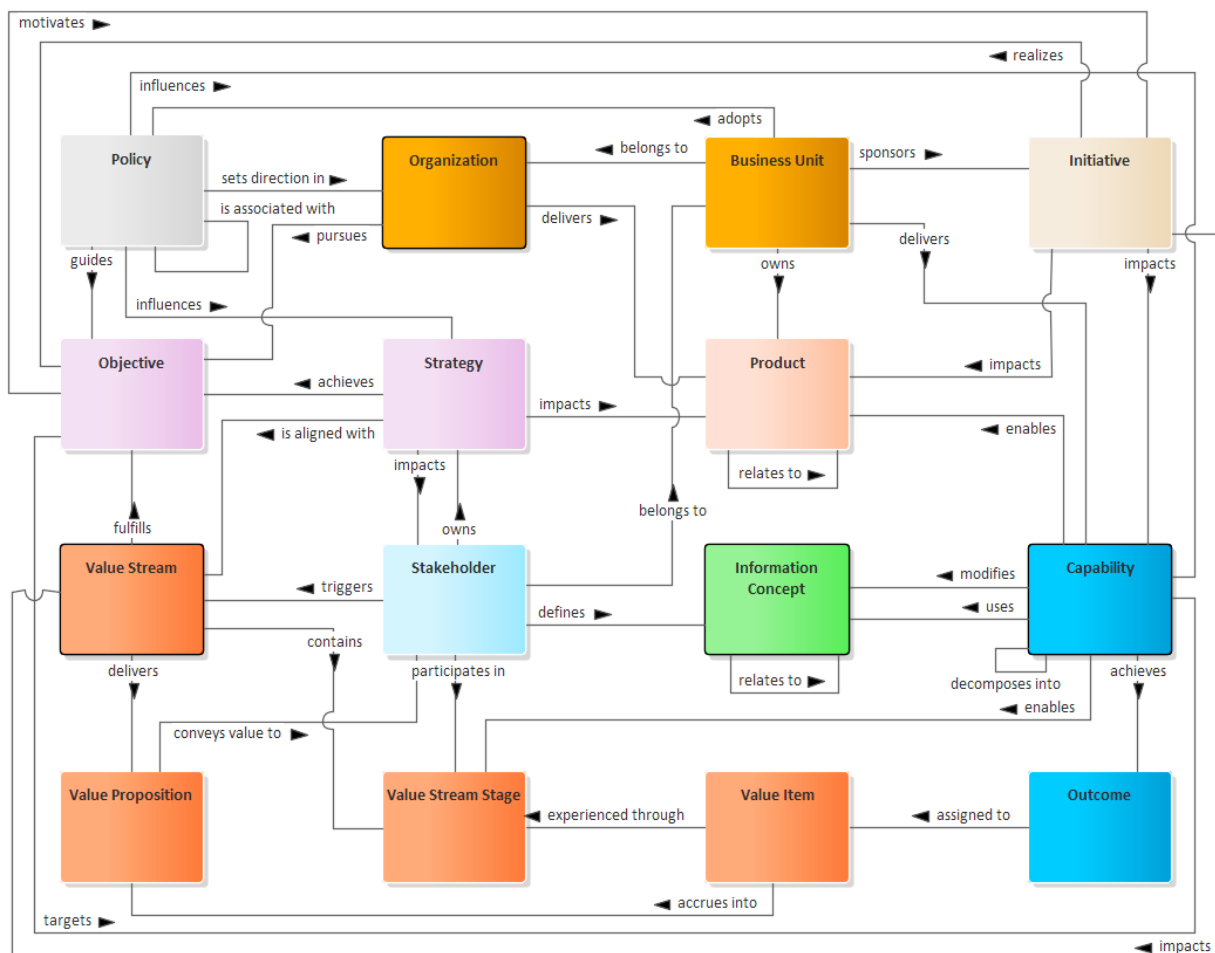


Figure 6: Overview of Business Architecture Metamodel

Figure 6 depicts high-level domain relationships. The individual domain perspectives that follow later in this section provide more details for each domain and across domains. For example, capability domain details include instance, behavior, and outcome. These details are essential to be able to apply business architecture to a wide variety of business scenarios.

Figure 6 applies a color-coding scheme to group elements associated with a given domain. For example, capability and outcome share one color, while value stream, value proposition, value stream stage, and value item share another. This color-coding scheme, which includes elements unaffiliated with a given domain such as business object, is shown in figure 7.

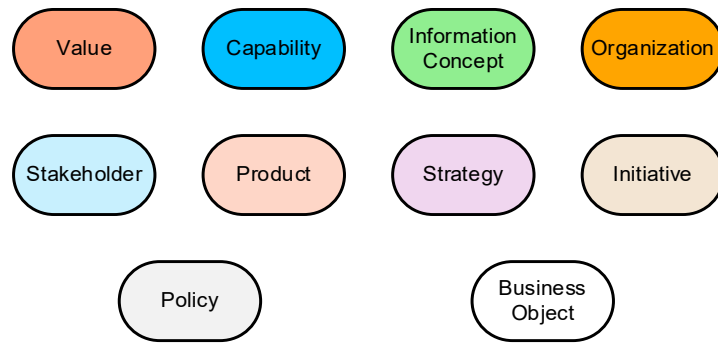


Figure 7: Metamodel Domain Color-coding Scheme

The following sections and corresponding figures apply this color-coding scheme to ensure proper associations within and among domains. Business object is used in various other domains and has a neutral color of white.

As shown in figure 3, metrics is a business architecture domain. The Guild’s business architecture metamodel does not specify or require any business metrics, although examples are provided in the *BIZBOK® Guide*. Rather, it allows organizations to define a wide range of metrics that may be derived from the rich tapestry of information collected in a given knowledgebase. For example, the *BIZBOK® Guide* discusses metrics such as effectiveness, impact, and breadth of coverage ratings.

The metamodel provides a mechanism to use those libraries, including upcoming and not yet established measurement libraries for business architecture. We will not discuss metrics as a domain any further in this whitepaper.

5.2 VALUE STREAM

Organizations exist to provide value to customers and other external and internal stakeholders, making value an important focal point for business architecture. Value streams provide end-to-end stakeholder value delivery perspectives, with one value proposition per value stream (refer to the sidebar that discusses differences between value streams and value chains). Figure 8 breaks down the value stream domain and various relationships.

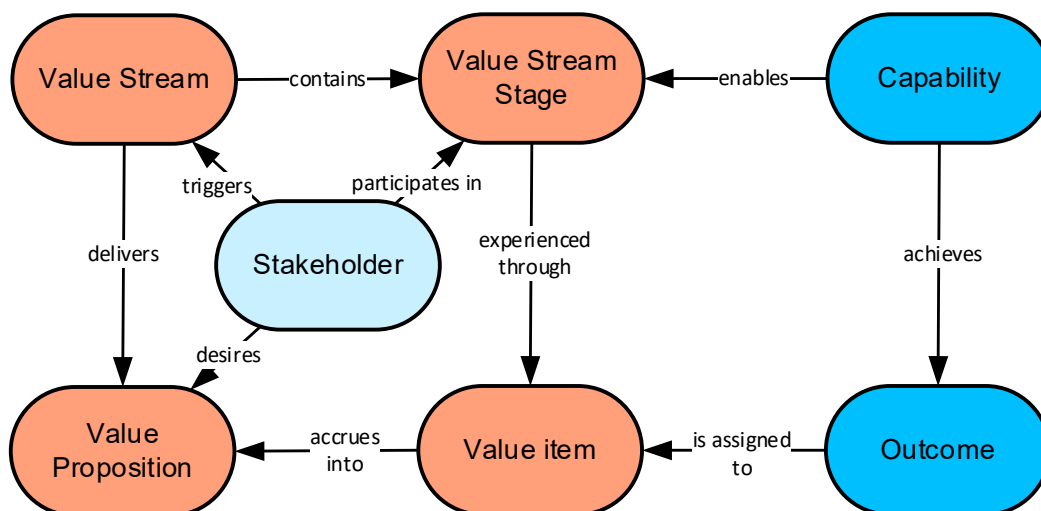


Figure 8: Value Stream Associations

The triggering stakeholder triggers the value stream to obtain a value proposition. Capabilities enable the value stream stages found within a value stream. Capabilities deliver outcomes that contribute to the value item(s) delivered by each stage. Value items are observable by the participating stakeholders.

Value items contribute to or accrue towards the value proposition desired by the triggering stakeholder. A value item is a connecting element between two or more stages in the value delivery process. A value stream stage's entrance criterion is defined by requiring a value item before it can start and by not finishing until the value stream stage has delivered another value item (the exit criterion).

In a world of limited resources, a business needs to ensure that the resources assigned to achieve a specific outcome add value to the triggering stakeholder. It follows that resources allocated to capabilities which are not enabling a value stream stage are, per definition, not adding value. In the words of Peter Drucker:

"There is nothing so useless as doing efficiently that which should not be done at all."

5.2.1 VALUE STREAM CROSS-MAPPING

Value stream cross-mapping establishes a basis for strategy impact analysis, initiative and investment scope determination, business design efforts, and requirements definition and solution deployment.

- Cross-mapping between value stream stage and capability is one of the most useful cross-mappings. It highlights which capabilities enable a value stream stage to deliver a value item(s).
- Cross-mapping capability outcome to value item highlights the capabilities that play a role in delivering stakeholder value and subsequently become a target for capability-based planning and investment?
- Cross-mapping between stakeholder, value stream, and value proposition highlights which stakeholder desires a given value proposition and triggered the value stream to deliver that value proposition.
- Cross-mapping between stakeholder and value stream stage identifies the stakeholders who participate in that value stream stage and contribute to the delivery of value item(s) for the stakeholder who triggered that value stream.

5.2.2 VALUE STREAM EXAMPLE

Value streams provide a comprehensive view of end-to-end value delivery to customers, partners, and internal stakeholders. Figure 9 depicts three value streams for a commercial airline: Take a Trip, Send Shipment, and Execute Route.

Value Streams and Value Chains

For readers not familiar with the principles of business architecture as laid out in the *BIZBOK® Guide*, it is essential to differentiate between the "business architecture value stream" and a "value chain". A value chain is concerned with how a specific organization obtains the highest profit and how it uses resources in transforming inputs to outputs.

The business architecture value stream also differs from the "Lean value stream". Lean value streams provide a means to analyze waste in existing operations and focus less on providing actual stakeholder value.

It also differs from a "Scaled Agile Framework (SAFe) value stream" which is concerned with operational or the development value stream employed on projects.

Business architecture value streams are goal-oriented, targeting the end objective of delivering the value proposition from the perspective of the ecosystem. The ordering of value stream stages is guarded by defined entry and exit criteria for each value stream stage.

Take a Trip encapsulates the end-to-end experience of a customer completing a journey, including multiple stopovers and route changes. Send Shipment encapsulates the journey of a shipment, which can be a package, freight, or luggage, bundled collectively or shipped individually along different routes as a single shipment. The airline, which in this example moves people, packages, and freight, would use these value streams to examine and improve customer satisfaction.

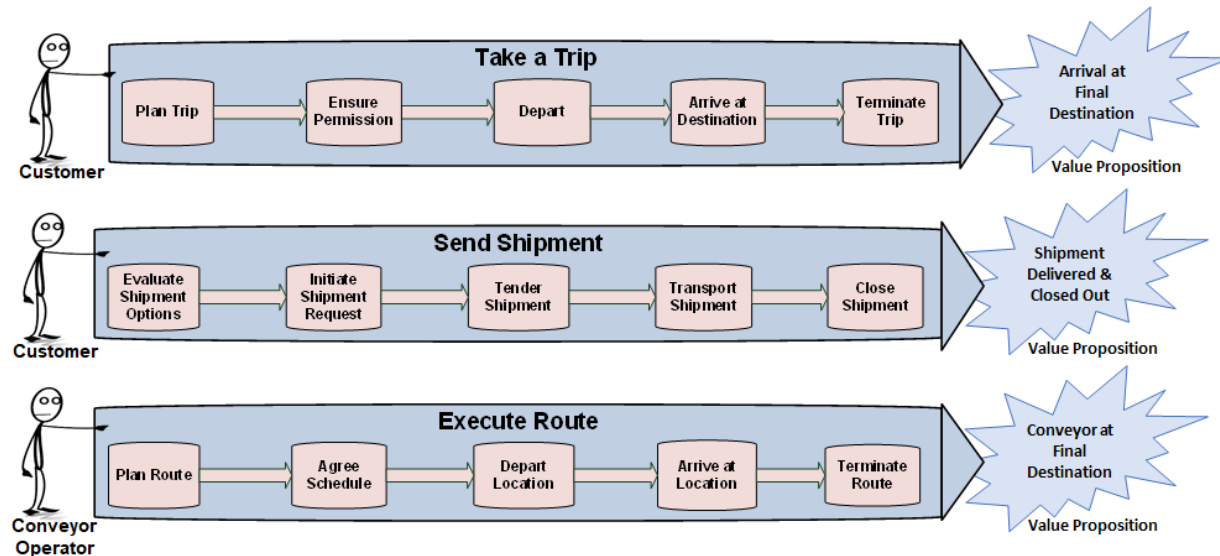


Figure 9: Example Transportation Value Streams^{vi}

These value streams, which appear as simple pictures, represent a formal description of how stakeholder value is delivered. They include the value stream stages, triggering stakeholder, and value proposition, as well as value stream stage entrance and exit criteria, value items that accrue to achieve the value propositions, and the stakeholders that contribute to value at each stage. Not shown are the many capabilities that enable value accrual at each stage of the value stream.

Consider the first example of a customer taking a trip. The customer would plan the trip in stage 1, acquire a ticket in stage 2, which equates to ensuring the ability to travel, and then travel to multiple destinations through multiple iterations of departures and arrivals. Upon arriving at the final destination, the customer's trip would terminate.

If the customer checks luggage, it initiates the Send Shipment value stream, which is the end-to-end journey of the luggage, independently traveling to its own destination. A separate value stream is used for the luggage because the value proposition differs and the luggage is on a unique trip that differs from that of the customer. While the customer and their luggage are on their journeys, the airline would be moving multiple conveyors (e.g., planes, shuttles, trams) across multiple routes, with each conveyor traveling through a unique instance of the Execute Route value stream. Capabilities would match the customer and the luggage (i.e., shipment) to various conveyors; as the conveyors change locations, the customer and the luggage simultaneously change locations by virtue of these matching capabilities.

The value streams shown in figure 9 work for commercial airlines, shipping companies, railroads, urban transport operators, and cruise lines. When a company seeks to improve the customer experience, or increase the operational efficiencies of that experience, the value stream provides the lens into the capabilities requiring analysis, improvement, and investment.

5.3 CAPABILITY

Capabilities represent the basic building blocks of the business. These building blocks can be used, improved, rearranged, and leveraged in a variety of ways to achieve an infinite range of business objectives. To do that, a business must first define those building blocks.

A capability is *what* the business does. The business architecture practitioner is advised to take particular care to define this concept. The *BIZBOK® Guide* gives the practitioner guiding principles, tools, and techniques to identify these critical architectural building blocks. Crucially, capabilities are identified through a business's value streams, and there is only one set of capabilities for each organization.

Capabilities are identified with a business object in focus. For example, if there is a capability such as "Customer Management", this capability has the business object "customer" in focus. Any decomposition of this capability will not change the focus on customer. For example, child capabilities under Customer Management may include the ability to "define a customer", "determine customer related risks", or "capture customer preferences". In no case would a child capability of Customer Management veer outside customer scope. For example, Customer Management child capabilities would not manage agreements, products, financial accounts, or other business objects.

Each business ecosystem has one, and only one, set of capabilities. In other words, one capability map crosses all business units and, where applicable, partners that deliver outsourced capabilities. In most organizations with multiple business units, each business unit will have or plan to have various implementations of a capability. For example, a business with two business units, with different numbers and types of customers, will most likely have implemented the capability of "Customer Information Management" differently. Therefore, a capability must be connected to the specific activities of the business to support problem analysis and solution formulation. This connection is made through three perspectives:

- Capability Instance: An occurrence of where business units or partners implement a capability in the real world
- Capability Behavior: How a capability instance works in context
- Outcome: The end result that is produced by a capability

Figure 10 breaks down the capability domain. The capability instance inherits the properties of the capability so it can produce and consume outcomes from other capabilities. In other words, an instance realizes the capability in practice. A business unit delivers its instance of a capability. It follows that an organization with many business units may have many instances of an implemented capability. So, the effectiveness and efficiency (use of resources) for each capability instance can be analyzed. The capability map captures organizational capabilities and is an important blueprint that is derivable from the knowledgebase. Capability definition and decomposition, starting at level 1, is enabled by the capability "decomposes into" capability relationship in figure 10.

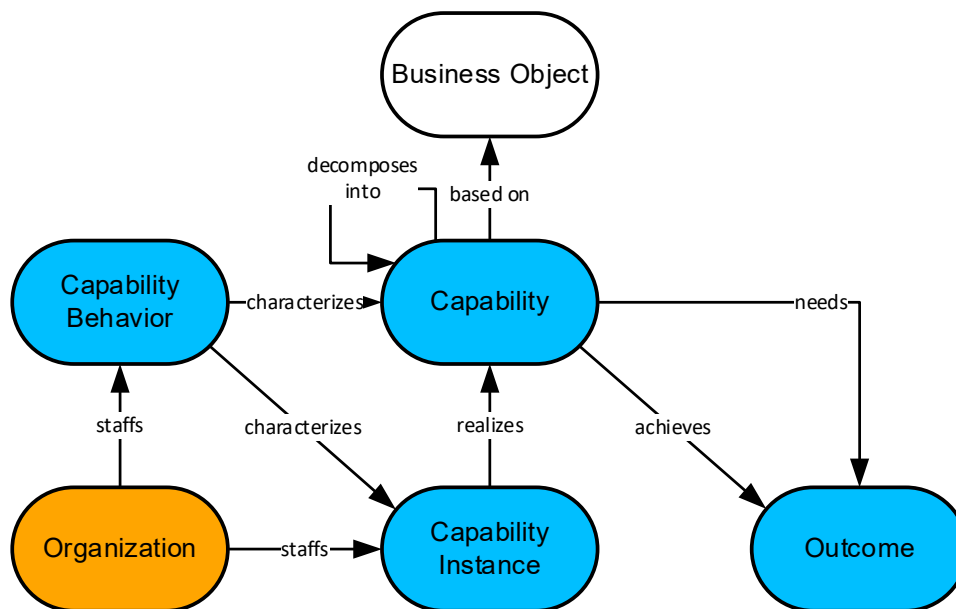


Figure 10: Capability Associations

The capability instance represents a bundle of real-world implementations of that capability. The behavior describes how that capability acts from a procedural, process definition, policy, and norm-based standpoint.

Capability is based on a business object. A single piece of behavior will rarely coincide with the life cycle of a business object. For example, the outcome of the “Customer State Management” capability might express the state of the business object “Customer” to be “Active”. Another capability outcome might express a state on the same business object to be “Rejected”. The concern of capabilities and capability behavior is the creation of value and resources needed to enable value delivery. For example, the action of sending out a welcome letter to new customers can be triggered by the business object “Customer” being in the state “Approved.” Approval or rejection across different business units may be achieved in different ways for the same capabilities, and this is represented by the association between capability instance and capability behavior.

Capability is an abstraction of the ability to produce an outcome. It aggregates all the specific activities that provide the same outcome. It does not specify behavior and does not determine resources. It allows the business executive to summarize all of the specific activities that produce an outcome, to identify systemic problems in these activities, such as insufficient staffing, poor support from IT, or lack of experience, and formulate general approaches to solving systemic issues. One common technique employed by the business architecture practitioner is to create effectiveness ratings or metrics to indicate the performance of a capability instance or differentiate between as-is and to-be versions, where a behavior is improved to achieve a business objective.

Viewing a business through a capability perspective involves looking at the business at rest, while looking at the business from the value stream perspective involves looking at the business in motion. One or more capabilities enable the value stream stages to provide value items, which in turn connect the value stream stages to the end-to-end delivery of the value proposition.

5.3.1 CAPABILITY CROSS-MAPPING

- Cross-mapping between capability and organization highlights which business units or partners deliver the capability. When expanded to capability instances, it identifies how many different implementations of the same capability exist in an organization.

5.3.2 CAPABILITY EXAMPLE

The transportation example discussed in section 5.2.2 highlighted a traveler scenario in which a customer took a holiday with multiple stopovers involving multiple modes of transport or conveyors, and checked luggage at various intervals. A number of capabilities are required to plan, contract, and complete the customer's journey. A key subset of these capabilities is shown in figure 11.

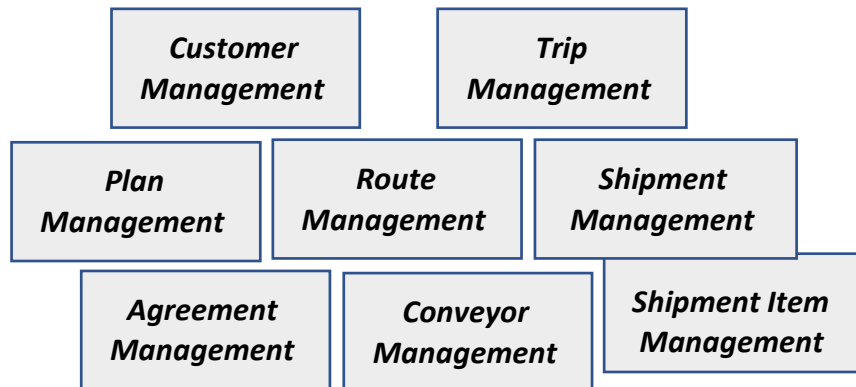


Figure 11: Sample Transportation Capabilities^{vii}

Consider the end-to-end perspective depicted in the Take a Trip value stream introduced in figure 9. Capabilities are required to enable the customer to take the trip and manage every aspect of the customer experience along the way. Figure 11 highlights seven level 1 capabilities and one level 2 capability called Shipment Item Management, where this capability is a child of the level 1 Shipment Management capability. The roles of the subset of capabilities required to enable such a journey are highlighted in figure 12.

Capability	Role in Transportation Scenario
Customer Management	Establishes the customer; validates eligibility; determines and sets preferences; recognizes the customer going forward; and maintains profile, type, state, and history.
Plan Management	Establishes and tracks a formal plan for the trip.
Agreement Management	Establishes, provides access to, prices, sets terms, and enables a customer to travel based on a formal contract.
Trip Management	Established upon customer engagement, the Trip Management capability manages risk, preferences, access, profile, and state transitions through the journey until the trip is terminated.
Route Management	The trip, customer, luggage (shipment), and conveyor all travel along routes. This capability sets beginning and endpoint locations, tracks risks, and can change dynamically.
Conveyor Management	Conveyor is the mode of transport where the company may move the customer in planes, trams, buses, or rental cars. Each conveyor trip travels a path through the instance of the Execute Route value stream, often on a fixed schedule. The customer is matched to a given conveyor in advance or as required based on shifting conveyor schedules.
Shipment Management	Shipment in this example would be the customer's luggage, which may be formally shipped in advance or ad hoc at check-in. A shipment goes on a different trip than the customer, on the same or a different conveyor, with its trip being completed in the Send Shipment value stream.

Capability	Role in Transportation Scenario
Shipment Item Management (child of Shipment Management)	Where a customer checks multiple pieces of luggage, each piece is tracked independently in case they are separated, with each taking unique routes on unique conveyors.

Figure 12: Sample Transportation Capabilities and Usage Context

The transportation capabilities in figure 12 enable the three value streams previously shown in figure 9. Additional capabilities associated with partners, transportation networks, messaging, work items, decisions, and events would augment the work being performed by the capabilities in figure 12. In order to represent the value stream-enabling relationship, organizations cross-map the collection of enabling capabilities to each stage of each value stream required to complete the trip, receive the shipment (e.g., luggage), and execute a given route.

5.4 INFORMATION

The information concept is an umbrella business term that represents the foundational concepts of several modeling approaches. Some methods use entities, domains, and relations. Other methods use individuals, classes, and properties. Regardless of the approach, the information concept forms the business vocabulary, making concepts tangible. This creates consensus and a shared understanding of what an organization is all about.

To understand the value proposition, we need to understand what information is used to construct the value proposition. Business value is when information is associated with experience. Information interpreted by an experienced analyst or algorithm delivers knowledge. While data is often considered an IT domain concern, business information is the baseline from which business knowledge can evolve. Business information is transformed into business knowledge when organizations use that information in context to improve business decision making and respond to challenges. This transformation is enabled in two ways: training and automation.

An information map can be created and represented in the metamodel and associated with other business architecture domains. For organizations that strive to become data-driven, it is essential that the resources employed to deliver value to stakeholders understand the role of information and how to improve it from a business perspective, particularly the capabilities that impact and deliver information. Figure 13 highlights relationships between information and related domains.

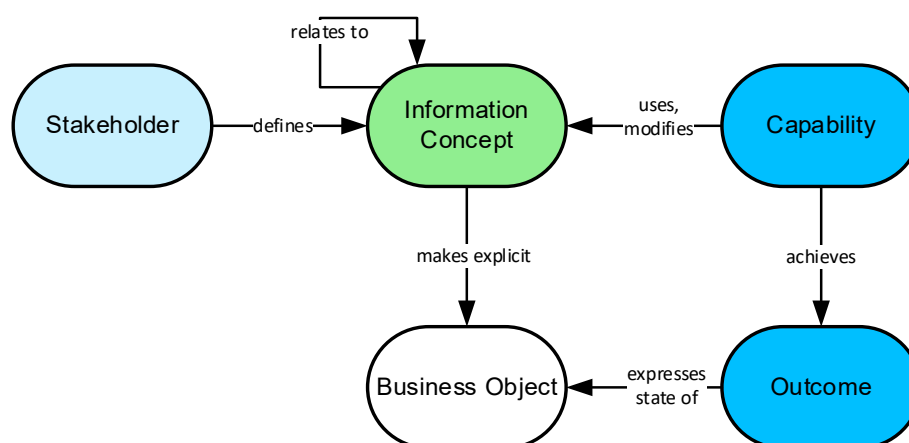


Figure 13: Information Concept Associations

The information concept is based on a business object, just as capability is based on a business object. There is a one-for-one relationship between the business objects that form a set of information concepts within a business ecosystem and the business objects that form the corresponding capabilities in the capability map. Figure 13 depicts this business object-to-information relationship.

An information map would include relationships among information concepts. This is represented in figure 13 as an information concept “relates to” information concept relationship. Information concepts also include the valid information types and information states associated with the concept.

Information concepts cover a wide range of business perspectives, many of which are not represented in the data associated with IT systems. An example would involve a “decision”; a decision is represented as an information concept but organizations would be unlikely to record and track every decision made as IT data. On the other hand, the information map does expose the need in this example to capture and record substantive decisions made in the course of strategic planning or in customer or partner dealings. In other words, in business architecture, information has human knowledge associated with it.

The information concept is the focal point for the capabilities in a capability map. The users of this map must share the human knowledge (e.g., decision-making skills) of what is being discussed or considered. The information concept is a passive element of the business that will be affected by capability behavior through the outcomes of the capability instance.

A common mistake is to use data model(s) typically found in IT departments as a substitute for an information map. As the previous example highlights, taking a data-oriented approach would omit critical information from being mapped within a business ecosystem. Lineage between the IT data architecture and the business information map is part of the business architecture and IT alignment.

5.4.1 INFORMATION CROSS-MAPPING

- Information concepts are cross-mapped to the capabilities that use and modify those information concepts. The modify/use relationships would be shown in a capability-to-information concept cross-mapping.
- Information concept is cross-mapped to stakeholder. For stakeholder-oriented information concepts, such as customer, partner, or human resource, stakeholder categories associated with those information concepts become information concept types. For example, a customer may breakdown into customer segments that include retail customers and wholesale customers. Information concept types align to the stakeholders defined in the stakeholder map, which are in turn cross-mapped to value stream stages. The important point is that stakeholders are managed as information within a business architecture.

5.4.2 INFORMATION CONCEPT EXAMPLE

Information is required and modified by various capabilities in order for those capabilities to do their job. Prior to defining capability dependencies, a business architecture practitioner would incorporate a formal mapping of information concepts relationships. Figure 14 depicts the relationships among the subset of transportation information concepts required by the aforementioned transportation capabilities.

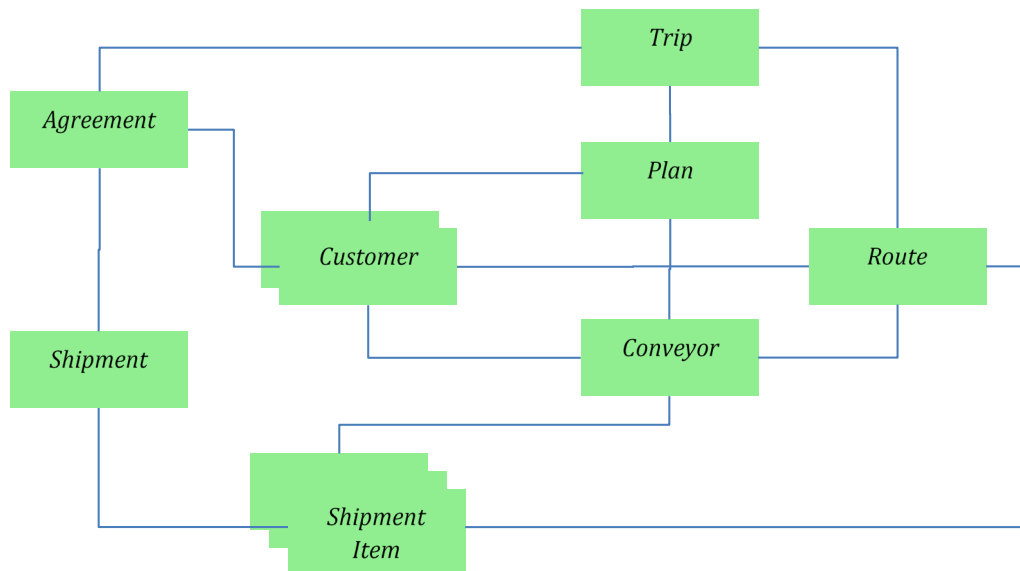


Figure 14: Transportation Information Concepts^{viii}

The relationships among the information concepts shown in figure 14 align to a cross-section of transformation scenarios for a given organization, across multiple business models. For example, the information concept relationships in figure 14 enable a passenger travel scenario and a package shipping scenario for a commercial airline. A summary of these information concepts is highlighted in figure 15.

Information Concept	Relationship Context
Customer	Customer establishes a plan, executes an agreement to travel, and is associated with multiple conveyors for each leg of the trip. There may be multiple customers per agreement.
Plan	The plan simply reflects the formal or informal trip plan a customer might have and is associated with the customer and the trip. A conveyor may also have a plan, such as the case with a flight plan.
Agreement	The agreement is the contract that tickets the trip for the customer and is associated with the actual trip.
Trip	The trip remains active until it is terminated at the end of a journey, has an overall route (including all destinations), and may be associated with transient artifacts such as a trip itinerary.
Route	Routes maybe complex, multi-stop, or non-stop. Routes are associated with anything that travels including the customer, luggage (i.e., shipment), and the conveyor.
Conveyor	Conveyors, based on a given business model, may include planes, trams, buses, or other means of transport, and represent the main business object transitioning through the Execute Route value stream. The customer and the luggage are associated directly with a conveyor on which they may travel. Schedule changes, cancellations, or other situations may require re-matching a customer or their luggage to another conveyor.
Shipment	Shipment is the collective set of items being shipped, which in this scenario is a set of luggage. A shipment is associated with the same agreement the passenger is traveling on, but may require a second payment.
Shipment Item	A shipment is composed of one or more shipment items, where each one is assigned to a conveyor in case a multi-piece set of luggage is separated. The shipment item travels the route on a given conveyor. When all shipment items are delivered, the shipment is considered delivered.

Figure 15: Transportation Information Concepts for a Travel Scenario

Information maps depict additional information but concept-to-concept relationships are an important aspect of defining the information required to ensure capability effectiveness. For example, organizations and customers have a strong vested interest in knowing which plane a piece of luggage

(i.e., a shipment item) is traveling on or the corresponding route on which it traveled. The ability to clearly and consistently identify, track, and relate information across business units, partners, and a variety of real-world scenarios is essential for organizations to ensure customer satisfaction.

5.5 ORGANIZATION

The organization in today's modern business environment is no longer easily described by hierarchical models that represent purely internal structures. The businesses that operate today are increasingly cross-border and leverage strategic partnerships that can cross geographical, corporate, and legal boundaries.

Organizations bringing together producers and consumers to gain market share. These so-called platform businesses have changed the competitive landscape. In traditional organizations, the focus has been on owning and protecting the resources of the organization. For platform businesses, the critical resource is the community and the resources owned by the community — the focus shifts from owning the resource to orchestrating the resources amongst platform participants. Platform businesses create an ecosystem where participants organize themselves for the good of the community. In a platform economy, companies need to organize in a manner where they can thrive in a collaborative value-sharing ecosystem.

Management methodologies have shaped the traditional organization, the main objective being to acquire and protect its resources. Organizations failing to change their management approach to a 'sharing-is-caring-for-customers' methodology will struggle to participate in the new paradigm of collaboration. Organization is one of the core business concepts in business architecture, providing the Who and What view of a business.

An organization map is used to describe an ecosystem-wide perspective of business units, which can be internal business units, partners or external units, and collaborations that are often not represented in hierarchical models. By considering all the business units within the boundaries of the business activity, the organization map provides visibility into the business and its organizational context. The map can then provide clarity about the structure of the entire business ecosystem rather than a siloed view of a business.

The organization map brings similar value to the business architecture practitioner as other mappings discussed in this paper. The approach considers the whole of the business ecosystem. Strategic partners, outsourcing arrangements, collaborative teams, and others may all provide business capabilities that need to be understood. Being able to view an organization map and the relationship of business units to other core business concepts such as capabilities paints a picture of how an organization works, rather than how an executive might think it works.

Understanding the structure of your organization from a value delivery perspective, beyond the confines of your company's organization chart, is fundamental. Without this whole organizational view and the ability to cross-reference it to other core business concepts, it will be difficult to see the real impact of a given course of action. That clearer picture of the organization and its relationships with other business concepts can then facilitate:

- Issue analysis

- Business planning
- Solution deployment
- Transformation planning

Organization mapping is not constrained to a specific format. A business unit is considered to be a sub-type of organization. With the right level of decomposition of business units and consideration given to horizontal and external relationships (including partnerships and outsourced capabilities), an organization map is a powerful tool that provides a useful visualization of the organization. Organizations will need to maintain this map to keep it accurate and applicable across a wide range of business scenarios. Figure 16 depicts adjacent relationships among an organization, objective, business unit, and capability.

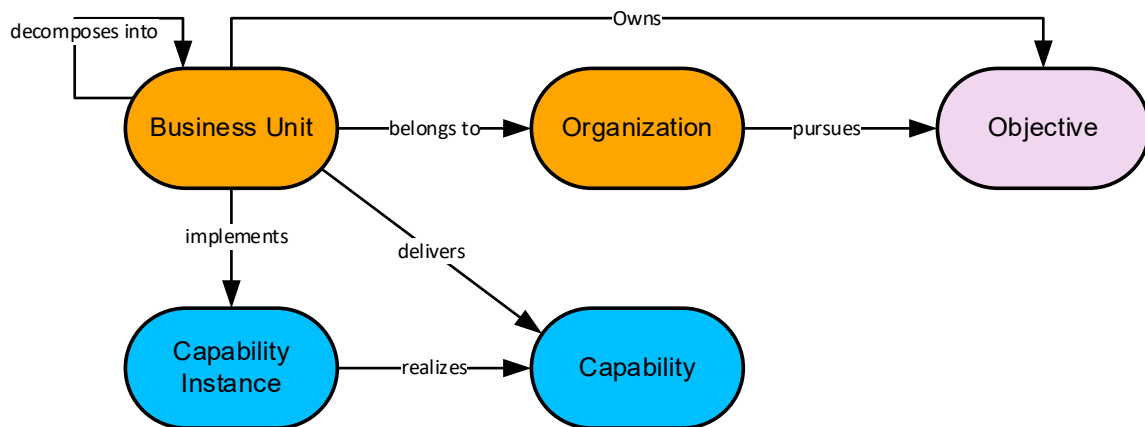


Figure 16: Organization Associations

Note that a business unit can decompose into more business units, enabling the creation of organizational hierarchies. The relationship structure in figure 16 is simple, yet coupling the structural view of an organization with capabilities enables planning teams to view where functional redundancies exist and may be detrimental to the organization. This view also streamlines rapid impact analysis during strategic planning exercises.

5.5.1 ORGANIZATION CROSS-MAPPING

- Cross-mapping between organization and objective highlights which objective(s) an organization seeks to fulfill.
- Cross-mapping between business unit and capability creates a capability instance, highlighting which business units or partners implement a capability in practice.

5.5.2 ORGANIZATION EXAMPLE

The abbreviated extraction of a transportation organization map shown in figure 17 highlights selected business units and partners with certain capabilities.

Business Unit Level	Business Unit	Business Unit Type	Definition	Key Capabilities Associated with Business Units
0	Transport Company	Enterprise	Global shipping service provider.	All

Business Unit Level	Business Unit	Business Unit Type	Definition	Key Capabilities Associated with Business Units
1	Retail Facility	Business unit	Handles the decisioning of credit product offerings to an organization's client.	Customer Management, Agreement Management, Shipment Management, Payment Management, Financial Account Management
1	Shipping Distribution Center	Business unit	Manages shipping and receiving, sort center, and logistics control.	Shipment Management, Asset Management, Human Resource Management
2	Dispatch Center	Business unit	Coordinates ground transport, operator assignments, conveyor assignments, and fleet maintenance.	Conveyor Management, Route Management, Human Resource Management, Asset Management
2	Customs Clearance Service, Ltd.	Partner	Handles the development and enhancement of the channel's product offerings.	Partner Management, Policy Management, Agreement Management, Shipment Management
2	Network Control	Business unit	Controls network design, optimization, route definition, and incident rerouting.	Network Management, Route Management, Incident Management

Figure 17: Sample Extract of Transportation Business-to-Capability Cross-mappings

Figure 17 highlights where business units and business partners share capabilities that collectively contribute to customer and stakeholder value delivery. For example, if there was an objective driving a planned investment in improving the Shipment Management capability, the scope of consideration should investigate the use of those capability instances within each business unit depicted in figure 17. The knowledgebase would quickly highlight the business units that need to be engaged in order to ensure that planning is complete, comprehensive, and scoped effectively.

5.6 STAKEHOLDER

The stakeholders of an organization (this includes commercial business, government, and non-profit organizations) are the very reason to be in business, so they should be top of mind when thinking about ways to leverage business architecture.

A key objective of business architecture is to represent the stakeholders within a business. Business objects such as Customer, Employee, and Partner are usually viewed as stakeholders. But in business architecture, the concept of stakeholder has a more specific meaning. Stakeholders are either triggering or participating stakeholders in the context of value streams, as defined in whitepaper section 5.2, as well as being those who affect or are affected by an aspect of the architecture, e.g., an initiative.

Stakeholders are identified when defining value streams in terms of:

- Triggering stakeholders of the value stream who desire the value proposition of the value stream
- Participating stakeholders in the value stream stage who participate in achieving the value item

Note that the concept of being a triggering or participating stakeholder is value stream context dependent. A given stakeholder may trigger a value stream and participate in that value stream, simply participate in that value stream, or be absent from the value stream altogether. A major emphasis is

on identifying stakeholders as individuals as opposed to business units, e.g., a Compliance Officer as opposed to a Compliance Office.

A stakeholder is further classified by its type – External or Internal. Stakeholders are organized by category, or according to an information concept, e.g., customer, partner, or human resource. It is essential to maintain the distinction between the information concept and the stakeholder when classifying stakeholders. For example, if you have a Customer Management and a Partner Management capability, we would identify stakeholders to be either customers or partners.

A value stream begins with a stakeholder triggering the first stage of the value stream and ends when a product or service, notification, a degree of satisfaction, or other communication is delivered back to that stakeholder. A triggering stakeholder is a category of stakeholder that initiates a value stream to achieve a stated value proposition. Figure 18 highlights adjacent relationships between stakeholder and other business architecture domains. It shows where a stakeholder belongs to a business unit, defines a type of information concept, triggers and participates in a value stream, is impacted by strategy, or contributes to a capability outcome.

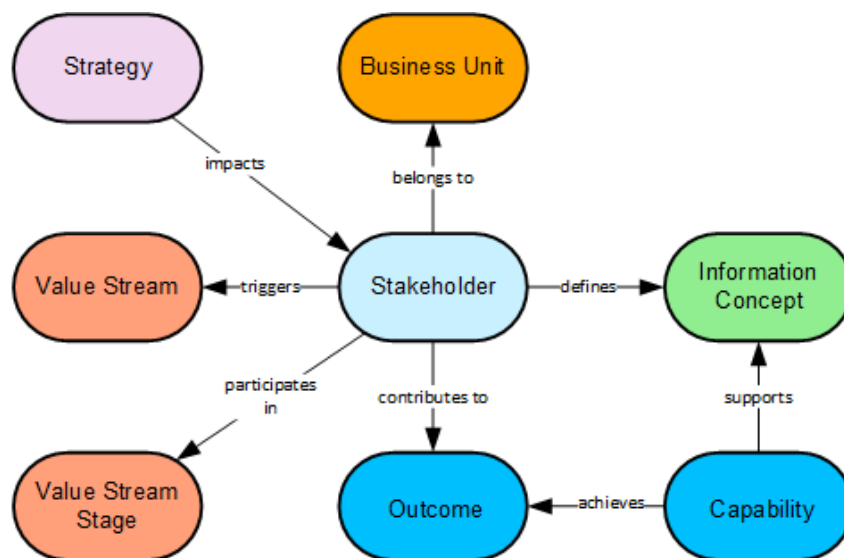


Figure 18: Stakeholder Associations

5.6.1 STAKEHOLDER CROSS-MAPPING

- Stakeholder defines information concept types linked to objects such as customer, partner, or human resource.
- Cross-mapping between stakeholder and outcome defines who contributes to which outcome.
- Cross-mapping between stakeholder and value stream highlights who triggers that value stream.
- Cross-mapping between stakeholder and value stream stage highlights who participates and contributes value within a value stream stage.
- Cross-mapping between stakeholder and business unit defines where stakeholders exist across an organization or partner organization.

- Cross-mapping between stakeholder and strategy highlights who is impacted by a strategic change.

5.6.2 STAKEHOLDER EXAMPLE

Figure 19 depicts an example of stakeholders engaged in the Take a Trip value stream. The customer triggers the value stream when they engage an organization with an interest in taking a trip. The customer is also involved in each stage of the value stream as a participant. The customer transitions through the value stream as their journey progresses and ultimately terminates. Figure 19 also identifies the other participating stakeholders, each of whom contributes to value accrued as the trip progresses.

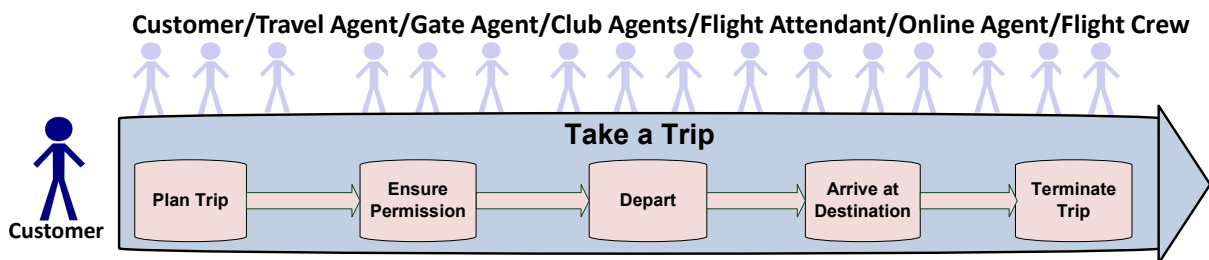


Figure 19: Triggering Stakeholder and Participating Stakeholders in a Value Stream

For example, an airline customer might want to be moved to an earlier flight and approaches a gate agent with this request. The gate agent would, in a best-case scenario, be able to move the customer to another flight. In this example, the gate agent would play a role in the Customer/Conveyor Matching capability that would switch that person to a new flight. The agent would additionally play a role in the Customer Authorization and Authentication Management capability, allowing the customer to access a different flight. Other stakeholders, which may be proxied by technology in some cases, would similarly contribute to value along a journey.

5.7 STRATEGY

The strategy domain encompasses the processes of creation, execution, monitoring, and supervising a strategic change to aspects of the business. The *BIZBOK® Guide* and other modern strategic practices consider strategy creation, initiative planning, and initiative execution and tracking to be of equal importance. Strategy mapping in the business architecture metamodel focuses on strategy creation and formulation, whereas initiative mapping addresses initiative planning and execution.

There are two popular techniques in place for execution and monitoring initiatives. One popular method is the Balanced Scorecard, whereby a business implements a monitoring and measurement system for strategic initiatives by defining Key Performance Indicators (KPIs). Another popular method is Hoshin Kanri, a management technique to ensure that there is a shared understanding and coordination of the strategy execution across the business.

As shown in figure 20, strategy is comprised of objectives, each of which requires and realizes courses of action. Change, which is the rationale for a given objective, affects a capability, which in turn would be the target of a strategy.

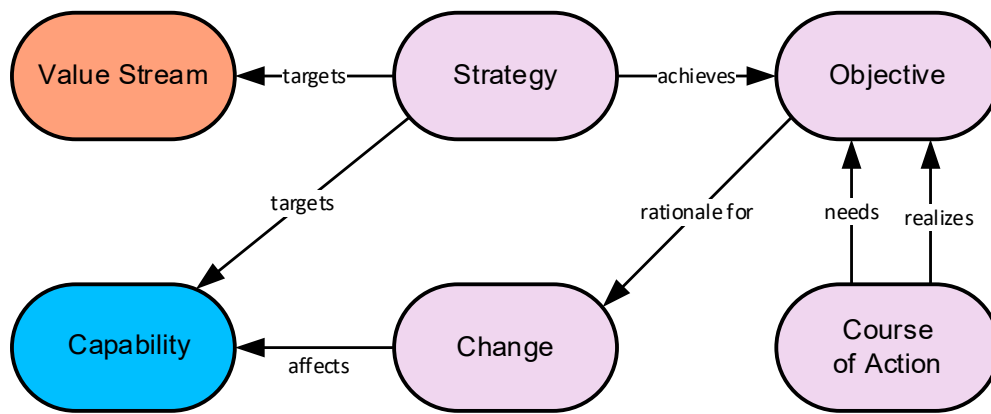


Figure 20: Strategy Associations

One or more objectives relate to a strategy. To create strategies, organizations identify strategic objectives that are decomposed into lower-level objectives and put into the objective map — a tree-like hierarchy illustrating their relationship and contribution to strategy execution.

A course of action implements a strategy resulting in reaching the objectives associated with the strategy. In some circumstances, objectives have pre- and post-conditions that need to be satisfied before starting another course of action. Objectives can depend on each other. The business architecture practitioner documents the rationale behind changes made to a capability in the course of action chain, including the justification for the change.

A summary of the figure 20 strategy domain details are as follows.

- Strategy's association with objective highlights whether the objectives linked to one or more strategies, where there is no freestanding objective.
- Change is associated with an objective to highlight the rationale and related change impact of that objective.
- Connecting the course of action with objective identifies the actions to be taken to achieve that objective as well as the course of action that may be a prerequisite to that objective.

5.7.1 STRATEGY CROSS-MAPPING

- Cross-mapping strategy to capability identifies the capabilities impacted by strategy, which could be further decomposed by the objectives associated with that strategy.
- Cross-mapping change to capability highlights the behavioral impacts or improvements to be associated with one or more capability instances.
- Cross-mapping strategy and a value stream identifies the value-related impacts or improvements that this strategy will deliver within a value stream.

5.7.2 STRATEGY EXAMPLE

Figure 21 provides an example of the relationships between an objective and its impact points, and includes the goal as well as the corresponding course of action, KPI, and the value stream and capability impact points.

Strategy Impact Analysis Template					
Goal	Objective	KPI Metric	Course of Action	Value Stream Impacts	Capability Impacts
Ensure that shipments arrive intact	Reduce lost shipment items when shipments break apart in transit to .05%	Lost Shipment Item Percentage	Consolidate shipment item tracking across business units and partners	Send Shipment	Shipment Item Definition Shipment Item Access Management Shipment Item/Location Matching Shipment Item/Conveyor Matching Shipment Item/Partner Matching

Figure 21: Strategy to Value Stream and Capability Impact Tracking

This example highlights where a goal of ensuring that shipments arrive intact is realized by a clearly stated objective and a KPI stating that lost shipment items (in scenarios where a shipment is inadvertently separated) is reduced to .05% of the time. The course of action, to consolidate shipment item tracking across business units and partners, points to the capabilities that focus on shipment item tracking (shown on the far right of the table) along with the targeted value stream.

Organizations would, based on this analysis, examine the effectiveness and related metrics associated with each of these capabilities across every business unit and partner instance. The metamodel provides the underlying tracking mechanism for many such business scenarios, and allows organizations to scale this analysis to fully define the scope and related investment impacts of various business goals and objectives.

5.8 INITIATIVES

Initiatives represent the execution of strategy. Initiatives are the choices an organization has made to achieve the objectives of a strategy.

An initiative is often known as a program, project, or portfolio, and responsibility for execution often lies with a Project Management Office (PMO). The PMO typically has the responsibility for coordinating program and project planning, prioritization, implementation, and tracking. Monitoring includes assessing how well an organization is delivering its milestones across the initiatives in a portfolio. Organizations often track performance against plan using tools like the Balance Scorecard.^{ix}

The operational role of the PMO is an essential function, but only one piece of the process of governing initiatives. Though doing things right by being efficient is crucial, what if the initiative fails to do the right thing? It will not be effective. Only effective initiatives will deliver the strategy. Measuring efficiency, the focus of agile development methods, is relatively easy. Measuring effectiveness, the focus of business architecture, is much tougher.

The strategy defines the objective to be achieved by initiatives, and initiative is a type of course of action. Initiatives will deliver a value item and impact or require one or more capability outcomes. A business unit has different roles in relationship to initiatives. A business unit executes and/or funds an initiative; an initiative can impact a business unit.

Initiatives impact a value stream stage because the value item is a logical focal point for initiative investments. Initiatives also target value stream stages as a way of rapidly filtering the initiative-impacted capabilities that enable that value stream stage and contribute to the value item. Finally, highlighting the value stream stage impacts of an initiative shows which participating stakeholders may be impacted by an initiative; where those stakeholders become targets for improving how they engage; the roles that they play; the automation they require; and the requirements they communicate to deployment teams.

Figure 22 summarizes the direct impacts between business unit, objective, course of action, capability, and value stream stage and the initiative. As with other domain associations, only the initial point of impact is represented in figure 22. Expanded associations would be represented in the other domain models.

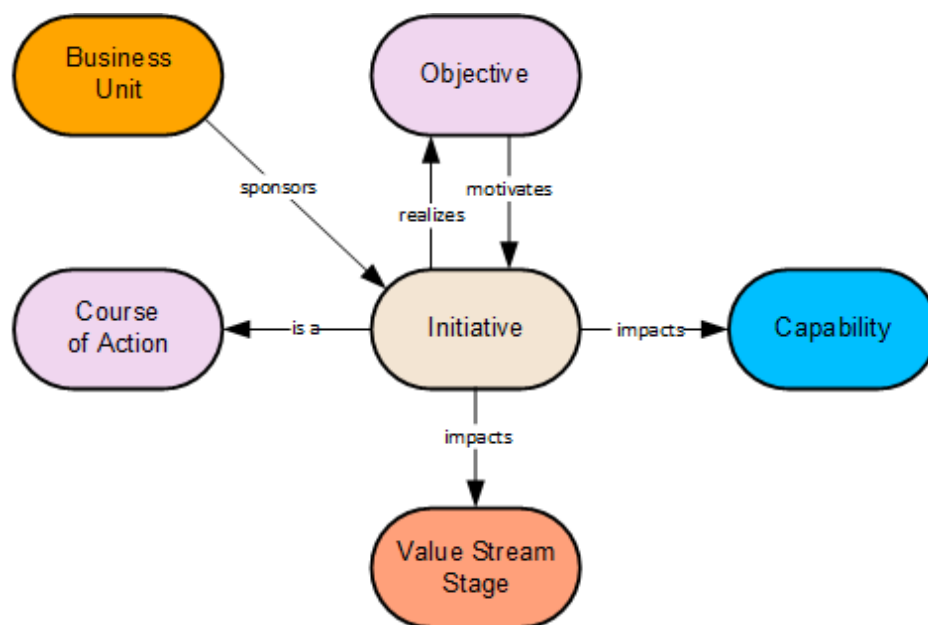


Figure 22: Initiative Associations

In practice, a business unit with a set of objectives would target a given initiative. The initiative in turn would effect changes to behaviors associated with capability instances for that business unit. Initial impact assessments typically target the value stream stages, which would then be used to highlight relevant enabling capabilities for those value stream stages.

5.8.1 INITIATIVE CROSS-MAPPING

- Cross-mapping between initiative and value stream stage highlights which value stream stage is impacted by an initiative and indirectly which initiative delivers the value item.
- Cross-mapping between initiative and objective highlights which objective is realized by which initiatives and, as initiative is a type of course of action, which initiative groups the course of action.
- Cross-mapping between initiative and capability highlights which capability is impacted by the initiative and which initiative requires which capability.
- Cross-mapping between initiative and business unit highlights which business unit sponsors or executes which initiative and which initiative impacts which business unit.

5.8.2 INITIATIVE EXAMPLE

Initiatives are aligned to deliver one or more business objectives, often funded by a particular business unit. The objective or objectives to be realized by an initiative would target the impacted value stream stages and capabilities necessary to impact change. Figure 23 depicts an example of a transportation company initiative along with related business impacts.

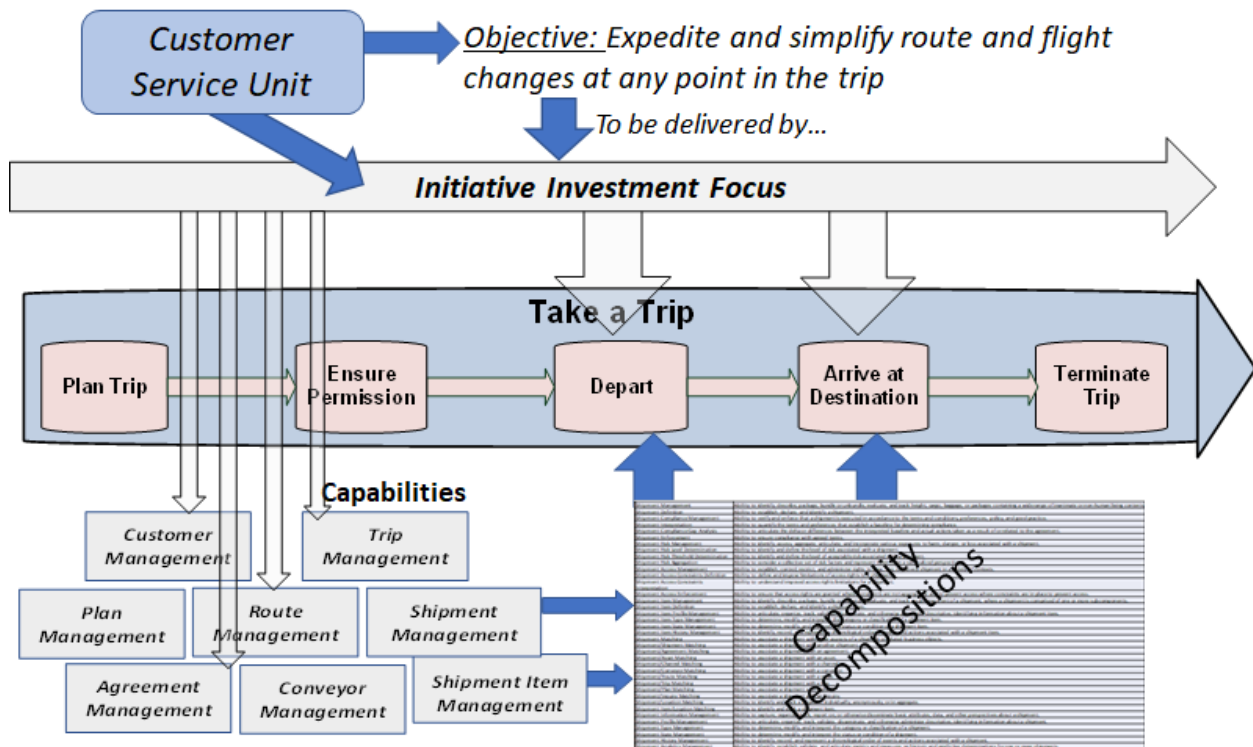


Figure 23: Initiative Mapping to Business Unit, Objective, Value Stream Stage, and Capability

In this example, the Customer Service business unit is seeking to expedite and simplify the ability to change a trip route and flight through any channel, at any point in a trip. Based on this objective, the value stream provides an insight into the two value stages, Depart and Arrive at Destination, where the customer engages throughout the life of one-way, multi-stopover, or multi-destination trip. A program planning team would then identify the enabling capabilities for these value stream stages to highlight the capability-related investments for that initiative. These capabilities include Agreement Management, Trip Management, Customer Management, and Route Management. The capabilities will rematch the customer to a conveyor, meaning that conveyor information is used to reroute the customer to an alternative route and flight.

5.9 POLICY

Policy plays a vital role in doing business in many organizations, especially in highly regulated areas like banking or the public sector.

Policy categorizes into internal and external policies.

- Internal policies are set and maintained by an enterprise's internal organizational structures. These are usually not dependent on sources outside an enterprise.

- External policies are mostly edicts that must be implemented and complied to, such as a regulation, an industry praxis, or a commercial agreement. Non-compliance is usually associated with some damage to the reputation or finances of the business.

Conformance to external and internal policies is controlled by a governance process.

Figure 24 highlights the relationships between policy and stakeholder, capability, objective, and business unit.

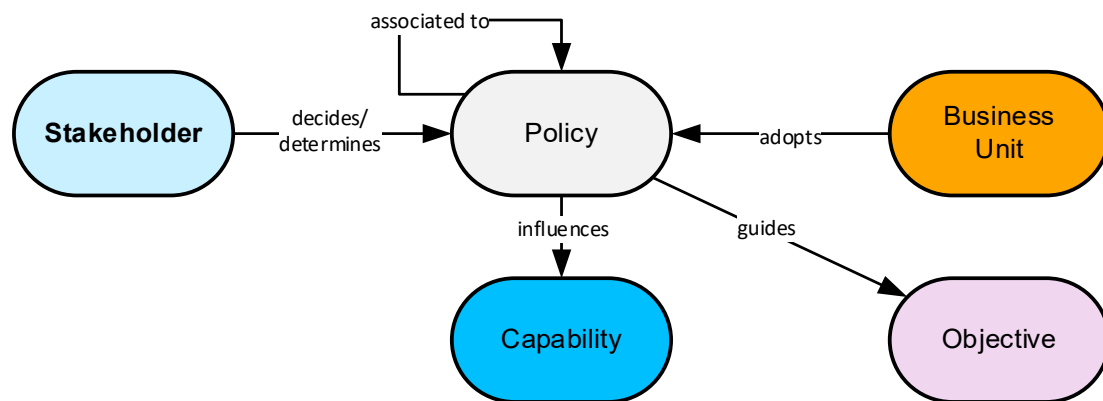


Figure 24: Policy Associations

The relationship showing that a policy is associated with a policy depicts a derivative relationship. For example, an organization may establish a set of internal policies associated with federal regulations, treaties, or statutes, each of which is also a policy. The internal rule may be associated to these external policies to identify the lineage between, for example, a statute and the internal rules meant to comply with that statute.

5.9.1 POLICY CROSS-MAPPING

- Cross-mapping between policy and business unit highlights which business unit adopts which policy.
- Cross-mapping between policy and capability highlights which policy influences which capability.
- Cross-mapping of policy and stakeholder highlights which stakeholder decides/determines which policy.
- Cross-mapping policy and objective highlights which policy guides which objective.

5.9.2 POLICY EXAMPLE

Policy mapping connects legal, regulatory, or corporate policies with potential commitments and liabilities that organizations must incorporate into their investment model. The example in figure 25 depicts three internal policies concerned with changes to travel industry regulations.

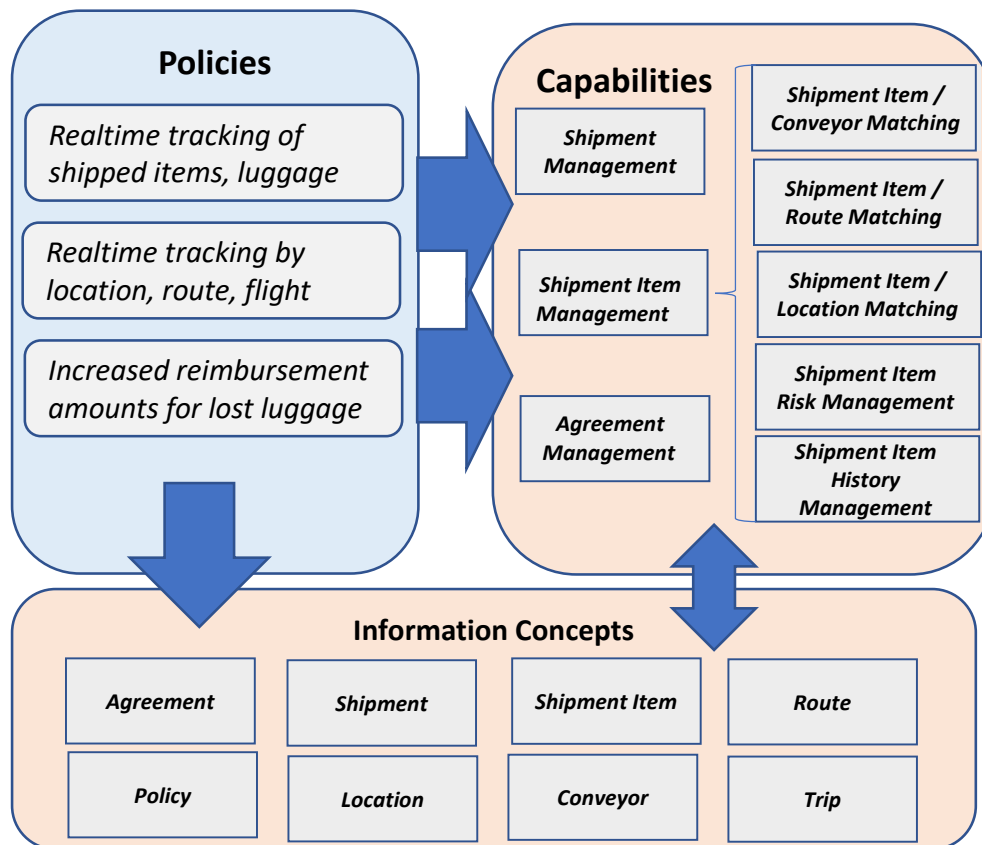


Figure 25: Policy Mapping Scenario Example

Using policy mapping, an organization can target the capabilities impacted by those policies as well as the impacted information concepts used and modified by those capabilities. For example, a policy associated with tracking individual pieces of luggage impacts the Shipment Item Management capability and the information used by that capability. Capabilities directly impacted include Shipment Item Management, Shipment Item/Conveyor Matching, Shipment Item/Route Matching, Shipment Item/Location Matching, and Shipment Item History Management. The policy may also call for resetting acceptable levels of risk for a shipment item, impacting Shipment Item Risk Management. A second policy increasing reimbursement amount exposure to the company for lost luggage would directly impact the Agreement Management capability to address agreement terms.

Once a set of policies are traced to the impacted capabilities and information concepts, impact assessment teams can trace the impacts on value streams enabled by those capabilities; business units associated with instances of these capabilities; and impacted stakeholders associated with those value streams and business units, systems that automate those capabilities, and data representing the impacted information concepts.

5.10 PRODUCT

From the customer perspective, product is the overall experience provided by the combination of goods and services to satisfy that customer's needs.

In business architecture, a customer is the external recipient of a product rather than an internal stakeholder. A product may be accompanied by entitlements, such as installation, warranties, or other

services provided through a product lifecycle – reaching many years beyond the purchase date. An organization must, therefore, have specific capabilities to provide the product and then capabilities to offer those after-sales entitlements.

Products may belong to a product line with similar characteristics or that target a particular buyer. But, in the same way that companies may outsource some of their capabilities, so too can they outsource the supply of products, with companies increasingly selling products that they don't manufacture themselves.

For example, many consumers purchasing a product over the Internet see the ability to deliver a shipment as an entitlement. The customer's experience will be defined by the sum of the organization's capability outcomes. It answers the question of how well they work individually and together in an orchestrated delivery of value.

By incorporating these product concepts into business architecture through product mapping, there are several benefits for a business, particularly for companies that are product-focused. Visibility of the product ecosystem provides clarity when considering how well supported, delivered, or aligned the products and product lines are.

Product maps provide the basis for further cross-mapping with other business architecture domains. For example, product mapping allows the business to investigate not only the relationships between products and product lines, but also to see which products are delivering the most value to customers. Understanding these relationships can support businesses in making the right investment decisions when targeting new markets and segments. Product mapping provides a focus for reviewing and optimizing sales and service value streams such as product design and creation.

Business architecture provides a framework for formalizing product management and provides visibility into complex products and product lines, as well as critical capability dependencies and an organizational perspective. This increased visibility also offers a view of value, initiative, and strategy mapping that may not otherwise exist.

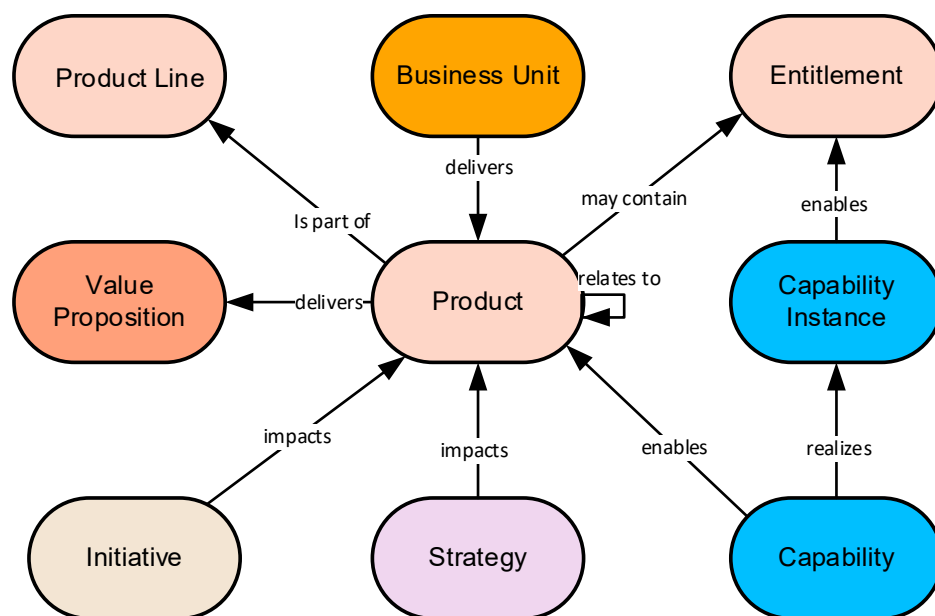


Figure 26: Product Associations

The product mappings shown in figure 26 enable an organization to validate the ability to roll out a new product based on existing capabilities, highlight underperforming products and related underperforming capabilities, and target investments for improving existing products and deploying new products.

Two product mapping relationships are of particular importance when defining a product mapping. The “relates to” association between product and product indicates which product complements, is similar to, or bundles another product. The association between product and entitlement highlights the specific customer commitments that a customer is entitled to under the terms of a given product. A product can be grouped into a product line, which may be added to a metamodel. Product line is a standard organizing structure for products.

5.10.1 PRODUCT CROSS-MAPPING

The following product domain cross-mapping provides insight and context for product-based investments, targeted at improving the customer experience while streamlining product delivery and performance.

- Cross-mapping between product and capability highlights which capability enables which product.
- Cross-mapping between product and organization highlights which organization is responsible for providing and delivering a given product.
- Cross-mapping between product and strategy highlights which strategy impacts a given product.
- Cross-mapping between product and initiative highlights which initiative impacts a given product or products.
- Cross-mapping between capability and entitlement clarifies the capability needed in order to deliver on a given product entitlement.

5.10.2 PRODUCT EXAMPLE

Product mapping has many uses, one of which is new product planning. When a new product is proposed by Marketing or the Product Management team, a rapid assessment of the impacts, viability, costs, risks, and other considerations associated with that product is warranted. Figure 27 highlights an example of product to capability mapping.

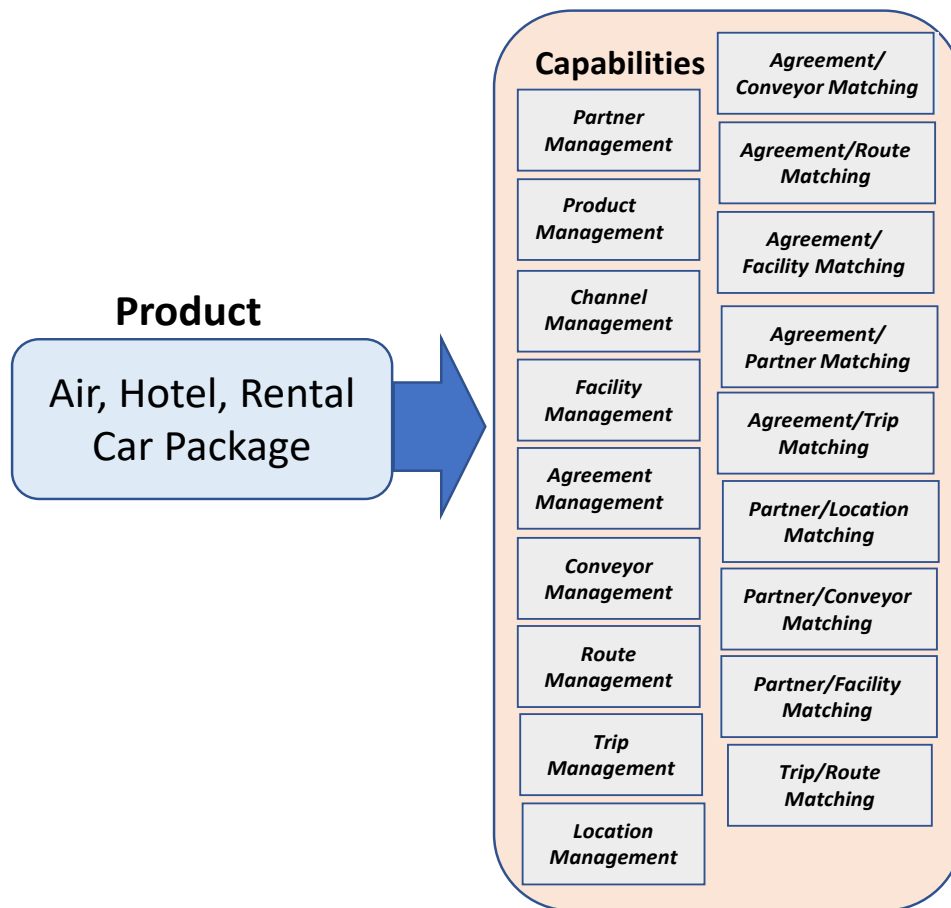


Figure 27: Product Mapping Scenario Example

This example considers an airline that, working with its partners, is seeking to offer its customers a full-service travel package. The package would include airfare, hotel reservations, and a car rental. While the hotel and car rental would be provided through partners, the airline must still accommodate the full-service package: packaging pricing; flight, hotel, and vehicle reservations; and other options through its portal. This is a new offering for the airline, and they want to perform an impact analysis for what it would take to launch this package.

Figure 27 highlights some of the capabilities involved in the assessment. An agreement would need to reference the flights, routes, hotel reservations, and car rental times, locations, and commitments. These are addressed via Agreement Matching capabilities. In addition, the airline would require Conveyor Management to be expanded to vehicle tracking, and Facility Management to be expanded to hotel properties. Partner relationships via Partner Management would also be required.

The impact analysis is the first step in pointing to the work to be done to deploy such a product offering to the airline's customers. Secondary analysis would look at specific instances, partner relationships, policy impacts, information impacts, and technology impacts associated with these capabilities. In this way, product mapping provides a way to quickly incorporate business architecture into marketing, product planning, and related activities at a company.

6. SUMMARY

Business architecture is an abstraction of real-world things described in a business model. To ensure that all participants understand and share the same mental model of that business requires a rationalized, clearly-defined vocabulary, value delivery model, and related perspectives. A metamodel, or model of a model, which is the main topic of this paper, defines the comprehensive set of domains, the underlying domain relationships, and usage rules for defining the model of a business.

There is more to the practice of business architecture than providing this model of the business; modeling results must be made accessible and framed by specific business scenarios to solve the challenges at hand. Meeting this overall goal requires storing the business domains and associations into a readily accessible business architecture knowledgebase while maintaining the integrity of modeled domains and relationships. To organize the business architecture knowledgebase, a comprehensive representation of an organization is separated into ten domains: four core domains and six extended domains. Information about the business is modeled along these domains into blueprints or maps. Relationships among these domains are organized in cross-mappings in order to answer multidimensional questions of business professionals ranging from strategic planners to designer and solution deployment teams.

Business architecture focuses on the value for a consumer or customer from an outside-in perspective of the value provider. This unique perspective enables the viewing of consumer value delivery and all work associated with improving upon that value delivery to be viewed from an ecosystem-wide perspective across business units, partners, and related perspectives.

Value, capability, information, and organizational domains work in lockstep to deliver consumer value. Value streams define what stages are necessary to achieve the consumer value proposition. Value stream stages are enabled by capabilities, which in turn are delivered by business units, which are part of an organization, i.e., the value provider. Information is closely aligned to capabilities that require and effect that information. Cross-mapping capabilities to value streams and business units is a powerful means for targeting and improving organizational weaknesses, capitalizing on opportunities, dealing with threats, and maximizing organizational strengths.

The remaining business architecture domains organize around stakeholder, strategy, initiative, policy, and product. Metrics, while not covered in this whitepaper, are integral to the use of business architecture and are context-dependent. Stakeholders are differentiated into triggering and participating stakeholders, serving as a focal point for connecting value delivery, strategy, business unit, capability via outcomes, and information.

Strategy mapping enables business objectives to target one or more business units, impacted capabilities, or one or more value streams. The ability to view strategic impacts across these domains broadens the focus of strategic planning and impact analysis, shifting the focus from a single business unit onto the organization as a whole, ensuring that the scope of any investment is clearly defined and attainable. Once a strategy is defined and validated for impacts, the scope of initiatives (programs and projects) may be established with clarity and confidence.

Policy mapping ensures that the impacts of legislation, statutes, treaties, and regulations are considered at every stage of strategic planning and execution. Finally, product is the overall experience

from the customer's perspective, and is defined as a combination of goods and services provided to that customer to deliver value. Cross-mapping product to business unit, capability, strategy, and initiative opens up interesting options to identify new business opportunities.

Modeling an organization using business architecture is a multidimensional, multidisciplined effort that evolves over time based on the priorities of a given organization, ensuring that tools, techniques, and human skills are maximized for success. Although it is possible to set up the knowledgebase with spreadsheets, scaling such a knowledgebase for anything other than a simple and very small enterprise is impractical. The use of a modeling tool that can capture, store, cross-map, and provide access to the business architecture is highly recommended in order to support scalability. A variety of tool vendors have the ability to enable the knowledgebase views defined in this whitepaper.

Organizations can jumpstart their business architecture mapping efforts using industry reference models available from the Business Architecture Guild®. Using the reference models as a baseline or starting point enables organizations to move through the startup phase of business architecture in a very short period of time. All reference models are designed and mapped to align to the formal cross-mapping domain structures described herein. Using the formally defined business architecture framework, business architecture knowledgebase, and accompanying metamodel defined in this whitepaper will allow organizations to quickly and effectively launch and maximize the value of a business architecture practice.

Glossary of Terms

The following glossary provides definitions for certain terms used in the Metamodel Guide. The terms are drawn from the *BIZBOK® Guide*, Appendix A: Glossary.^x

Business Ecosystem

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.

Business Object

A representation of a thing, including at least its business name and definition, attributes, behavior, relationships and constraints, which may represent, for example, a person, place, or concept.

Business Unit

A logical element or segment of a company (such as Accounting, Production, or 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 Functional Area.

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.

Knowledgebase

A combination of process, structure, and a 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.

Model

A visual and/or data representation of a real-world thing or category of real-world things.

Metamodel

The abstract syntax of a class of models.

Organization

A social unit of people, systematically structured and managed to meet a need or to pursue collective goals on a continuing basis.

Objective

A quantitative, measurable result that defines strategy.

Outcome

An end-result or final product that is a consequence of an event, action, or a series of events and actions.

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 parties.

Value Proposition

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

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.

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).

About the Business Architecture Guild®

The Business Architecture Guild® is an international, not-for-profit, and member-driven professional association that provides valuable resources to business architecture practitioners and others interested in the profession. Formed in 2010, the Guild’s primary purpose is to promote best practices and expand the knowledgebase of the business architecture discipline. The Guild is the source for *A Guide to Business Architecture Body of Knowledge® (BIZBOK® Guide)*, the go-to guide for business architecture practitioners and other professionals seeking to leverage the discipline.

The Guild is active in industry standards programs and partners with related professional associations to further its purpose. In addition to the *BIZBOK® Guide*, the Guild offers a Business Architecture Maturity Model® (BAMM®), Business Architecture Tool Evaluator™, and business architecture reference models for various industry sectors including financial services, healthcare, insurance, government, manufacturing, transportation, and a common industry reference model. All Guild-produced content, including the industry reference models, is developed by its members. In addition to these resources, the Guild has a vendor partnering program, a Guild Accredited Training Partner® (GATP®) program, and an academic program.

For more information and more details, visit: www.businessarchitectureguild.org.

References

ⁱ *A Guide to the Business Architecture Body of Knowledge® (BIZBOK® Guide)*, Business Architecture Guild®.

ⁱⁱ P. M. Hacker, *Wittgenstein's place in twentieth century analytic philosophy*. (Oxford: Blackwell Publisher Inc., 1996)

ⁱⁱⁱ Business Ecosystem: See Glossary. *BIZBOK® Guide*, Part 1: Introduction, www.businessarchitectureguild.org.

^{iv} Federation of Enterprise Architecture Professional Organizations (FEAPO), www.feapo.org

^v “BA next level foundation for success”; whitepaper available to members on the Guild website.

^{vi} Business Architecture Guild, Transportation Reference Model v2.0

^{vii} Business Architecture Guild, Transportation Reference Model v2.0

^{viii} Business Architecture Guild, Transportation Reference Model v2.0

^{ix} David P. Nolan and Robert S. Kaplan, “The Balanced Scorecard—Measures that Drive Performance”, *Harvard Business Review*, (January-February 1992)

^x *BIZBOK® Guide*, Appendix A: Glossary, www.businessarchitectureguild.org.