Open Group Preliminary Standard

Open Business Architecture (O-BA) – Part I

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Preface

The Open Group

The Open Group is a global consortium that enables the achievement of business objectives through IT standards. With more than 500 member organizations, The Open Group has a diverse membership that spans all sectors of the IT community – customers, systems and solutions suppliers, tool vendors, integrators, and consultants, as well as academics and researchers – to:

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This Document

This document is Part I of the Open Business Architecture (O-BA) Standard, a standard of The Open Group. It has been developed and approved by The Open Group as a Preliminary Standard.

This standard is being published initially as a Preliminary Standard since it addresses an emerging area of best practice; therefore, it may change before being published as a full Open Group Standard. In such a case it will be made as upwards-compatible as possible with the corresponding Preliminary Standard, but complete upwards-compatibility is not guaranteed.

This standard is focused on transformations to the enterprise or organization. This standard defines an approach to ensure a clear understanding of business vision by all stakeholders throughout the enterprise transformation lifecycle. An extensive elaboration of strategy domain, covering implications on structure and operations of the organization, is needed to ensure relevance in communication.

The three parts of the standard, when taken together, will address all aspects of a Business Architecture practice explicitly; not only the holistic approach in modeling, but also the way of working and thinking, as well as the way of organizing and supporting. Thus, the standard

explicitly reckons with the systemic nature of transformations, the varying interests and goals of stakeholders, and moreover prepares for consistent communication of business priorities and needs throughout the lifecycle. It addresses a real need to solve structural challenges in enterprise and organizational transformations.

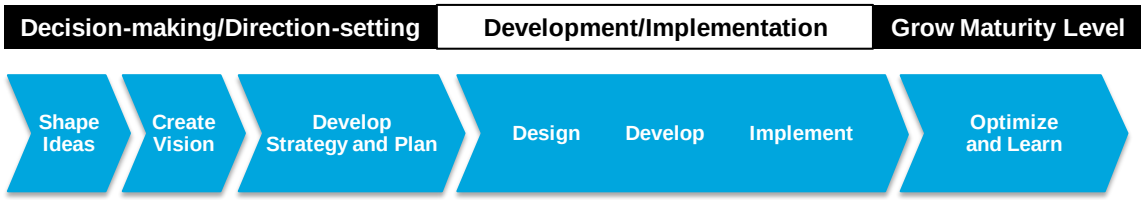

Figure 1: Transformation Cycle and Phases

Part I (this document) describes the practice through a Business Architecture framework, the five-ways framework, the structural challenges it tries to resolve, and how these are resolved by applying the standard. The perspective of Part I is focused on decision-making and direction-setting, as shown in the transformation lifecycle in Figure 1.

Part II will describe the context in which the practice is applied, the Business Architecture process, the contribution of the Business Architect to enterprise transformations, and the views and viewpoints needed to accomplish the expectation. The same concepts and techniques apply as in Part I, but they are elaborated at another level of detail.

Part III will include the specific techniques and guidelines that enable the Business Architect to accomplish the value proposition.

This document is structured as follows:

- Chapter 1 (Introduction) is an introduction to this standard.
- Chapter 2 (Definitions) defines the general terms used.
- Chapter 3 (Approach) describes the approach to the practice of Business Architecture defined by this standard.
- Chapter 4 (Challenges Addressed by the Standard) discusses the current challenges of organizations with change and how a Business Architecture practice should address such challenges.
- Chapter 5 (A Standard Business Architecture Paradigm) discusses the added value of a Business Architecture practice for decision-making, the success factors, and the set of requirements identified to enable success.
- Chapter 6 (Business Architecture Framework) describes the five-ways framework and how it can be applied to establishing and running a Business Architecture practice during decision-making.
- Chapter 7 (Business Architecture) justifies and describes the artifact types that have to be included in the Business Architecture practice.

The following appendices are provided:

- Appendix A (Rationale) provides background information on the standard.

- Appendix B (Positioning Business Architecture) describes the positioning for this Business Architecture standard; what it is, including its position in the transformation lifecycle; the differentiation of roles during the lifecycle; and how it relates to enterprise architecture and to the TOGAF® Version 9.1 standard.
- Appendix C (Use-Cases) describes a number of use-cases applying to the standard.
- Appendix D (Realizing Vertical and Horizontal Traceability) provides clarification of the relation between competence and capability as used in this standard.
- Appendix E (Definition of Concepts in Common Language) defines the concepts in common language that are used for capturing and communicating leadership views and insights.

Trademarks

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Referenced Documents

The following documents are referenced in this standard.

(Please note that the links below are good at the time of writing but cannot be guaranteed for the future.)

Normative References

Normative references for this standard are defined in Section 1.4.

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1 Introduction

This document is Part I of the Open Business Architecture (O-BA) Standard, a standard of The Open Group. It is being published as an Open Group Preliminary Standard.

1.1 Objective

This document describes an approach to the practice of Business Architecture in the decision-making and direction-setting phase of transformations to enterprises and organizations. Three transformation challenges have been considered in the development of this standard, as shown in Figure 2. These challenges have been matched with contributions provided by current practice, leading to the definition of features required for an effective Business Architecture practice. With these features, the practices can become a critical approach in three domains: business planning, initiative development, and enterprise transformation.

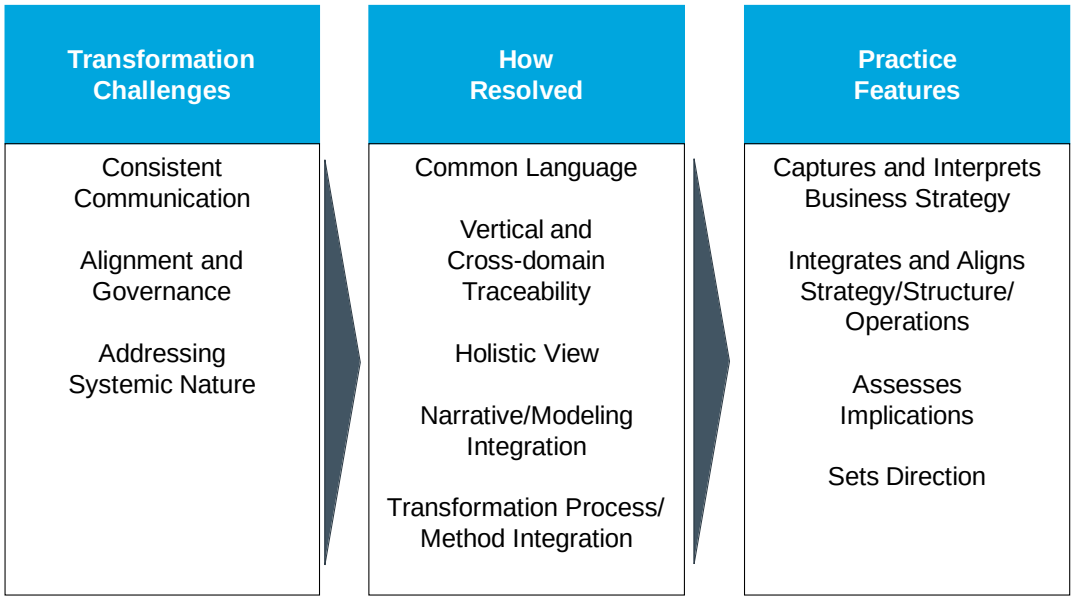


Figure 2: Defining the Business Architecture Practice

The other parts of this standard deal with the design, develop, and implementation phases of a Business Architecture and also the detailed artifacts.

1.2 Overview

Most businesses and government departments have to embark on a form of transformation if they want to keep up with service expectations demanded by their clients or communities. In some cases, the transformation originates from new strategic insights driven by either market, environmental, enterprise, or technology changes. In others, the transformation is driven by new disruptive technologies and completely new business models are developed.

This standard is focused on the transformation of the organization. It ensures that the business vision, together with strategy and its implications for structure and operations, is well understood and subsequently well communicated throughout the enterprise transformation lifecycle. An extensive elaboration of the strategy domain is needed to accomplish this.

This standard defines an approach for taking a holistic view of the organization. As shown in Figure 3, this standard considers the vision and external influences, the strategic intent and strategic priorities of the organization, and its business structure and operational context, and develops artifacts for the strategy, structure, and operational context domains. The three domains – strategy, structure, and operational context – are considered of equal importance and inter-dependent.

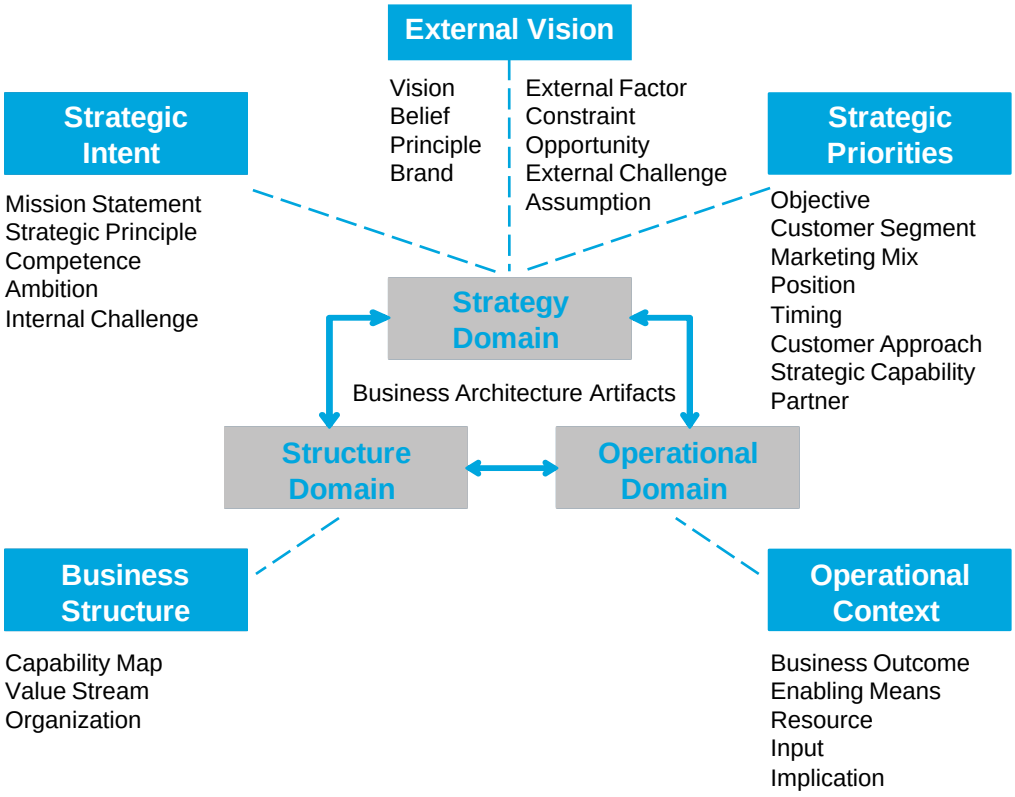


Figure 3: Overview of the Open Business Architecture (O-BA) Standard

The strategy domain refers to those elements that together provide the insights, intent, and priorities that set direction for structuring the operations. The structure domain refers to those elements that together describe how the different elements of an organization juxtapose with the goal to accomplish the strategy. The operational context domain refers to those elements that together describe the requirements and implications of operations.

This standard focuses on defining and communicating strategic business needs and their operational and structural implications as well as their strategic fit cross-domain. Furthermore, the standard explicitly defines a holistic view. This is considered a critical part of a Business Architecture practice and guarantees consistent alignment. Another differentiator is the use of a common language for consistent communication during the whole lifecycle of transformations. Adjectives to certain concepts in Figure 3 are included to ensure it is traceable to its origin. The concepts are defined and explained in Appendix E.

This standard identifies the following requirements for Business Architecture:

1. The need to apply a common language for consistent communication
2. Vertical traceability (vision, strategic intent, competence, capability, resources) for transparency of implications of the strategy for operations
3. Horizontal traceability to create transparency in cross-business domain dependencies
4. The need for a holistic view to ensure alignment of all relevant factors
5. Transformation process integration with the approach to ensure the right artifacts are applied at the right level of detail for decision-making at each phase.

1.3 Conformance

Readers are advised to check The Open Group website for any conformance and certification requirements referencing this standard.

1.4 Normative References

The following standard contains provisions which, through references in this standard, constitute provisions of the O-BA Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard listed below.

- TOGAF® Version 9.1, an Open Group Standard (G116), December 2011, published by The Open Group; refer to: www.opengroup.org/bookstore/catalog/g116.htm.

1.5 Terminology

For the purposes of this standard, the following terminology definitions apply:

Can	Describes a possible feature or behavior available to the user or application.
May	Describes a feature or behavior that is optional. To avoid ambiguity, the opposite of "may" is expressed as "need not", instead of "may not".
Shall	Describes a feature or behavior that is a requirement. To avoid ambiguity, do not use "must" as an alternative to "shall".
Shall not	Describes a feature or behavior that is an absolute prohibition.
Should	Describes a feature or behavior that is recommended but not required.
Will	Same meaning as "shall"; "shall" is the preferred term.

1.6 Future Directions

Parts II and III of this standard will address the design, develop, and implementation phases of a Business Architecture (as described in Figure 1) and also the detailed artifacts.

2 Definitions

For the purposes of this standard, the following terms and definitions apply. Merriam-Webster's Collegiate Dictionary should be referenced for terms not defined in this section.

2.1 Approach

A flow (as in work flow) of steps or phases that show how the goal accomplishment will be addressed in order to produce a defined deliverable and/or result.

2.2 Business

Anything that is related to organizing for exchange of products and services by business, governmental, or institutional organizations.

2.3 Business Architecture

The formalized description of how an organization uses its essential competencies for realizing its strategic intent and objectives.

2.4 Business Capability

A particular ability or capacity that a business may possess or exchange to achieve a specific purpose.

Note: A capability is a fundamental and unique contribution to the business mission, independent of any kind of organization. In some communities it is called a business function.

(Source: A Business-Oriented Foundation for Service Orientation, by Ulrich Homann.)

2.5 Business Service

The valued attribute of a capability as perceived by the stakeholder.

2.6 Business Structure

A set of business capabilities and their inter-relationships that contribute to accomplishing a higher-level goal.

2.7 Common Language

A set of definitions of concepts that are essential to the Business Architecture practice.

Note: In order to facilitate integration of the common language with the way of modeling and way of working, it is preferably controlled to a certain extent. Control in this standard is conducted through clearly stating to which concepts certain terms refer. The essential concepts can be found in Appendix E. By adhering to these concepts the practice enables consistent description of a holistic view, integrated analysis of operational implications, and review of validity of the structure and operations against the assumed business strategy.

2.8 Competence

An organizational mechanism composed of related capabilities, commitments, knowledge, and skills that enable an organization to accomplish its strategic intent and objectives.[1]

2.9 Discipline

The framework, method, and approaches that constitute a complete integrated set for practicing in the field of a profession.

2.10 Framework

A set of linked ways of thinking or insights that serve as the guiding principles for the structuring of a method and associated approaches.

2.11 Holistic View

The complete set of descriptions of the business strategy, the business structure, and the implications of the strategy and structure for operations.

Note: The business strategy includes an external vision, the strategic intent, and the strategic priorities. It provides insights reckoning with the horizontal and vertical dependencies between the strategic, structural, and operational level as well as between business domains.

2.12 Organization

A social unit of people that is structured and managed to meet a need or to pursue collective goals.

[1] Business competencies embrace and communicate the holistic view. Competence descriptions express the strategic need comparable with the concepts of key mechanism, core competence, and critical success factors. Competence descriptions also define the required quality levels of competence maturity and capabilities. It resonates with a systemic view and can be used to define a desired emergent property of a system, which is more than the sum of the parts. Customer experience is a nice example. The difference between competence and capability is the way in which capabilities are performed. Culture and experience and the combination of capabilities are factors that contribute to accomplishment of a competence.

Note: Organizations are open systems – they affect and are affected by their environment.

2.13 Resource

A human, financial, physical, or knowledge factor that provides an organization the means to perform its business processes.

2.14 Structure

The aggregate of elements of an entity in their relationships to each other.

(Source: Merriam-Webster dictionary.)

2.15 Value Stream

A sequence of activities an enterprise undertakes to deliver on a customer request. More broadly, the sequence of activities required to design, produce, and deliver a good or service to a customer, and it includes the dual flows of information and material.

(Source: Value Stream Mapping, by Karen Martin and Mike Osterling.)

2.16 View

A representation of a whole system from the perspective of a related set of concerns.

(Source: TOGAF 9.1.)

2.17 Viewpoint

A pattern or template from which to construct individual views. A viewpoint establishes the purposes and audience for a view and the techniques or methods employed in constructing a view.

(Source: TOGAF 9.1.)

3 Approach

A Business Architecture practice should address the full cycle of transformations to an enterprise or organization. This part of the O-BA Standard focuses on the decision-making and direction-setting phase of an enterprise transformation. In particular, this part defines a structured process for alignment of business strategy with business structure and the operational context. Part II of the standard elaborates the process in further detail as well as addressing the design/develop/implement phase.

3.1 Process

A three-step process is defined to deliver value, as illustrated in Figure 4. This is as follows:

- **Capturing Insights**: The starting point for Business Architecture is composed by the analysis of a new trend or market situation in order to provide to stakeholders a global and traceable understanding of how impacting elements fit together. The Business Architect provides the context of change and aligns it with the defined business strategy and priorities. The key elements that *should* be included are summarized in the common language domain for "external vision".

- **Alignment and Governance**: The Business Architect sets up the Business Architecture holistic view and integrates representations of the business strategy, the business structure, and the operations. For unambiguous communication of the holistic view a common natural language is introduced as a key enabler. The common language provides the key concepts for composing the holistic view in three domains: strategy domain, structure domain, and operational context domain. Use of such a common language during governance cycles for new initiatives is required because the audience consists of many disciplines and management levels that have their own vernacular and jargon. Stakeholders are operating in a rapidly changing world with iterations and feedback from and to operational and strategic level. The common and natural aspect of the language ensures a better and non-ambiguous communication. It leads to acceleration of alignment and decision-making.

- **Communication/Direction and Enabling Means**: Once the market situation, its interpretation by the organization's leadership, and the consequent strategy is captured, shared, and understood it can be applied to the business structure and operational context domain. The business structure is represented as a hierarchy, relational, or logical structure of capabilities. It is organized in a way that fits with the environment (economic, social, regulations, and laws) and the (state-of-the-art) technology applied in the industry and adapted to the organization-specific strategy. Both the value stream and the capabilities are decomposed to serve as a means for consistent communication of the capability structure. The value stream represents the sequence of activities the organization undertakes to source from partners, collaborate with partners, add value themselves, and finally to deliver to the customers.

These three steps and their deliverables enable a structured and explicit communication between stakeholders because the language and hence deliverables enable integration of the different

viewpoints of stakeholders. These are well defined and guide the stakeholders in aligning needs, requirements, and dependencies. Figure 4 shows the steps and their outcomes as pillars that are part of creating the Business Architecture value.

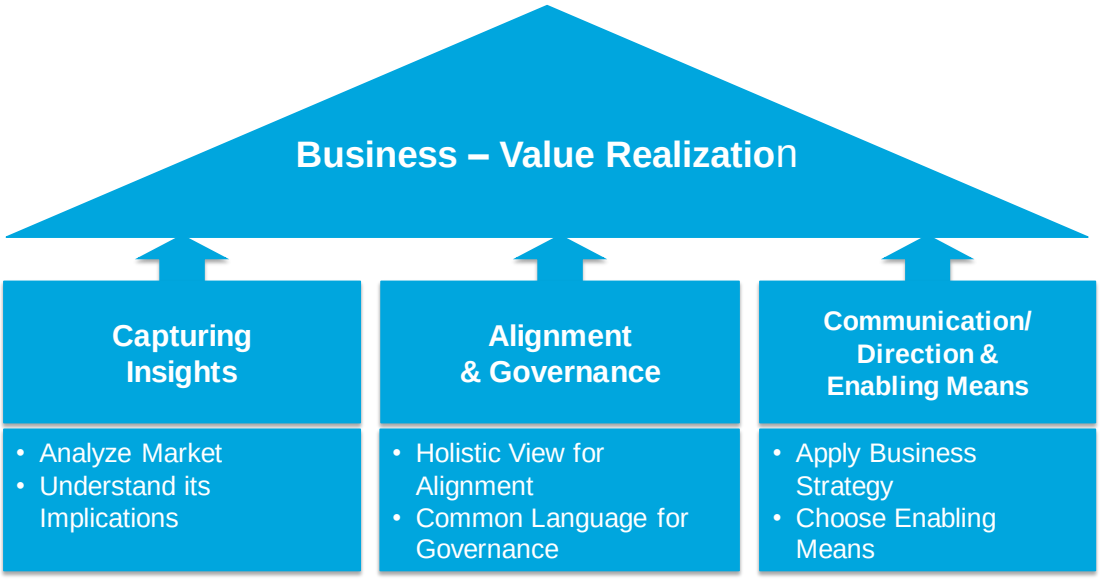


Figure 4: Business Value Realization

The process generates a flow of views that enable the alignment, governance, and communication of business needs and priorities. The views address the strategy domain, the structure domain, and the operational context domain. In the strategy domain key views are defined for decision-making: external vision, strategic intent, and strategic priorities. The Business Architect has a major contribution to all of these. However, it is assumed that he works in a team and collaborates with other disciplines.

The process should have certain properties. It must have a holistic view in order to guarantee alignment between domains, dependencies, and implications. It must adhere to the *five ways framework* (see Chapter 6) that describe the requisites in order to ensure the practice operates according to the discipline's thinking and working. It is recommended that a common language be used to facilitate consistent communication during the transformation.

- **Holistic view**: A holistic view is the complete set of descriptions of the business strategy, the business structure, and the implications of the strategy and structure for operations. The business strategy includes an external vision, the strategic intent, and the strategic priorities. It also defines horizontal dependencies that ensure strategic fit and vertical dependencies aligning strategy, structure, and operational context.

- **"Way of" fields**: Business Architecture practice has different aspects. The "way of" fields describe the different areas of the Business Architecture practice. The five-ways framework is used for its description: way of thinking, way of working, way of modeling, way of organizing, and way of supporting.

- **Common language**: A common language includes a set of defined concepts that are essential to the Business Architecture practice. An important feature of the common language is that it is integrated with the way of modeling and way of working. Consequently, it enables description of a holistic view, integrated analysis of operational

implications, and review of validity of the structure and operations against the business strategy.

Major deliverable categories are: external vision; strategic intent (including the value proposition, mission, business model, competencies and internal challenges); and strategic priorities on the different market segments, products, and capabilities.

3.2 Relationship to the TOGAF® Standard

This standard can be used with the TOGAF Architecture Development Method (ADM) during the ADM Phases highlighted in Figure 5. The reasons to use this standard in conjunction with the TOGAF ADM are as follows:

- The Enterprise Continuum provides a view of how industry architectures evolve and how these can be transformed into enterprise architectures. This evolution and the influence of new trends are an important aspect to understand what ambition should be adopted for the target architecture. These are typical aspects dealt with more explicitly than currently included in the TOGAF Version 9.1 standard.
- The outcome builds on and enhances the Preliminary Phase and Phase A. The outcome is a holistic view that shows alignment of business vision, strategic intent, and strategic priorities which has analyzed the implications for the business structure and operational aspects of people, process, technology, and organization.
- TOGAF ADM Phases B to D are focused on further architecture development, and the subsequent phases are focused on the transformation roadmap. This standard describes a more explicit and structured way to align and integrate strategy, structure, and operational context. It sets direction by explicitly describing horizontal and vertical dependencies and the coherency between all elements. As such, it sets context and direction for Phases B to H, and when required explicitly develops the transformation roadmap and transformation governance.
- From a content perspective this standard applies a common language that includes additional elements to those included in the standard TOGAF 9 Content Framework. The extensible content concept of the TOGAF 9 Content Framework, shown in Figure 6, can be used to add content-type elements. Most additions will extend the Motivation Extension.
- During the lifecycle there are iterations between the strategy, structure, and operational context. Market conditions or new ambitions may influence the structure or operations. However, new technology will also influence bottom-up the shape of the structure and in some cases lead to a complete change of the business strategy. Iterations will mostly take place between the processes at the first part of the lifecycle: develop ideas, create vision, and develop strategy and plan. These phases may have different iterations and decision-making periods in between.

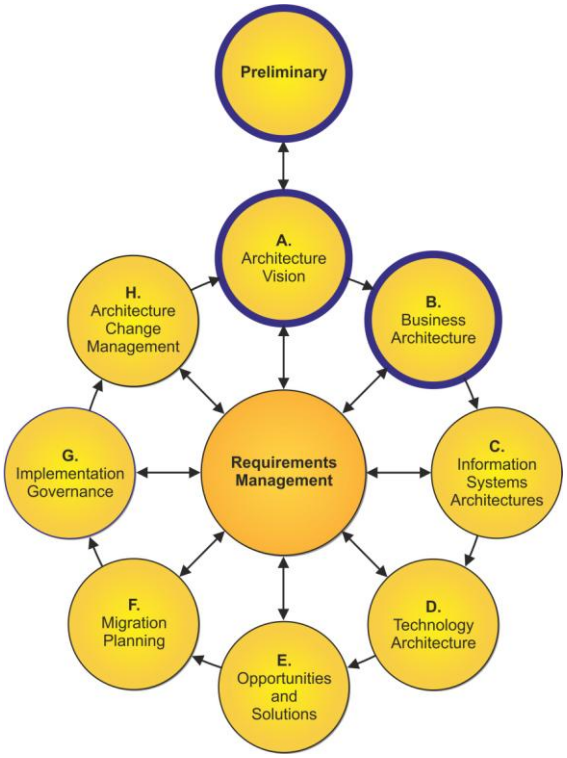


Figure 5: Decision-Making Phase of the O-BA Standard Mapped to the TOGAF ADM

Although the common language and way of modeling takes into account that representations are fit for communication throughout the complete transformation cycle, a handover model is needed between the decision-making and alignment phase and the development phase. Thus intelligence and consistency of the work during the Preliminary Phase and Phase A are not lost afterwards. In common terms this might be the transfer between the sponsor who was more interested to make the investment decision, and the design authority that is more interested in the design decisions. The common language ensures the consistent communication between those two roles because it is natural and predefined. Hence access to meaning of priorities or strategic statements is better accessible to all disciplines and managerial levels. A second coordination mechanism is the role of the Business Architect.[2] By embedding the role during all phases of the transformation lifecycle, consistent communication is also ensured.

[2] The role of the Business Architect and the competencies needed to perform that role are defined in the Business Architecture stream of The Open Group Open CA Certification program (see www.opengroup.org/openca/cert).

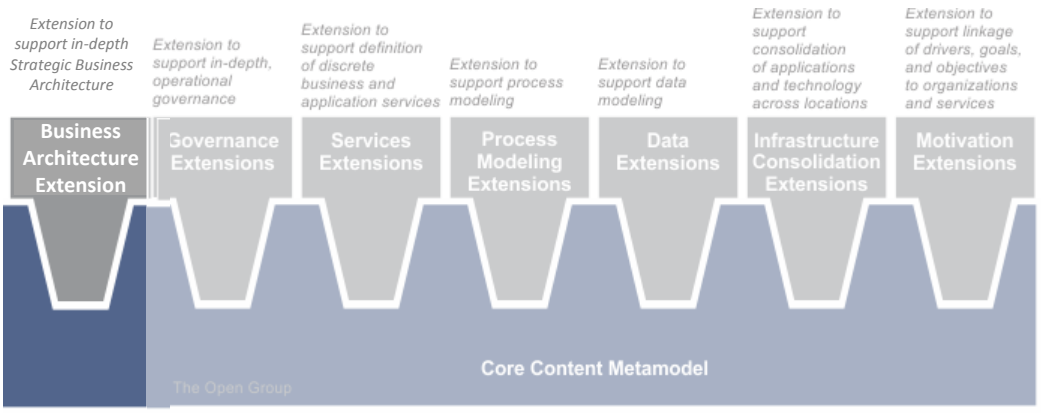


Figure 6: TOGAF Content Metamodel with Business Architecture Extension

The deliverables in this part of the standard are focused on decision-making. Hence their purpose is to inform about justification and why certain aspects are important. It enriches the current available concepts that are related to these aspects and links very well to concepts such as motivation, driver, principle, or goal, for instance. Many other concepts are defined in the common language (see Appendix E). They enhance communication and alignment between stakeholders.

4 Challenges Addressed by the Standard

This chapter describes common challenges with managing change and how the Business Architecture practice defined in this standard addresses such challenges.

4.1 Enterprise Context and Today's Challenges

Organizations are continuously in flux. New technology trends such as cloud computing, mobile computing, social media, big data, and the Internet of Things (IoT) cause changes that are strategic in nature and often require fundamental organizational changes. Besides these, smaller changes are needed to follow market or technology evolutions.

Structural and persistent challenges occur in enterprise transformations and in change initiatives. Historically, the aspects considered for large transformation initiatives have been as shown in Figure 7. However, many initiatives did not include all the aspects that need to be considered.[3]

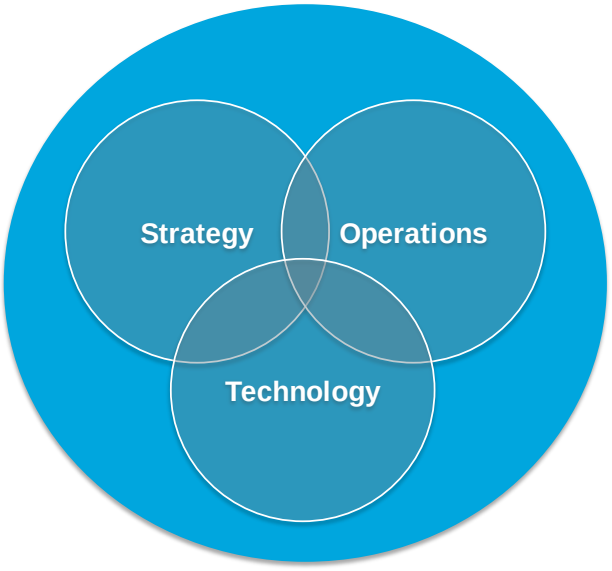


Figure 7: Major Aspects of Enterprise Transformations

In the domain of smaller change initiatives, the challenge has been to stay aligned with the overall strategy and the holistic view. Since such changes are numerous, they cannot all be reviewed by stakeholders as intensively as they should be, and higher-level management is often not involved. Moreover, priorities are not always easily communicated in larger organizations and the risk exists that the strategic intent is not well embedded throughout. Consequently, a risk exists of a growing disconnect between business strategy and operations.

The potential implications for value creation in organizations if not addressed properly can be dramatic as a consequence of the following trends:

[3] See the referenced IEEE Conference Paper: Defining the Business Architecture Profession, by Harry Hendrickx, et al.

- Time and location aspects can develop different meaning and value. This can make organizations irrelevant very quickly; for example, the disruptive competition that online bookshops brought to traditional booksellers.
- Cross-domain communication has a potential to decrease processing costs or throughput time due to accessibility of information and real-time feedback of market dynamics into the process, from any place, at any time. The trend of big data has reinforced this trend.
- Collaboration is increasingly more important than the traditional decision-making authority structures; information gaps and uncertainties in decision-making are now addressed through collaboration between partners and internally across processes causing a complete overhaul of traditional operations. Customers and consumers are also becoming increasingly part of the decision-making when matching need with fulfilment operations.

These trends can lead to new business models, disruptive change in processes and systems, or at a minimum a change of tasks and roles at the operational level.

Unexpected and sometimes costly implications can result from inadequate or inconsistent communication. It was found in practice as well as in academia[4] that stakeholders have difficulty defining boundaries for transformations. Also it was found to be difficult to capture and communicate business mechanisms and logic in a consistent way. Furthermore, the reality is that many stakeholders with different values and goals need to align to one common transformation vision, often with inter-dependencies between stakeholders that are implicit and difficult to handle. Finally, it was found that reductionism (seeking to reduce complexity to simpler forms) introduced risks for failure since generally enterprises have many multi-faceted inter-dependencies and inter-relationships.

Hence today's challenge is to capture and communicate a holistic view that shows the boundaries, is easy to communicate, and conveys the transformation vision in a consistent way throughout the transformation lifecycle.

4.2 Business Architecture Practices

The notion of business is: "*anything that relates to organizing the exchange of goods and services by a business, a governmental institution, or an agency*". And Business Architecture is defined as a: "*formalized description of how an organization uses business competencies essential to realizing strategic intent and objectives*".

The boundaries of the practice range from:

- Business understanding and business strategy to the implications for operations
- Large business transformations to small change initiatives
- Initiative ideas to deploying the target structure and operations

This standard supports and complements the TOGAF vocabulary with additional concepts for understanding, capturing, and describing Business Architectures.

[4] See the referenced Enterprise Transformation: Why are we Interested, What is it, and What are the Challenges?

Business Architects deal continuously with change and its implications cross-domain, in structures, and in operations. When change expands to becoming a transformation, two questions arise:

1. How to accomplish better alignment and governance between stakeholders
2. How to conduct successful transformations

The Business Architect plays a critical role in managing these challenges.[5]

In research and currently prevailing practice the Business Architect role has not yet been able to address aspects of business IT alignment. Moreover, technology trends – such as cloud computing, mobile computing, social media, big data, and the Internet of Things (IoT) – drive, for instance, disruptive industry innovations, mergers and acquisitions, and globalization and reinforce the need for an enhanced practice. This standard bridges that gap. It includes a holistic view to avoid the pitfalls of limiting the aspects considered in a transformation initiative. Alignment and governance are enhanced by explicitly paying attention to formalizing the description of the industry practices and strategy. Enhanced ways of traceability, way of working, and modeling aspects have also improved transformation processes. A summary of the key elements of this standard is provided in Figure 8.

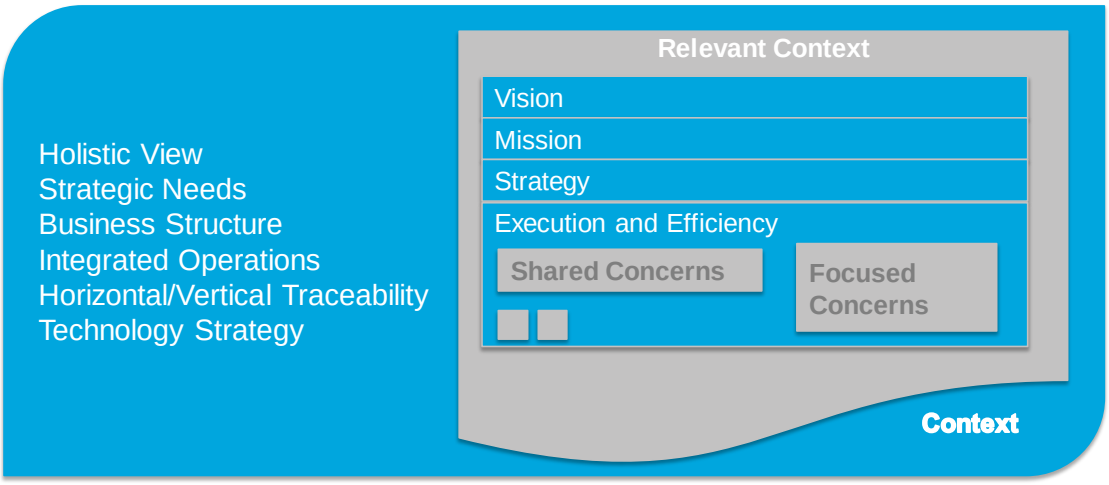


Figure 8: Key Elements of this Standard

[5] See the referenced Business Architect: A Critical Role in Enterprise Transformation, by Harry Hendrickx.

5 A Standard Business Architecture Paradigm

This chapter justifies and describes how Business Architecture is part of the solution and explains the requisites for successful transformational change and business cycles.

5.1 The Added Value of Business Architecture

The purpose of the Business Architecture practice is to resolve the challenges occurring during enterprise transformation and smaller change initiatives. As described in Section 4.1, the traditional entry points for transformations have been found to be inadequate for overcoming complexity and aligning business and technology.[6] A holistic view combining strategy, operations, and technology as shown in Figure 9 is key to achieving a resolution.

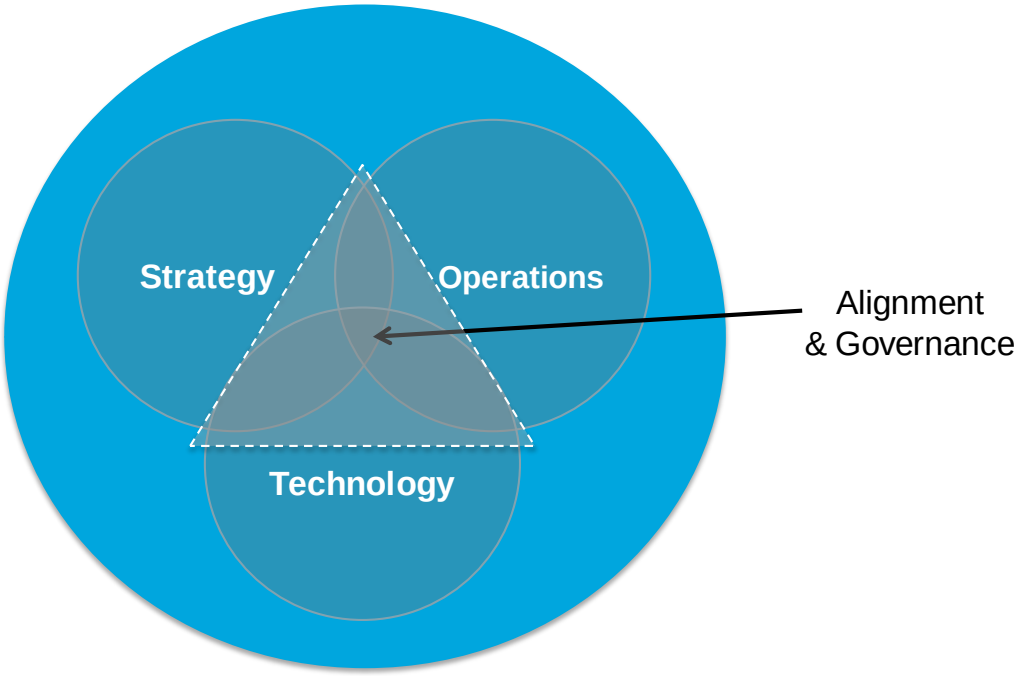


Figure 9: Open Standard Business Architecture within the Enterprise Ecosystem

The Business Architect generates insights into the implications of a new trend or market situation for a business. These are identified at strategic, structural, and operational level. Furthermore, the alignment and governance process is accommodated between stakeholders during the end-to-end change cycle by providing a formalized description, including a holistic view. And finally, the direction is set for new initiatives, and the means and outcomes critical in operations are communicated.

[6] See the referenced IBM White Paper: Actionable Business Architecture: IBM's Approach.

This standard can be used to create a transparent view of the anatomy of an industry and the strategic intent, enabling rapid evaluation and response to expected and unexpected market disruptions. The Business Architect is in a position to accommodate iterations between abstraction levels and feedback loops between legacy operations and strategy.

Specifically this standard provides:

- A strong **means for communicating** business strategy and needs to all managerial levels and disciplines
- **Consistent communication** of the holistic and traceable understanding of how elements fit together in business domains
- **A means to mitigate risks** through a transparent view of both the inter-dependencies between business entities and vertical view between strategy and operations
- **Stewardship of understanding business implications** caused by substantial changes in technology and/or environmental aspects

5.2 Success Factors

Business Architects and governance cannot exist without each other. The Business Architect provides reference of business needs and priorities for decision-making on transformation or changes. This is an aspect that has long been neglected since the emergence of information technology. The Business Architect develops insights on all aspects since he focuses on alignment, integration, and implications. He informs other team members involved in the transformation initiative how these elements need to be prepared for accomplishing the ambition and intent of the organization. Over several decades awareness has grown and lessons have been learned leading to the acceptance of the Business Architect role. This has resulted in understanding the success factors for dealing with large transformations.

Every organization needs a Business Architect, explicitly or implicitly. Over the past few years the number of positions has grown rapidly. Business Architecture is becoming more of an established function in many organizations, as reflected in the two MIT CISR polls.[7] Usually organizations deal with business analysts to develop solutions, but what is needed is a role to deal with the cross-border issues and alignment of the internal situation with the external situation. They are especially needed during the phase when investment decisions have to be prepared and made. Awareness of this is a first step, and hiring a Business Architect is the next step.

Other success factors are:

- Embedding the role in governance processes. They are most effective if they can do homework first, and then apply it many times at different transformation initiatives.
- Use a common language to remove ambiguity in the communication.
- Avoid project failure by engaging the Business Architect as early as possible in the lifecycle.

[7] See the referenced Architect Your Business – Not Just IT!, by Ross, et al.

- Ensure traceability from strategy needs to operations and cross-domain can be communicated easily.

By understanding all these aspects it is possible to define other key requirements of a successful Business Architecture practice.

5.3 Requirements of a Standardized Practice

In order to address the challenges of organizational transformations and change initiatives, the following requirements are defined in Chapter 1 for the Business Architecture practice and summarized below:

1. Common language to discuss, share, and communicate consistently the holistic view and business strategy (optional)
2. Vertical traceability between business strategy, business structure, and operations
3. Horizontal traceability between different parts of a business
4. Holistic view to ensure alignment of all relevant factors
5. Integration of the transformation process and the approach to ensure content preparation and decision-making are just enough and just in time

5.3.1 Remove Ambiguity by Using a Common Language

For unambiguous communication of business vision and strategy a common natural language is recommended; a *natural* language since the audience consists of many disciplines and management levels; and a *common* language since in a rapidly changing world iterations and feedback from operations to structural or strategic level are critical.

The common language ensures easier and better communication about implications of trends or events. This standard includes a set of concepts that constitute a reference for the common language. These concepts are explicitly defined and more importantly are *integrated* with the way of thinking, way of modeling, way of organizing, and way of working.

Natural language facilitates conversation of technical and non-technical stakeholders. However, with respect to information technology, more technical modeling techniques are required for translating business needs into information, application, or technology requirements. To achieve this it is necessary to complement the O-BA Standard with other architecture frameworks such as the TOGAF framework and visual representation notations such as the ArchiMate® modeling language.

5.3.2 Ensure Vertical Traceability

Vertical traceability ensures transparency and enables alignment and governance. This is summarized in Figure 10. It enables the analysis and identification of the implications of industry developments and business strategy for the business structure and operations. The concept "Competencies" is critical and provides a means to distribute strategic requirements over different parts of the business. The need for this concept originates from a long history of research dealing with the issue of how to communicate business needs and priorities.[8] It enables

[8] McGahan & Porter 1997; Prahalad & Hamel 1990; Daniel 1961; Gharajedaghi 2011.

a means for monitoring whether strategy is embedded in structure and operations. Once explicitly traceable, it also becomes possible to receive feedback from operations on the effectiveness of a strategy.

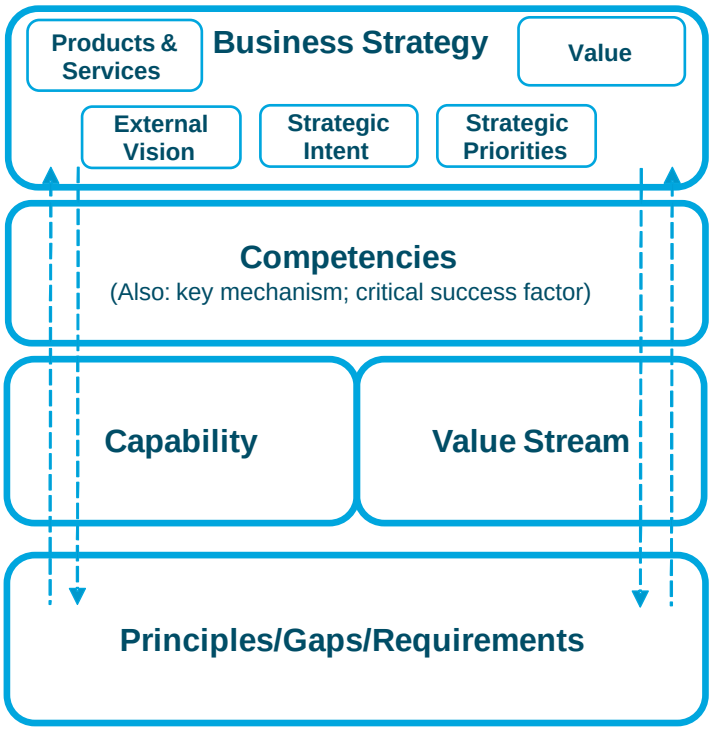


Figure 10: Full Traceability from Strategy to Resources[9]

5.3.3 Ensure Horizontal Traceability

Horizontal traceability, as shown in Figure 11, is needed to identify which elements must be included to adhere to a principle, or realize a competence or capability. Horizontal traceability is critical for understanding cross-domain dependencies and investments. Once horizontal traceability is followed, then strategic fit can be accomplished. Applying a competence – for example, "integrated social media for customer journey" – to business capabilities provides explicitly defined dependencies. These can be mapped to the value stream at a strategic level across the business cycle of innovating, producing, selling, and servicing. For example, tasks in one domain are required to enable the application of social media in another domain.

[9] Besides value streams with respect to IoT, it would make sense to position value network as a concept as part of the structure. However, that requires further alignment with the standard.

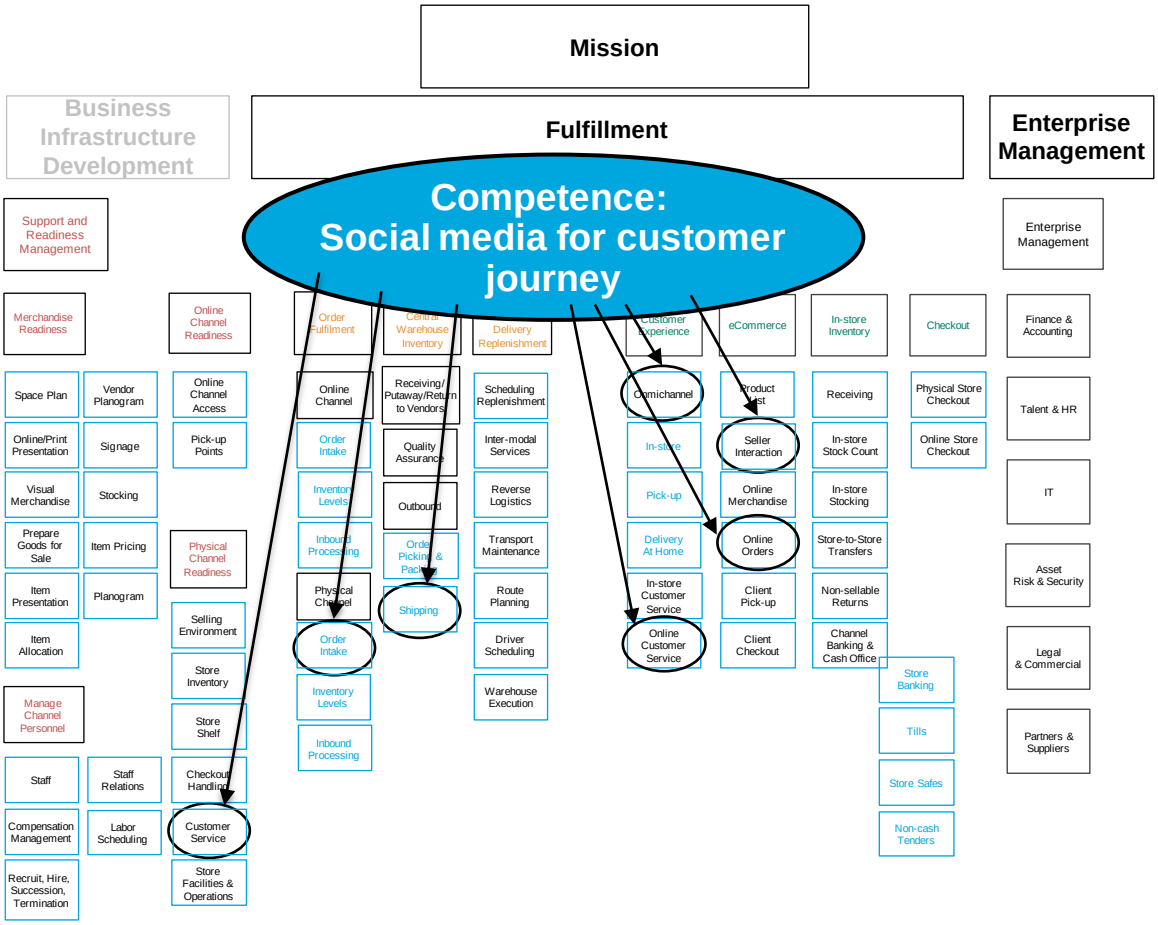


Figure 11: Horizontal Traceability Representing Strategic Fit

5.3.4 Generate Holistic View

A holistic view – with full integration of modeling and narratives in natural language – is required for communicating inter-dependencies and addressing the systemic nature of an architecture. A holistic view provides a means for communicating inter-dependencies in natural language. The competencies are a critical part of the holistic view, since a defined competence refers to the maturity level and the required outcome of performance. The holistic view consists of representations of the business strategy (including the required competencies), the business structure, and the operations, with predefined syntax. The holistic view is incomplete if one of these elements in not included.

5.3.5 Set Up an Integrated Practice

Timely development and easy access during the transformation cycle are critical and need to be managed explicitly. Integration of the transformation process with the Business Architecture practice is critical. At specific phases in the transformation process specific artifacts are required. This standard includes the artifacts that are critical for preparing and making investment decisions.

6 Business Architecture Framework

6.1 The Five-Ways Framework

The five-ways[10] framework is used in this standard to describe the standardized practice. It consists of the *way of thinking*, *way of working*, *way of modeling*, *way of organizing*, and *way of supporting*. It summarizes in a structured way the required activities and skills, positioning, approach and tools, engagement, and management techniques. A key aspect of the Business Architecture practice is its continued focus on the value created for the stakeholders.

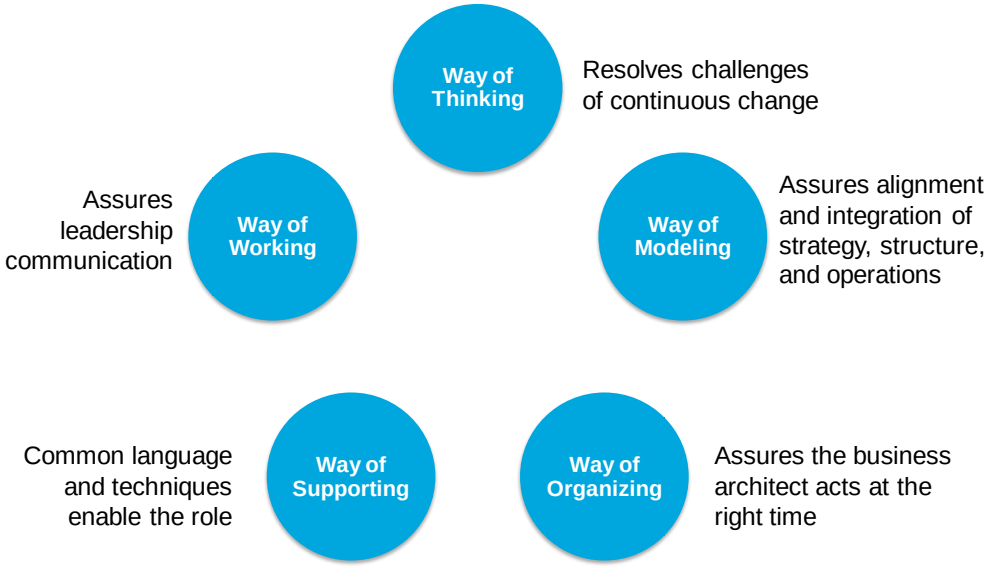


Figure 12: The Five Ways of the Business Architecture Practice

[10] See the referenced Analyzing the Structure of IS Methodologies, by Seligmann, et al.

6.1.1 Way of Thinking

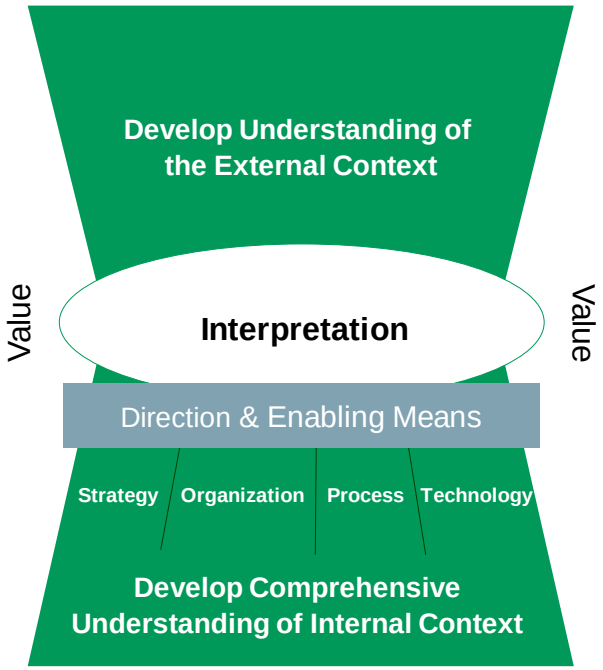


Figure 13: Way of Thinking: Practice and Purpose

The "way of thinking" is the essential assumptions and beliefs about an area of concern and what it comprises. In this standard, the areas of concern are business change, the processes involved in the change, the actors and stakeholders involved, as well as communication between stakeholders. Areas of concern also include the external context, stakeholder varying insights, assessment of implications, and guidelines and principles in the strategic, organizational, process, and technology domains.

The Business Architect has to resolve several categories of these concerns. They are focused on extracting actionable insights and have to align external developments with the internal situation, and subsequently accommodate the related process of alignment and governance. They assume that the business external context and internal situation are inter-dependent. They need to focus on the content as well as the process that is required for decision-making. Their holistic view accommodates the alignment and governance processes. Inter-dependencies are the challenge, as much as consistent communication of the understanding, insights, ambition, and priorities.

An essential assumption is that it is valuable yet complex and risky to deploy new strategies and run large transformations. A lot of the complexity and risk resides in the inter-dependencies between the moving elements, like processes, data, and IT implications. The competitive edge is achieved when new strategies are orchestrated through structures, processes, and technology that in normal circumstances have their own individual management, goals, and operations. The belief is that through purposeful and systematic design the Business Architect can provide guidance that can reduce complexity and avoid risks.

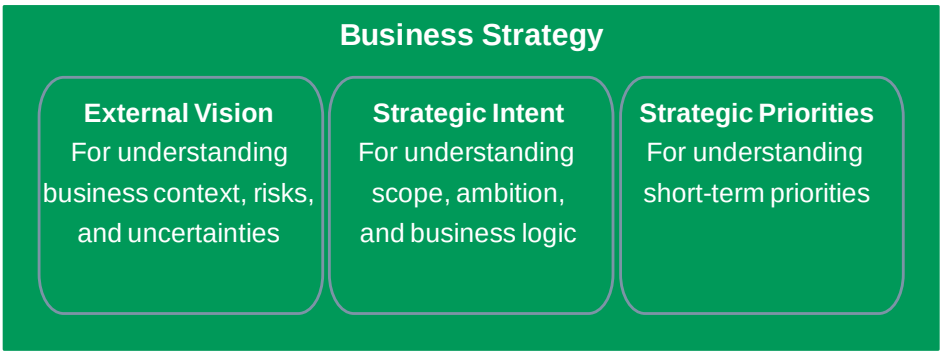


Figure 14: Key Factors that Shape a Business Strategy

When it concerns change, the Business Architect provides the context of change and sets direction. In both larger and smaller initiatives it is most effectively done in an embedded role; i.e., where the Business Architect is involved early in the processes of initiative development. Typically these processes concern "shaping the idea", "assessing the viability", and "assessing feasibility". The value of the Business Architect is to capture and represent the strategy and technology situation and then to assess and communicate the implications of strategy and technology upon structure and operations.

Three factors are included during analysis and capture of the business strategy (see Figure 14): external vision, strategic intent, and strategic priorities.

The first factor to consider is reviewing the external context of the enterprise or change area. This may relate to the industry, society, regulations, or geographies; current thinking in sectors (trending topics in a sector; e.g., current financial sector about remuneration) as well as state-of-the-art technology are relevant. Then interpretation and deriving what it means for the stakeholders is captured in the external vision.

Subsequently the Business Architect should think through and capture from stakeholders how these external factors and executive ambition are connected to the current situation and the aspirational strategy. This is captured and represented in the strategic intent. This includes, for example, the business model and the key competencies to accomplish the aspiration.

Then the result of the first direction-setting tasks can be set in motion through setting strategic priorities, often shown by setting objectives for the implementation aspects. This is the third factor to consider in the strategy implementation.

These factors inform stakeholders about the longer-term and the short-term priorities for keeping the organization in shape. Since these insights have been transformed into actionable insights, finally the Business Architect can analyze the implications of the strategy for the business structure and operations.

6.1.2 Way of Working

The "way of working" includes the areas of concern, the deliverables that address them, and the flow that leads to a resolution. Systematic design focuses on the coordination of business elements to address transformation complexity and risk.

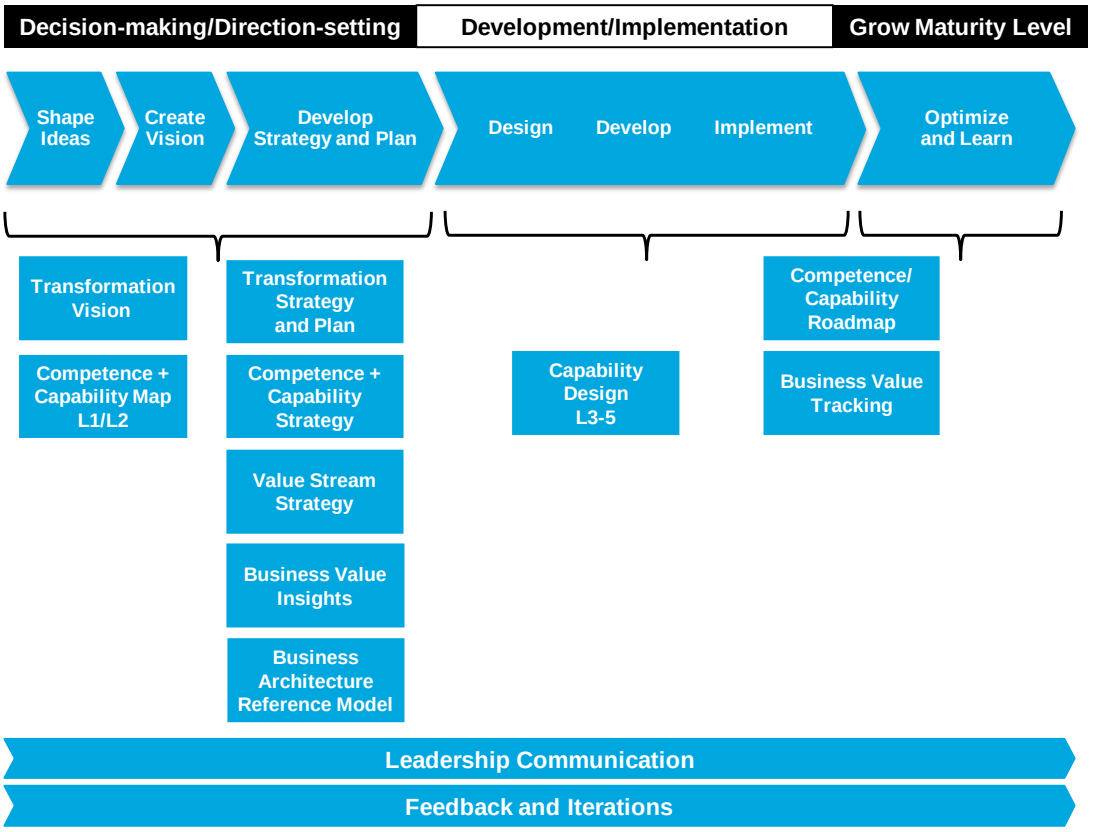


Figure 15: Way of Working: Practice and Purpose

The areas of concern and deliverables that need to be addressed are:

- **Assuring integrated leadership communication**: Communication is one of the major concerns for Business Architects. Therefore, they apply a common natural language. Recommended concepts are defined and can be included in the analysis. Natural language is applied because then it is easier to explain to any discipline *without having been educated in a specific discipline*. A key view is the vision description according to a prescribed syntax.

- **Creating the holistic view**: All views are needed to create the holistic view. The holistic view consists of an external view of the market, the strategic intent of the board and executive management, the strategic priorities, the business structure, and the integrated view of the operational context. And their inter-relatedness. Description of the holistic view provides clarity on the implications of the business strategy on structure and operations. The holistic view is an integrated part of the transformation vision, strategy, and plan. With strategic principles the business logic is described. A competence map is created to communicate the critical success factors needed to accomplish the strategic intent. Internal challenges are identified to communicate what participants should address. Strategic priorities – usually expressed as objectives for specific domains – are defined to communicate the kind of actions required in the short term. These elements – insights from the external vision, strategic intent, and strategic priorities – can then be applied to the business structure and operations. However, before doing that, a decomposition of the industry architecture in business capabilities and value streams is indispensable. Strategic requirements can then be linked to a business capability, linked to value streams, and hence applied to operations. Thus, an integrated view can be composed through the lens of

a business capability where strategy, enabling means, processes, ambition, and organizational aspects shape operations. The integrated view is represented in an organization-specific Business Architecture reference comprised of the set of views and viewpoints described in Chapter 7, which can serve as the means for consistent communication throughout the lifecycle.

- **Assuring feedback and iterations**: Iterations are applied between the three abstraction levels: strategy, structure, and operations. Since it is rare that architectures are developed in a green-field situation, strategy and internal context are important. A feedback loop should be integrated in the practice to accommodate continuous change during the optimize and learn phase of the architecture. The feedback loop goes to the shape idea phase.

6.1.3 Way of Modeling

Addressing stakeholder concerns is an important aspect of modeling. Modeling creates transparency and ensures integration. It also ensures the intent becomes embedded in the structure and operations. Modeling in Business Architecture has two aspects: syntax of narratives and modeling elements for visual representation. Four modeling requirements have been defined to comply with the way of thinking: vertical traceability, horizontal traceability, aligning at each abstraction level specifically (strategy, structure, and operational context), and setting overall coherence. These are shown in Figure 16.

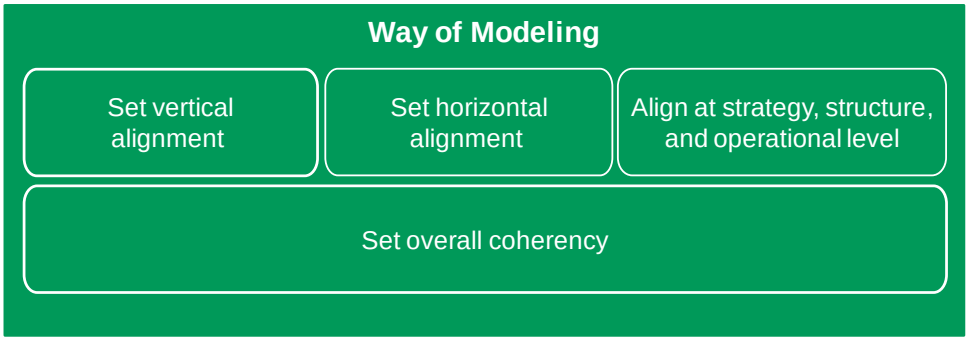


Figure 16: Way of Modeling: Practice and Purpose

To deal with complexity the Business Architect integrates and aligns the elements of a business at three levels horizontally: strategy, structure, and operational context. There are several approaches to accomplish this**.**

- At strategy level the architect integrates the external vision, the ambition/intent, and the short-term priorities (see Figure 14).

- At structure level the relationships between functional domains and specific business capabilities are derived from strategic statements. The structure can be captured in different ways. Common practices are representing it as a hierarchy or grouping it according to governance domains like direct, control, and execute. As an example, the level in the hierarchy shows the business importance of a certain business capability. It inherits requirements from higher-level capabilities and imposes requirements at lower levels. Inter-dependencies are also identified at structural level.

- At operational level the integration is achieved by applying strategic statements to determine the expected quality of the output. Implications of applied strategy and structure

are identified through analysis of controls, enabling means, input, output quality, and inter-dependencies.

Natural language facilitates conversation of technical and non-technical stakeholders; however, more technical modeling techniques are required for translating business needs into information, application, or technology requirements.

For consistent communication, language and representation techniques shall be integrated. The Business Architecture practice applies a common language for representing aspects that must be integrated with visual representation techniques. Many concepts in addition to the TOGAF concepts have been defined in the common language (see Appendix E) for capturing and representing the anatomy of the strategy domain and the relation between strategy and other levels of abstraction.

Cross-domain dependencies shall also be made explicit. The Dependency Network Diagram is a well suited artifact for describing and analyzing cross-domain dependencies. Figure 17 shows an example of how the dependencies can be described and communicated. For dependency definition, Business Capability 1 cannot accomplish its goal without receiving Service 2 and 3. Service represents the relationship between the capability entity and the consumer; in other words, the value for the consumer. Furthermore, it articulates the inter-dependency between Business Capability 2 and Capability 1 and 3, respectively.

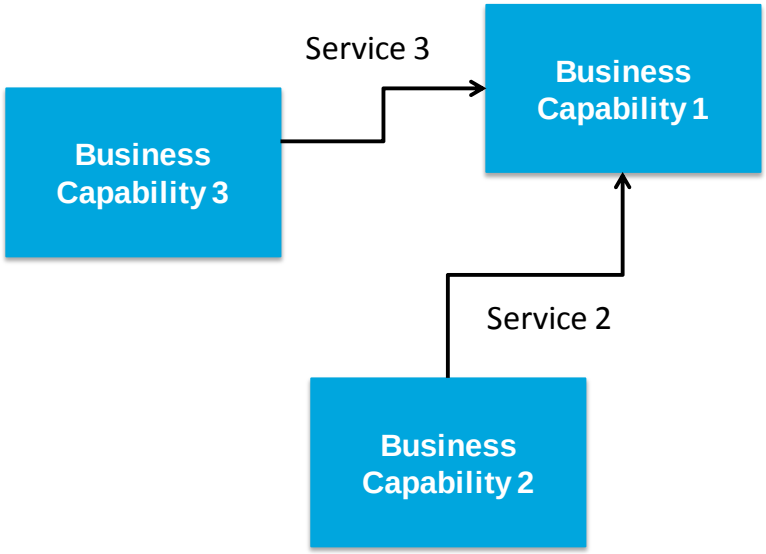


Figure 17: Dependency Network Diagram

It is important to use a separate way of modeling between the stable business aspects based on the business mission and the dynamic aspects based on the intended transformation. The stable aspects characterize the type of business, type of production, type of marketing, accounting, human resource management, etc. This stable part structures the business and the capabilities to realize the business (e.g., application packages). The dynamic part defines the qualifiers (quality criteria) of the stable part and gives them their business value. For competitors in the same business the stable part is the same, but the dynamic part defines the difference (competitive edge). So the dynamic part sets the parameters for all aspects of the organization, whereas the environmental conditions and applied business technology shape the foundational structure of the business.

If a partner of the company has better capabilities to realize specific parts of the business, a decision can be made for outsourcing. The accountability remains with the business owner based on the stable part; the responsibility is transferred to the outsourcing partner. A complete description of how to elaborate vertical traceability will be shown in Part II and Part III of this standard.

Once all the above approaches are applied, it is referred to as the holistic view of the organization's architecture with the following components: integration of external vision, strategic intent, and priorities; the business structure elaborated; and all relevant aspects are aligned in relevant capabilities. Figure 18 provides the structure of the holistic view. All the strategic questions shall be answered. The structure shall be represented in capabilities and value streams and the implications for structure and operations shall be explicitly identified. The operational context describes all aspects that are relevant for operations but still implementation-independent. Hence the operational flows still need further elaboration by designers.

See Figure 18 for all aspects that should be included for the holistic view. Thus it becomes an integrative device.

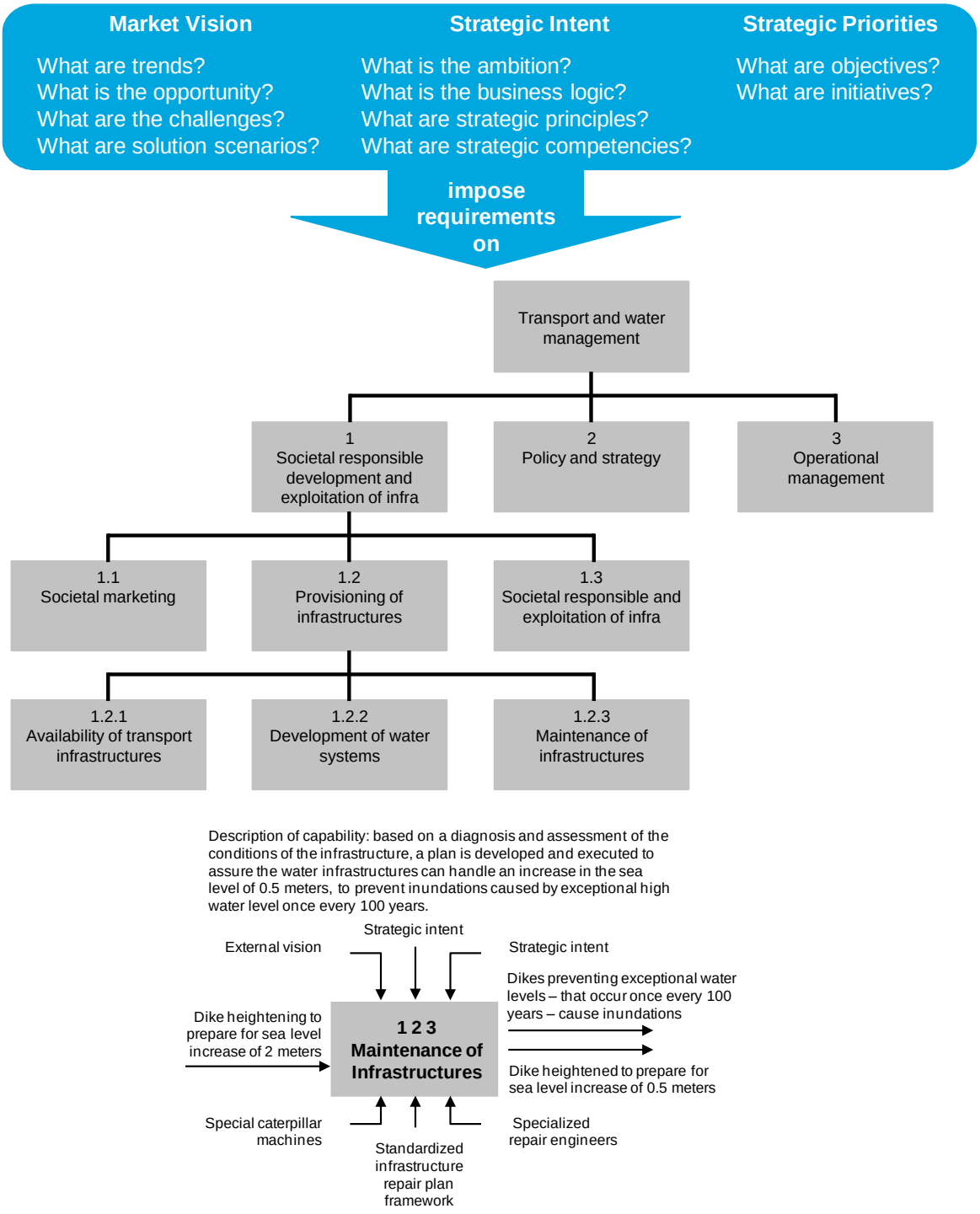


Figure 18: Composition of Holistic View

6.1.4 Way of Organizing

The "way of organizing" refers to the management of involving, practicing, and applying the practice. The purpose of the way of organizing is to ensure the Business Architect acts at the right time in the transformation and business lifecycle and can do this effectively.

Effectiveness of the Business Architect capability depends on how it is integrated in the transformation or change process. Business Architects must be involved when the enterprise transformation process starts. This enables the Business Architect to gather insights relevant for the topic so that unexpected problems can be avoided. Ideally this should be undertaken immediately after a strategy has been developed.

As a rule of thumb, Business Architectures are developed by strategy. Hence, most work will arise when a new strategy has been developed. As long as that strategy applies, the Business Architecture will monitor and adapt according to the evolution within and outside the organization. It can then be applied many times at large or small initiatives. It only has to change if new insights arise, or the strategy is amended. It is the responsibility of the Business Architect to manage the insights and thus the Business Architecture. The Business Architecture artifacts, the transformation process, and the governance processes need to be closely aligned.

To ensure this "good" practice is realized, management needs to be aware of this role, and act accordingly. Ideally there should be a permanent role of Business Architect embedded in organizational processes.

6.1.5 Way of Supporting

The "way of supporting" includes techniques with which the different parts of the holistic view can be represented. The purpose of *supporting* is to provide the Business Architect with the means to enable the practice to operate efficiently. The ways to support Business Architecture practice include:

- A common natural language for communication with a variety of stakeholders: The practice adopts a list of well-defined concepts that are aligned with each other. The application of these concepts guarantees alignment with each other and ensures consistency.
- Provision of tools for creating and maintaining views: This standard facilitates with several modeling techniques. Also commercial tools are available and some provide a predefined metamodel for architecture practice. The list of concepts as defined in this standard is important for consistency and completeness of the architect's work. Therefore, in practice it can be expected that alignment is needed between the applied language in these commercial tools and the proposed language by the standard.
- Application of industry standards reflecting technology trends and situational environmental aspects: Several industry standards exist already (e.g., eTOM™ from the TM Forum,[11] Banking Industry Architecture Network (BIAN™) for the financial sector, Exploration & Mining Business Reference Model[12] for the mining industry). These reference models provide a reference for the structure of the prevailing industry practices. They accelerate development of a Business Architecture reference for a specific enterprise or organization.
- Integration of the role into processes and organization: The role of the Business Architect may be embedded during business planning, commercial processes, and/or transformation

[11] See the referenced Frameworx from the TM Forum.
[12] See the referenced Exploration & Mining Business Reference Model. This Standard explains the concepts and definitions within the Exploration & Mining Business Reference Model – the first reference model delivered by The Open Group Exploration, Mining, Metals, and Minerals (EMMM™) Forum.

planning and transformation design. The role may be involved at different phases in the industry value chain.

Figure 19: Way of Supporting: Practice and Purpose

6.2 A Common Language for Unambiguous Communication

One of the purposes of Business Architecture is to address structural challenges in enterprise transformations, both large and small initiatives. These challenges are all in one or another way related to communicating, discussing, and maintaining priorities. Communication issues arise from different managerial levels and disciplines with differing views and perceptions. And, on top of this, selective perception disturbs communication.

Adoption and use of a common language implements three mechanisms to resolve these issues. The common language provides an effective organizational mechanism in three different situations:[13]

- **A mechanism for communicating priorities and needs**: The number of management levels and disciplines grows quickly during transformation lifecycles. Also the delay – for large transformations up to several years – between need assessment and its application causes problems. Inconsistencies arise from re-interpretations from executive-level statements by lower-level management and from re-interpretation when proceeding with a new phase. Therefore, a language is created that can be carried forward without re-interpretations and seamlessly fits in the adopted modeling techniques.
- **A mechanism for decision-making**: Executive managers have different views and selective perception. For setting direction, alignment is needed. A controlled predefined set of concepts about the market, the company ambition, and the investment priorities facilitates multi-stakeholder conversations and their decision-making. It accelerates execution of transformation initiatives since it prevents unnecessary meetings due to misunderstandings. It also avoids "artistic-design" during the cycle, and facilitates a more systemic design and implementation;
- **A mechanism for iterations**: Executive management has limited information and often little time or budget to gather information in case of uncertainties. Besides this, the environment and technology change and cause dynamics in current processes. There is a constant flux. Hence executive management needs to have feedback loops and iteration for assessing implications. The common language ensures vertical and horizontal traceability, which enables quick assessment of implications of feedback.

This standard defines the set of common language concepts shown in Figure 20 (see Appendix E).

[13] See the referenced Business Architect: A Critical Role in Enterprise Transformation, by Harry Hendrickx.

External Vision	Strategic Intent	Investment Priorities
Vision	Mission Statement	Objective
External Factor	Strategic Principle	Customer Segment
Assumption	Competence	Marketing Mix
Belief	Ambition	Position
Constraint	Internal Challenge	Timing
Opportunity		Customer Approach
Principle		Strategic Capability
Brand		Partner
External Challenge		

Figure 20: Overview of Common Language Concepts

6.2.1 The Nobel Prize Case Study

The common language defined in the standard is derived from the Nobel Prize Case Study. The purpose of the case study was to pilot the use of common language within a simulated Business Architecture practice. The case study was based on the Nobel Prize organization.

Two streams were adopted within the case study simulation: one common language-based and the other modeling-based. Each stream had to cover four domains:

1. External context
2. Customer needs *versus* offerings
3. Strategic direction
4. Structure (based on state-of-the-art technology)

For each domain, concepts were agreed and, during the simulation, the technique of listening and seeking clarification was used to overcome any misunderstanding. Although the team members came from different disciplines, they were able to easily create and agree on their own controlled common language. Each stream had to describe the properties of the business of the Nobel Prize organization, and then had to explain the Business Architecture description to the other participants. The explanation of an applied concept appeared to be sufficient to understand each other. The explanation then becomes the controlled common language. It appeared that the properties of the Nobel Prize organization's Business Architecture could be easily explained between participants from different backgrounds.

After having done this, the case study concluded the following: stakeholders were allowed to bring their own controlled vocabulary and this did not hinder the process; if controlled common natural language is used to capture vision, ambition, and business strategy, meanings are more important for effective communication than words; the controlled common language was effective to filter unstructured information. The language is controlled by setting rules for deductive and inductive reasoning. Consequently, requirements of processes and IT become visible and traceable and it was concluded that controlled natural language accelerates sharing properties.[14]

[14] See the referenced Nobel Prize Case Results, by Harry Hendrickx.

7 Business Architecture Views and Viewpoints

Three views are required by this standard:

1. Strategy view
2. Structure view
3. Operational context view

These are directly derived from the thinking and success criteria defined in Section 5.2. The views should be prepared for integration in order to leverage each other. Failing to produce one view decreases directly the value of the Business Architect contributions.

The three views above are related as follows:

- Vertical traceability representation of dependencies between strategy, structure, and operational context views informs about the resource requirements. It can be applied both bottom-up when changes occur in its elements, or top-down when the strategy changes.
- Horizontal traceability should be used to represent dependencies between business capabilities. Key competencies and capabilities inform about cross-domain dependencies. This can be used to ensure strategic fit based on defined competencies and capabilities.
- The Dependency Network Diagram is a technique that illustrates a structured description of the dependency between two business capabilities or competencies. These dependencies are also referred to as business services between two business capabilities.
- A common language is applied to provide a mechanism that relates artifacts of the different domains to each other unambiguously. Statements in the strategy domain have a defined relationship with the structure and operational context domains. The vertical and horizontal traceability mechanisms ensure the implications of business strategy can be explained explicitly. Thus, the integration of narratives and modeling techniques is possible.
- Real life is not static; neither is business. Hence, a mechanism is needed to deal with this. The common language has embedded concepts that give a qualification to the certainty or uncertainty of needs. A dynamic view can be maintained because the vertical dependency and cross-domain dependencies have been identified and can be monitored as reinforcing or balancing mechanisms. Qualification of statements that belong to the categories' insight, assumption, or belief are included to provide an understanding of where leadership priorities originate and how they may be affected by societal or technology developments over time.

Altogether the deliverables developed in the three views represent a holistic view of the enterprise and the challenges ahead. In summary, the following views should be included:

- External vision, strategic intent, strategic priorities

- Structure description business capability overview, including horizontal and vertical traceability
- Operational context and implications for the change area

7.1 Critical Views

The properties of each view are described in the following sections. The definition of specific concepts of the common language are given in Appendix E.

7.1.1 Strategy Views

- Strategy views should be narratives to express the external vision, strategic intent (including business logic), and strategic priorities. Each of these categories shall be included. The strategy domain is well described when the three fields of the strategy domain are completed.
- The *external vision* is to be summarized in a predefined syntax to communicate the market situation and its interpretation by the enterprise.[15] This shall be included for a concise and consistent communication of the major insights in an industry and interpretation of its implications and the goals of the organization. Internal and external challenges shall also be included in this summary.
- The *strategic intent* shall be included. This includes representation of the ambition level, the mission statement, the strategic principles expressing the business logic, and contributing competencies. It conveys the key mechanisms for accomplishing the business outcome.
- The *strategic priorities* shall be included. For each business aspect (e.g., customer, market, products/services, and capabilities) priorities shall be set. These convey actionable objectives and set the organization in motion for accomplishing the strategic intent.
- A *competence map* shall be included. This informs about the maturity level that is needed to accomplish the strategic intent. Competencies clarify the organizational experience, culture, and maturity level required to operate a capability effectively and to contribute to the strategy.

7.1.2 Structure Views

- The business *capability map*[16] shall be included. It informs about how business capabilities are arranged, and if represented as a capability hierarchy allows for assessing vertical and horizontal dependencies. It is a decomposition of the mission of the enterprise. It describes the key pieces of added value that has to be included to make the organization work according to its strategy. Usually the structure is decomposed from Level 0 (mission statement or alike for a business unit or department) to Level 3.
- A *value chain* displays the total value produced for the end-user and consists of value activities and margin. It is the industry view of the major steps in producing products and

[15] A predefined syntax provides a prescriptive structure of the description of artifacts. This serves to communicate more easily between the different disciplines.
[16] A capability map may be represented in different ways. In this standard an example is shown in Section 7.3.1 of a capability hierarchy.

services. A value stream can be used to describe the highest-level structure of the key process flows that need to be included to communicate the Business Architecture.

- *Competencies* represent a system property that is required to emerge from the business system. It resonates with long history expressed in a need to have good concepts for expressing what the features of a business system need to have to accomplish its ambition. Other similar concepts have been proposed: Key Mechanism (McGahan & Porter 1997), Core Competence (Prahalad & Hamel 1990), Critical Success Factors (Daniel 1961), and System Values (Gharajedaghi 2011). Business capabilities convey requirements of the solution structure and its contribution to the higher-level goals. Both are key for communication of the transformation vision and strategy.

7.1.3 Operational Context Views

- An *operational context view* for integration of all aspects at operational level. It is used to apply in a structured way all business imperatives derived from strategy and structure at the operational level.
- A *business service* is the value of a capability that enables the fulfillment of the need of a service consumer. The capability conveys the goal or contribution of a capacity in the system.
- Enabling means contribute to the accomplishment of the goal and performance of a business capability. Information services, application services, and technology services may be involved in the execution of a business capability.

7.2 View: Strategy

7.2.1 External Vision

The purpose of this view is to control the content of a vision. After having worked through all the concepts in the business strategy domain, the external vision provides a summary of the logic that has been applied to understand the external and internal challenges of the business. These set direction for the implementation of that strategy.

Although this view can only be completed when the other artifacts of the strategy have been produced, it is critical for the holistic view since it sets direction for shaping the business structure as well as the operations. When working through the external view of an organization it is also the view that it is recommended to draft upfront and to refine while working through the other views of the strategy domain.

Several external aspects need analysis for better business understanding. First of all, the industry and the products and services that the company wants to provide. The nature of products has a big impact on the technology and how the industry is organized. Also government regulations and society dynamics need to be included. Besides the technology of the industry itself the trends in information technology have a big impact on the way business is conducted. Analysis of these aspects precedes the summary of the external vision that relates the external situation to the company's situation. The task of the Business Architect is to capture the results of the analysis or the insights from executives and senior leaders, and not to perform these himself. The Business Architect analysis focuses on the dependencies and implications of the external vision.

The syntax in Figure 21 is used to summarize the external vision.

*Considering the <**trend**(s); **event(s)**>, and the following <**assumptions**; **beliefs**; **insights**> the organization identifies an <**opportunity**; **threat**> to build a successful business with the following <**business logic**> and <**mission; ambition; priorities**>. However, to accomplish this aspiration the following <**external challenges**> and <**internal challenges**> have to be addressed.*

Figure 21: Syntax for External Vision

The summary is applied to communicate to all managerial levels and disciplines involved what the organization's challenges are, and where they come from. This gives an immediate understanding of the business situation and can be consistently communicated or adjusted.

Statements of each concept will potentially have an impact on the business logic or key competencies. Matrices can be used to convey or assess the impact on strategic elements. It can be done once, maintained, and re-used in every initiative as long as the strategy and technology do not change too much.

7.2.2 Strategic Intent

The purpose of this domain is to capture the intent of the owner and/or the executives of an organization. Ambition sets the scene. The mission sets the boundaries. The strategic principles and competencies communicate an understanding of how the strategy and goals are accomplished. Often these can be derived from annual reports or investor presentations. From government departments and agencies these are often included in political statements. Narratives and representations are utilized to capture and communicate the intent and business logic.

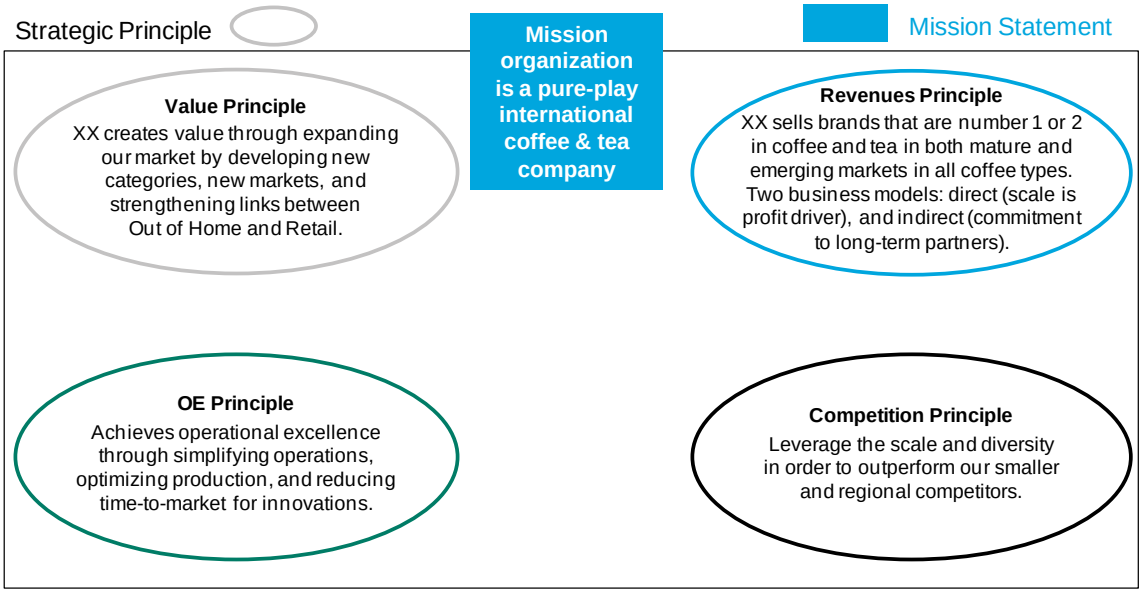


Figure 22: Example Representation of a Mission Statement and Business Logic

The strategic principles are expressed in four statements. These are "principles" because they shape the structure and operations of the business in every aspect. They show how value is created, revenue is generated, competition is dealt with, and operational excellence is achieved. The mission and strategic principles have direct influence on the shape of the business structure. The principles also have direct impact on certain capabilities. In matrices these can be identified and communicated. Dependencies can be identified between strategic principles and

competencies. These can then be transferred to visualizations of the capability map to demonstrate the structure.

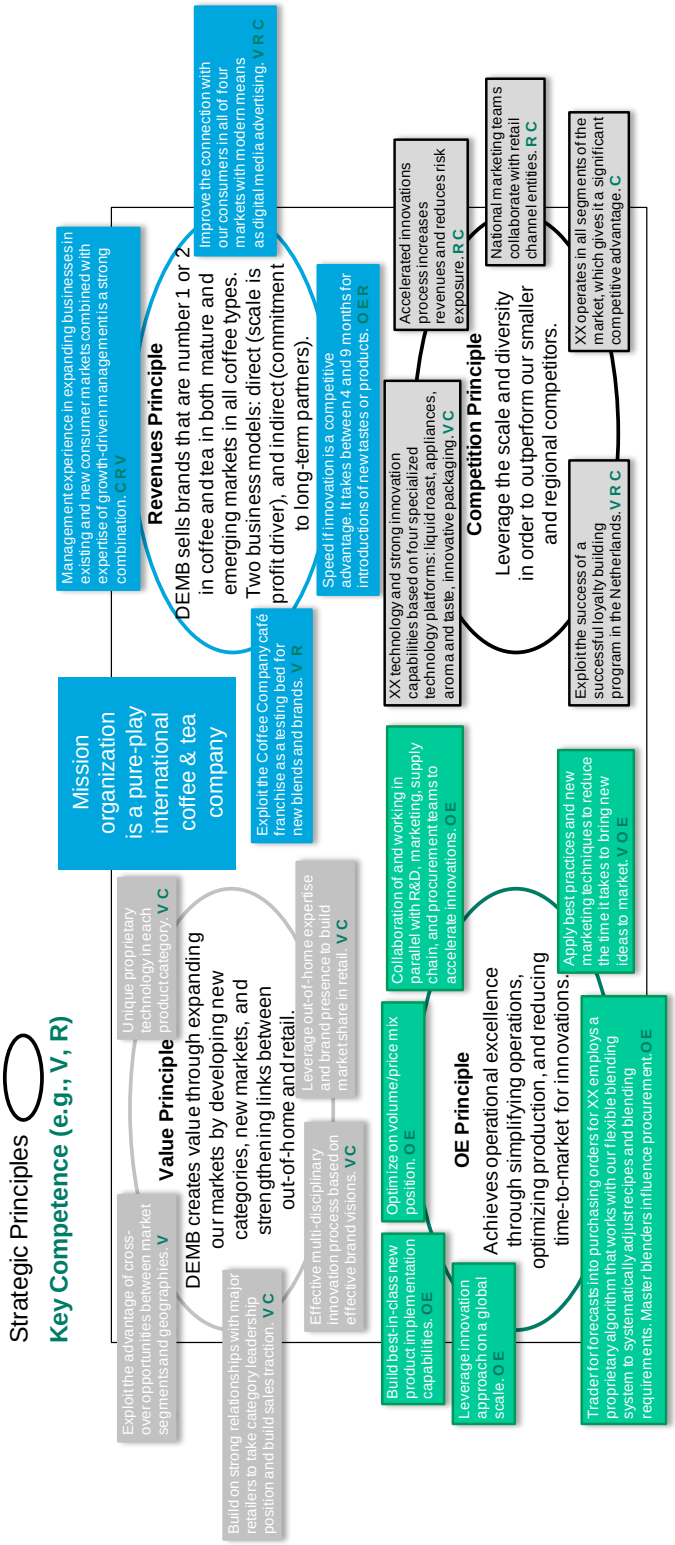


Figure 23: Example Representation of a Key Competence Map

Competencies inform about how the leadership believes business outcomes can be accomplished. Competencies contribute to the accomplishment of one or more strategic principles and may reinforce or balance each other. Those aspects can be captured in business policies.

Furthermore, key competencies are indispensable for both horizontal and vertical traceability. Vertically, competencies inform about how strategy relates to business capabilities. Horizontally, competence statements inform about the inter-dependencies of business capabilities. Matrix representations of dependencies are a useful aid to communicate this strategic core between management and disciplines. For visualization, these can be represented by the Dependency Network Diagram syntax.

A competence map identifies the major needs of the business. A strategic assessment (e.g., main competitive competencies) and maturity assessments are useful for setting direction and short-term priorities to prioritize initiatives. These set direction for short-term priorities.

7.2.3 Strategic Priorities

Competence descriptions indicate the quality levels of competence maturity and contributing capabilities. From these, the executives determine which strategic priorities provide guidance for the shorter term. Priorities – captured by the Business Architect – should be conveyed by business objectives as regards different business aspects; e.g., products/services, channels, marketing strategy, governance (centralization/de-centralization), partners, internal/external sourcing of capabilities, and enterprise architecture. They give guidance during operations without middle management having to make an analysis or decide with uncertainty or incomplete information.

Priorities inform about the short-term fit or implications of structure and operations. Priorities in the form of objectives, principles, or policies can be applied to business capabilities and inform about how to shape operations for accomplishing that business goal. Objectives are conveyed in statements that have the following properties: specific, measurable, accepted, realistic, and time-dependent.

7.3 View: Structure

7.3.1 Capability Map

The business strategy sets direction for shaping the business structure and operational context. Competencies are a key concept to communicate the business needs. The mission statement defines the boundary of the business. It provides an answer to the question: "which products or services are delivered to which customers at what quality?".

The state-of-the-art technology and environmental context of these products and services determine the shape of the industry structure independent of the organization's strategy (or governmental organization structure). The industry structure remains constant for as long as the technology and environmental aspects do not change. However, trend shifts or dramatic change in society or regulations may have a structural impact and change the industry structure. Companies that do not follow these structural changes could become irrelevant. This shows the importance of understanding the external vision and strategy intent for the Business Architect.

When the organization's strategic intent and mission statement are applied to the industry structure, the reference business structure of the enterprise appears.

The mission statement can be decomposed into capabilities. Each capability expresses a required capacity to produce added value necessary to accomplish the mission. Usually a decomposition up to a hierarchic Level 3, incidentally to Level 4, is sufficient to describe the business from an architecture perspective. The strategic intent is a determining factor in whether a capability will be positioned at a low level in the hierarchy, or at a higher level. For instance, waste management can be applied at the warehouse, or throughout the value chain. If the company is really serious about sustainability, it may choose to position it at a higher level in the hierarchy.

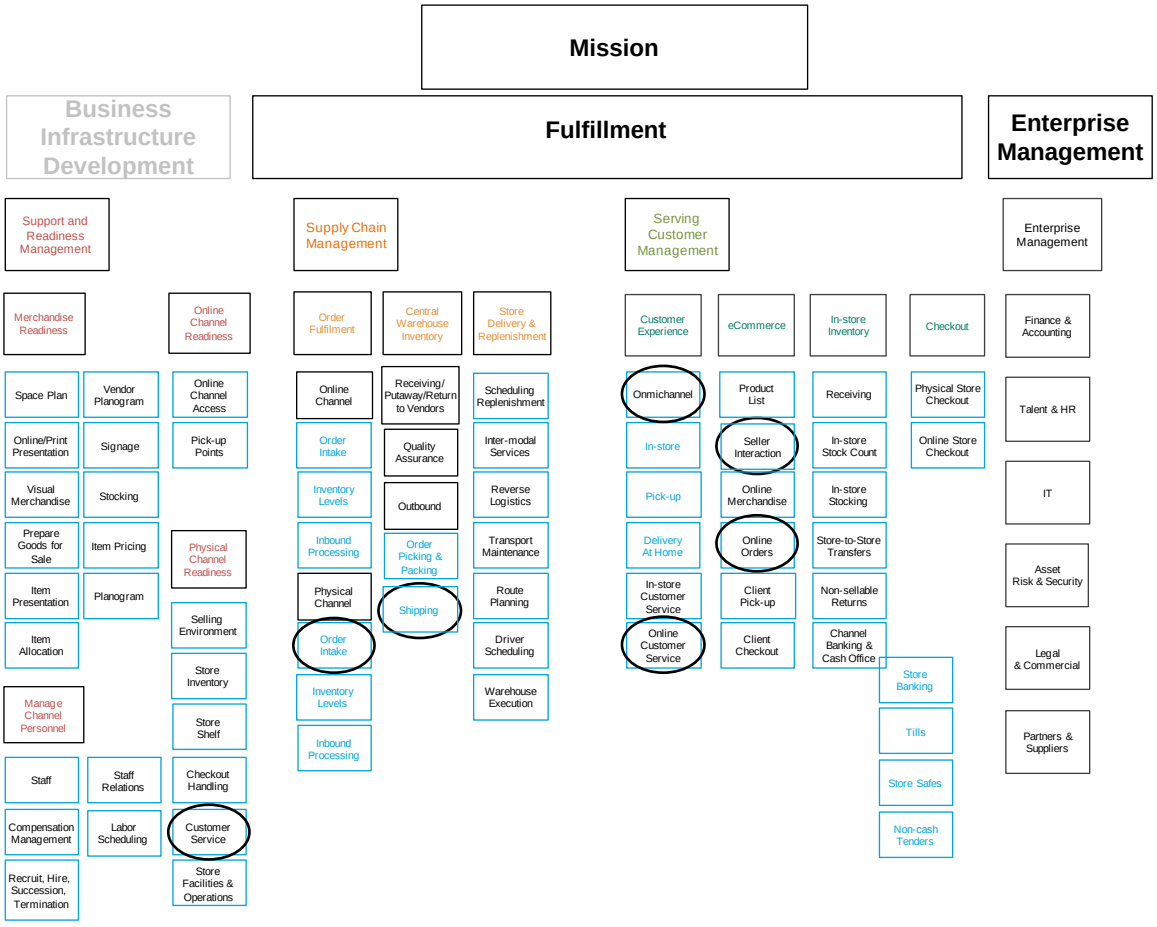


Figure 24: Capability Hierarchy and Key Competence Mapping

The capability map is a key deliverable because it describes those parts of the business that are essential to accomplish the mission. Several techniques exist and will be elaborated in Part II of this standard for composing a capability map. If a capability is lacking, business operations will be deficient. The strategy also provides an indication of the maturity level that is critical for accomplishing the strategic intent. Thus, it becomes a key enabler for the Business Architect to perform tasks effectively and in an efficient way. For the architect it is important because it provides a reference for completeness and quality criteria of a business. Moreover, it facilitates the conversation between stakeholders since it shows in a transparent way how different parts of the business are related. Last but not least, it is a critical re-usable component for representation of vertical and horizontal dependencies.

As regards the technique for identifying capabilities, it is helpful to understand what the business is really interested in and arrange these in a map. Capabilities are composed of people, process, technology, management, and information and informed by business strategy how that best contributes to the ambition of the organization.

Since the Business Architect captures and develops a holistic understanding of the business, they can also inform other stakeholders or participants in the transformation about the implications of the strategy and structure for the organization, technology, information, and value creation aspects. They will contribute and share related insights with stakeholders and participants in the transformation initiative.

7.3.2 Value Stream

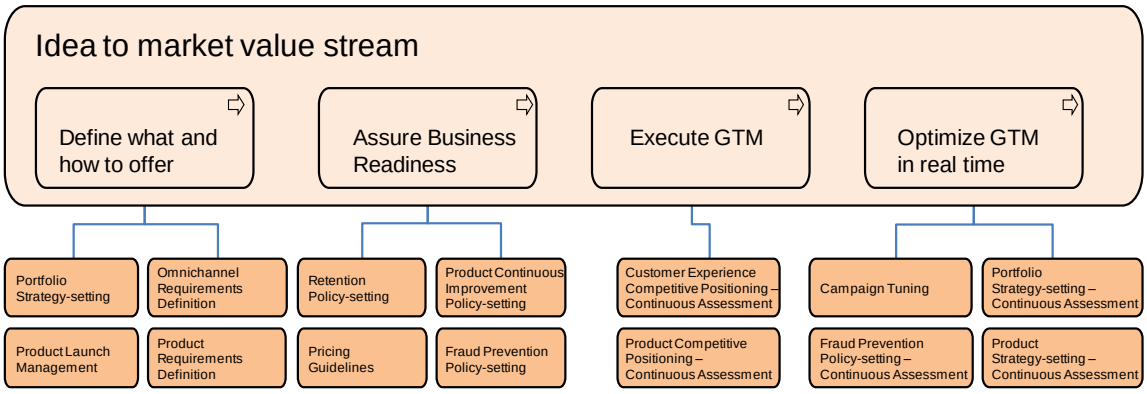


Figure 25: Example Value Stream

A value stream organizes business capabilities in the sequence that they need to be realized in order to deliver services and products to the customer. They decompose the value creation, in terms of benefits and costs, across the capabilities and allow opportunities to be identified, which are achieved by the collective of capabilities, not each one individually. Focus is placed on the integration and inter-dependencies of business capabilities. It describes how value is composed from the perspective of the customer. It is useful to use in the dialog with business managers, whose way of thinking is the flow of activities to deliver to customers as well as in explaining "how" a capability is actually realized.

It also enables the assessment of vertical and horizontal traceability, and consequently the impact of strategy when the architect deploys strategic requirements into process design.

7.4 View: Operational Context

Business Architecture practice is focused on understanding the implications of a strategy and how this translates into structure and operations.

Here the characteristics of the operational context are described. All elements of the business strategy can be applied to capabilities. The strategy determines both the type of resources needed as well as the quality that has to be delivered by that capability. Furthermore, the features of the capability shape the operational business processes.

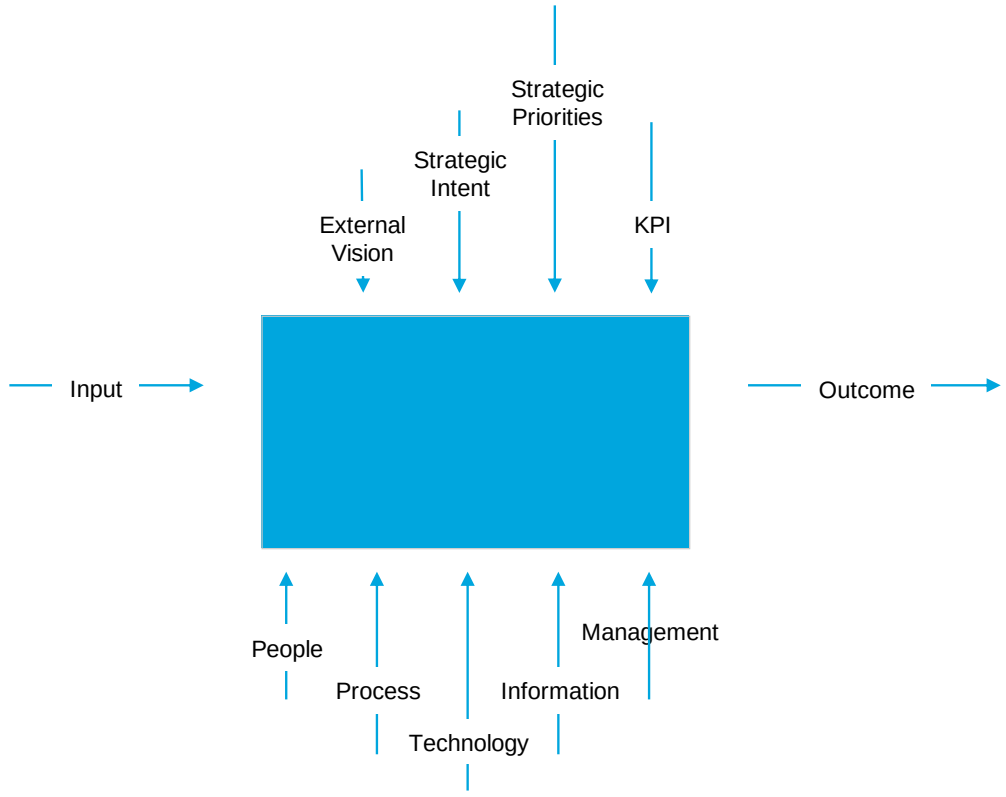


Figure 26: Technique for Representing Operational Context

For the analysis of specific methods, means, techniques, and practices (input, enabling means, and output) of each capability, the IDEF0 technique is an example of a technique that allows for analysis and integration of all aspects at the operational level, and for understanding the implication of changes. The operational context enables integration of all different aspects that are part of the holistic view and show the implications of a change in strategy. The IDEF0 technique is used here as an example. There are other applicable techniques for assuring integration and alignment of all aspects at operational level. If available, other techniques will be described in Part II of this standard.

7.5 View: Integration

The three artifacts – external vision, strategic intent, and strategic priorities – are differentiated for a purpose. Below the different artifacts and their relations are justified.

7.5.1 Strategy Domain

The external vision provides a description of the market situation and the view of the leader(s) of an organization on a specific need in the market, and the organization's potential to address this need with products and services.

The strategic intent is more concerned with capturing the ambition of the leaders and how they believe they can accomplish it. Part of this analysis is the description of the envisioned business logic (expressed in the mission statement and four strategic principles: value principle, revenue principle, competition principle, and operational excellence principle), the competencies, and internal challenges to make it happen. Once the ambition and intent are clarified, executive

decisions have to be made. These show what needs to be done in the short term, or the path towards the longer-term ambition. The executive decisions are described in the strategic priorities, often reflected in objectives or Key Performance Indicators (KPIs). The areas that shall be included to set priorities are included in Appendix E.

Besides these aspects, it is important to understand whether statements are based on proven facts, beliefs about how to resolve certain issues, uncertainty, or assumptions. If one of these elements, for instance, changes from uncertain assumption to a fact, it causes a difference in interpretation about the requirements and trade-offs in investment. Uncertainty is a major topic in decision-making related to capital investments. Owners and leaders are concerned with the degree of uncertainty about the return on invested capital and the return on initiatives. Hence they have to differentiate between facts, beliefs, and assumptions on which the investment decision is being made. The Business Architect is in a position to identify these factors and present them in a meaningful context.

To capture the business strategy in a shared common business reference all defined concepts shall be applied. However, these are not exhaustive. SWOT analysis and critical success factors are also very useful techniques and may be combined with these concepts.

The concepts included in the standard are minimal requirements for effectively applying the standard.

The concepts used for describing the strategy domain are applied through a common natural language. The common language ensures unambiguous communication throughout the lifecycle of a transformation or change initiative. Since each concept has been defined explicitly, the common language enables stakeholders from different disciplines to have easy access and understanding. This contributes to an effective conversation in spite of the varying viewpoints, tasks, and goals.

7.5.2 Structure Domain

Once the strategy is captured and understood it shall be applied to the business structure. Before this can be done a reference for that structure needs to be developed. The structure is represented as a decomposition of the mission statement of the organization. The result is a hierarchy of capabilities organized in a way that fits with the environmental context (economic, social, regulations, and laws) and the (state-of-the-art) technology applied in the organization. The environmental context and state-of-the-art technology are the key differentiators for an industry structure. And industry structures may change due to trend shifts or innovative technology enablers.

The strategic intent can then be applied to the industry structure to derive the specific structure for a specific organization and its business strategy.

7.5.3 Operational Context

Since the Business Architect sets direction for change and transformation initiatives, a way to convey the operational implications is needed. This adds value because the focus is not only on isolated implications, but direction is set in such a way that these are either related to the business strategy and structure or to other business domains with which dependencies exist. For illustration, two techniques have been presented. IDEF0 has been applied successfully for analyzing each business capability in a lean way to assess gaps and implications. The Dependency Network Diagram has been successfully used for elaborating the dependencies

between capabilities. These are example techniques. However, other techniques may also appear effective for this purpose as well.

A Rationale

This informative appendix contains additional information concerning the contents of this standard.

A.1 Why this Approach?

During the period 2009 to 2011, The Open Group Platinum Members – Capgemini, HP, IBM, Oracle, and SAP – established a task force to accelerate the development of the practice of Business Architecture and also to define a certification program for Business Architects. The task force was asked and delivered answers to the following questions:

- Does a need for the Business Architecture profession exist?
- If so, what is the Business Architecture method?
- What are the criteria for certification of a Business Architect?

The results of this special task force were summarized in an article in 2011.[17] The certification criteria for Business Architects were adopted by The Open Group as the Business Architecture stream within the Open CA Certification program.

Since then the acceptance of the number of positions alike on the Internet has grown exponentially. Moreover, the discipline and practice have evolved further through white papers, articles, and book writing by professionals, blogs, and communities on the Internet.

The need for a standard has its origin in the speed with which organizations have to change and adapt to technology and environmental changes. This can only be addressed in a more structured and systemic way when embarking on large enterprise transformations and organizational changes.

The Open Group Governing Board once again decided in 2014 to accelerate its evolution by forming a Work Group on the topic of Business Architecture with the following objectives:

- To combine and leverage the current knowledge and insights into a standard framework and approach for Business Architecture
- To create a description of the Business Architecture standard for The Open Group membership to build on
- To promote an open standard for Business Architecture practice

This document is the description of the standard after one year of meetings, workshops, and extended review by members of The Open Group Architecture Forum during which knowledge and insights have been shared and discussed by the Work Group participants.

[17] See the referenced IEEE Conference Paper: Defining the Business Architecture Profession, by Harry Hendrickx, et al.

B Positioning Business Architecture

B.1 What is Business Architecture?

Business Architecture is the discipline that captures and communicates how an organization uses its essential competencies for realizing its strategic intent and objectives.

It is applied in two situations: decision-making or operational design as regards enterprise transformations and changes. These situations are differentiated because they are different in nature.

When applied to decision-making, the Business Architecture practice focuses on holistically understanding the implications of a strategic business idea. At first, stakeholders are mostly interested to understand whether the idea is viable and feasible. During this phase the holistic view is created and alignment and integration of relevant aspects is done. This standard is prepared with the decision-making perspective.

When applied to operational design, the Business Architecture practice focuses on elaboration of design as far as is needed to communicate business needs and priorities to designers. Not only do strategic aspects have to be elaborated, but also business-as-usual operations have to be included. As such, it is a more detailed elaboration of the Business Architecture that has been developed during the decision-making phase. Now it has to be prepared for designers and developers. The methods and techniques are mostly similar, but have different purpose and focus. For instance, for decision-making, many new concepts are used to communicate business strategy and priorities. These concepts are not or only to a limited extent applied to the operational design phase.

B.2 How are the Practices Differentiated?

Both practices are concerned with applying the business strategy to structure and operations. The Business Architecture practice that is focused on decision-making puts more weight on capturing and communicating the strategy and setting direction for subsequent phases. The design of the target model will be elaborated as far as is needed for the decision-making process. Aspects as essential aspects of the business and risk management are dominant. What is considered business-as-usual will not be paid much attention to, unless it needs to change due to the new model.

The standard is designed in a way that once the strategy is captured it enables consistent communication throughout the transformation cycle. Once the target situation has been implemented it provides a reference for monitoring compliance of operations to the strategy during the optimize and learn phase.

On the other hand, the Business Architecture practice that is focused on development and design of the target structure and operations puts more weight on elaboration of the target model. Although the Business Architecture applies the same method and techniques, the nature of the practice is different. This practice is more concerned with the definition of management,

processes, people, information, and technology solutions at the structural and operational level. This work involves different stakeholders and demands different skills from the Business Architect.

Table 1: Major Business Architecture Roles Compared

Business Architecture		
Aspect	**Decision-Making**	**Operational Design**
Purpose	Enable decision-making from idea to investment decision Enable communication throughout the lifecycle Enable monitoring compliance	Enable implementation of architecture – design decisions Ensure horizontal integration
Process	Holistic view Integration and alignment, both vertical and horizontal	Apply holistic view to structure and operations Apply dependencies to operations
Outcome	Setting direction (vision and strategy) Investment decision for implementation	Assurance design of structure and operations complies with strategy
Perspective	Value-focused Strategic business needs	Operation-focused Solution requirements
Level of Detail	As needed for decision-making	As needed for implementation
Methods & Techniques	Identical methods and techniques used	
Common Language	Similar language for both practices Complementary concepts to standardize and communicate: • External vision • Holistic view • Traceability Complementary concepts to differentiate intent and short-term objectives Views adequate for decision-making	Similar language for both practices Views adequate for design

B.3 Why are the Practices Differentiated?

The two practices are differentiated because they are different in nature. Both require different soft skills and operate at a different abstraction and managerial level. However, they apply the same methods and techniques, but with different quality criteria.

B.4 How does Business Architecture Relate to Enterprise Architecture?

Business Architecture for decision-making is seen as an enrichment of enterprise architecture. It provides and clarifies viewpoints that are not yet explicitly defined in the TOGAF standard and can now be practiced in a more explicit and structured way.

B.5 How does Business Architecture Relate to Strategic Planning?

Business Architecture consumes and captures the strategy and ensures that it is communicated to guarantee the most effective and efficient application during enterprise transformations and change programs. It provides input to investment criteria, and makes decision-making transparent.

B.6 How does Business Architecture Relate to the TOGAF ADM?

Business Architecture with focus on decision-making fits well into the Preliminary and Phase A (Architecture Vision) phases of the TOGAF ADM and sets direction for Phases B through H.

Business Architecture with focus on operational design for implementation fits well with Phase B (Business Architecture) and the change and feedback cycles. The Business Architect also has a role in the refresh and change cycles.

B.7 How does the Common Language Relate to TOGAF Version 9.1?

The common language concepts have been compared with a list that was gathered as part of TOGAF Version 9.1. Most of the concepts in the common language (more than 80%) are not included in the current TOGAF vocabulary.

C Use-Cases

C.1 Decision-Making for Enterprise Transformation

This use-case demonstrates how the Business Architecture standard has successfully contributed to development of a transformation vision and strategy.

Background

In the agro-industry current developments in High Performance Computing (HPC) are a big opportunity to accelerate product development.

The first initiative to prepare for HPC investments did focus mainly on the technical perspective. However, this was not sufficient to make investment decisions. As a next step the CIO had requested a business-focused top-down approach. The standardized Business Architecture practice as described in this standard resonated well with the desired top-down business approach.

The Business Architect had first developed an external vision. Based on desk research and internal documents captured from industry experts four insights were identified that were relevant for the initiative:

- Acceleration of the product development process creates high value.
- There was high potential to do experiments that were impossible before at a critical stage of R&D.
- With computer-intensive analysis, the gains in product development would be considerable.
- The HPC industry had recognized that more business and end-user perspective was needed for HPC services.

Although the potential value of HPC investments was high, current investments were also at a high level. Therefore, the Business Architect had to look for more differentiation in order to focus investment decisions. This industry insight that more end-user perspective was needed justified that the Business Architect would search for HPC value streams – from business demand to HPC service delivery – to better balance investments with business value. He discovered seven and showed that these value streams were quite distinct.

The Business Architect contributed thus by integrating the industry insights and, in the current business model, discovering the boundary of disparate investment areas and providing scenarios for an HPC strategy implementation.

The Standard Applied

These results were captured in the external vision which showed how the state-of-the-art HPC services could contribute to the business, what the opportunity is, and what challenges had to be resolved to make it work. The concepts in the common language – industry beliefs, assumptions, insights, opportunities, challenges – gave guidance for discovery during this phase.

Then the Business Architect had to get a thorough understanding of the client's business and strategic intent. Firstly, by understanding the business ambition and goals, and how stakeholders believed they would be accomplished – the business logic. Secondly, the architect identified what kind of organizational competencies and business capabilities were required for success. This was done for the business as a whole. Common language and strategy and competence mapping were applied. Furthermore, a functional reference of the business was developed as an aid for analysis of the impact on business structure and operations. These artifacts together provided the reference against which to map the implications of the HPC strategy.

Then those competencies were identified where HPC would have a big impact. These provided a means to link strategy to operations: selected competencies are mapped against the capability hierarchy. As a result, in turn a number of capabilities were identified where operational implications are expected.

Then the more detailed operational insights were needed to understand the implications for operations. For each identified capability a subject matter expert was interviewed. He could explain what the potential value would be if HPC would be added to his operations. He described the current context of the operations and the implications after HPC would have been applied for people, process, technology, information, and managerial aspects. Thus the Business Architect could create transparency in dependencies between strategy, structure, and operational context.

Analysis of the business needs had already shown that different types of value streams exist. For a good understanding of these value streams each value step was analyzed – which demand and which service to fulfill – on how it could be accomplished. It became clear that for successful application of HPC services one size could not possibly fit all. Therefore, the direction was set in the strategy to look for a differentiated solution for HPC service implementation: both with internal and external service providers for the different value streams. This part of the analysis created awareness of the implications for the structure of the business.

Results

Several insights were derived from the integrated view of the potential of HPC and the nature of HPC value chains:

- HPC service provisioning is not just delivering an IT compute service, but is a practice that understands how to transform a question into a meaningful compute service. The Business Architect had contributed to this insight by developing and capturing the external vision and the different value chains for HPC. This clarified the implication for the business structure;
- The fragmentation of the HPC business demand hindered investment decision-making. Hence, it needed to be done in a wider context than the IT department and had to include several solution scenarios. The Business Architect contributed by integrating the different aspects and by assessing the right boundaries for sub-decisions. Thus the strategy

development for implementation could be conducted in a controlled way. The Business Architect contributed by aligning different stakeholders from both business and technology through the standardized approach.

As a result, stakeholders could now decide how to organize for the HPC capability.

Lessons Learned

This case demonstrates that the Business Architect had contributed by integrating varying interests and goals of stakeholders. He had set direction for decision-making through thinking through in a controlled way the industry, state-of-the-art technology insights, the client strategy, and the structure of the business and its operations. The common language did not only provide the concepts to put these together for getting conclusive insights, but also provided a means to communicate consistently dependencies between business domains and managerial levels.

Major artifacts applied:

- External vision
- Strategic intent
- Capability hierarchy
- Supply chain of IT services for different value streams (from business need to implementation of the HPC service)
- Ten descriptions of operational contexts (IDEF0 description technique applied)

C.2 Direction-Setting and Consistent Communication

This use-case demonstrates how the Business Architect and technology architect collaborate and set direction for vendors who are invited to quote solutions for a green-field project. The common language has been used in conjunction with following the TOGAF ADM process.

Background

A Telco service provider has just hired a number of executives to stand up a green-field service provider. The company had a clear business vision for new mobile services and how it might successfully compete with three incumbents in the country with 90 million inhabitants. The general manager needs to set direction while assuring risks are mitigated during the enterprise transformation. Hence the architects proposed to develop a target enterprise architecture, enriched with the Business Architecture perspective.

External Vision and Strategic Intent

The Business Architect applied the common language to capture and organize relevant information from the local Telco industry. After interviews and dialog with key stakeholders he distilled the external vision and captured it with the prescribed syntax. This provided sufficient insights for further investigation of the implications for the structure and operations of the green-field service provider.

Several insights and beliefs were captured from the executive team. The sponsor sees an opportunity for a fourth mobile operator in the country based on several facts about the current Telco industry: the low quality of existing wireless communications, high level of churn, low penetration on VAS services, other operators not knowing their customers or behavior, possibility to invest in a wider coverage of the country (85%).

Stakeholders believe that they can enter the market successfully if they join innovative technology with customer experience and the current assets of the corporation in other industry sectors; furthermore, if they offer services of higher QUALITY, wider COVERAGE of the radio network, and SIMPLICITY as its differentiating feature. They believe they can do this through leveraging the influence or control of local distribution networks and have a comprehensive view of the enterprise architecture (including alignment with partner domains).

The major challenge is to get to know the customer. This is a condition for convincing the customer to register in the loyalty scheme, even when buying a pre-paid subscription. The second challenge is to create a sustainable business with partners. This entails having good governance models with partners, a trustworthy relationship with these partners, and good architecture of the integration of partners with current corporate operations. The current target is to acquire 20 million customers over the coming three to four years.

With the above statements capturing insights, beliefs, assumptions, challenges, and the opportunity, the company vision and strategic intent are captured.

How did the Business Architect apply these insights? The strategic intent describes besides the business ambition the way the owner believes they can accomplish these goals. The working model (or business logic) is derived from the strategic intent and described through four strategic principles. Principles are statements related to how value is created, how revenue is generated, how competition is met, and how operational excellence is achieved. For each of these principles key competencies have been defined. A key competence is the concept that shows the behavior critical in achieving the strategic principle. Together these impose the strategic requirements that shape structure and solutions.

Identifying the Solution Components

Based on the dialog with the executive team members, key challenges have been identified together with the technology architect. For these challenges the implications for the business structure and operations have been analyzed and architecture solutions have been developed. Each solution concept describes the "why" derived from the external vision, the strategic principle it contributes to, and what is needed in the structure to make it work. As an example, three key competencies are given and their implication for the architecture, solution, or implementation is shown:

As a key competence for value creation a "successful loyalty program" was assessed as a critical success factor.

As a key competence for successful competition a "BI capability for behavioral and dynamic marketing" was considered critical.

As a key competence for successful competition "knowing the customer" was critical in order to be able to convince him to register for the loyalty program when he subscribes to telecom services.

1. Customer is recognized at any point of contact:

— Implication for the architecture: One common authentication system across the partner network.

— Implication for implementation: Robust authentication.

2. Customer data capture and BI:

— Implication for the architecture: All systems prepared to deliver information to BI system.

— Implication for the architecture: Master data management – "incremental information alignment" policy required to accommodate new partner products.

3. Loyalty

— Implication for the solution architecture: Account hierarchy is a critical requirement for point attribution.

— Implication for the architecture: One standalone loyalty system.

— Implication for operations: Exchange of points between different partner loyalty systems an option.

Thus, strategy has become traceable to operations, and the implications of the strategy have been made transparent.

In this phase the strategic principles and the key competencies were derived from stakeholder interviews. They demonstrated the key aspects for successful operations. However, these key competencies also require an architectural solution that ensures the enabling parts of the solution are distributed over the business to support each other. Through mapping of key competencies on the business structure, where that specific business need has implications can be identified. Below the mapping has been done for "know the customer". Each marked capability should be prepared with a task, specific skill, or system element that contributes to "know the customer".

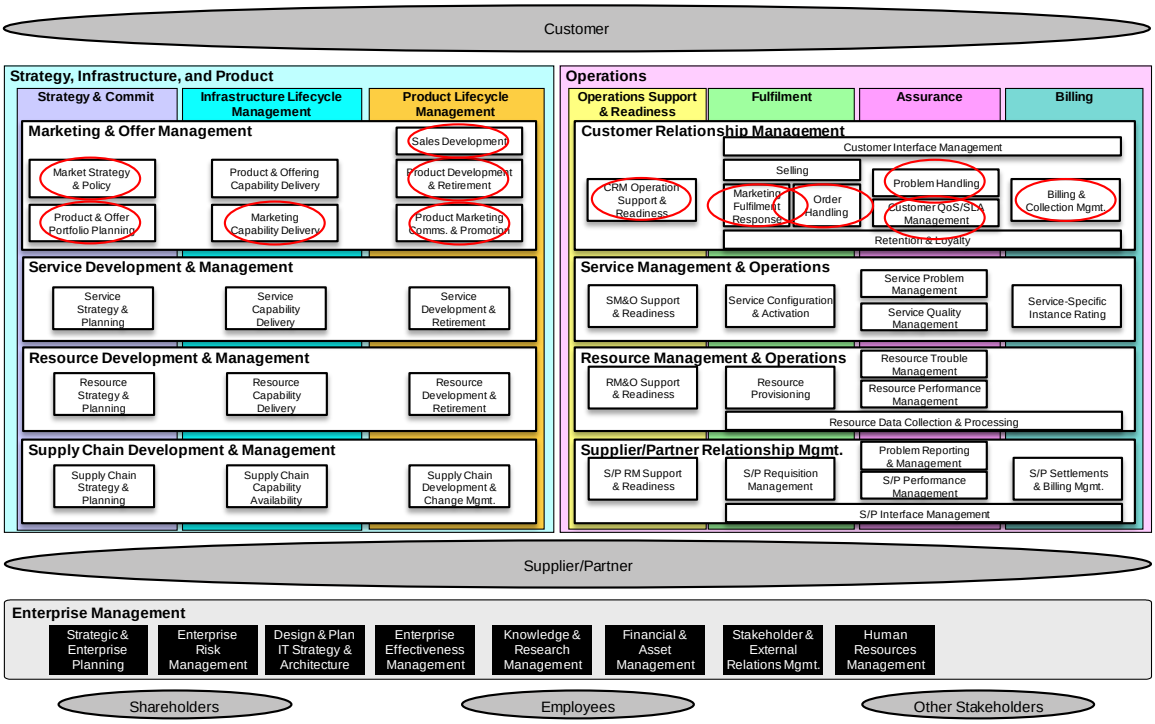


Figure 27: Competence Mapping on Business Capabilities (Frameworx[18] View)

Lessons Learned

This case has demonstrated how the business vision and intent can be captured and communicated. However, it also demonstrates how for each challenge a transparent and traceable concept can be developed. Thus the intent and priorities can be easily communicated to the different management levels and disciplines during the transformation. This is especially valuable in a situation where many new staff are on-boarding or the lifecycle of the transformation is long.

Major artifacts applied:

- External vision composed with a standardized syntax for communicating the external vision of the stakeholders.
- Strategic intent expressed as four principle statements to communicate how it is believed the venture can succeed with the green-field.
- Strategic priorities to indicate which objectives apply for operational aspects as regards the market segments, products and services, partners and vendors, and the internal capabilities.
- Capability map or hierarchy to enable distribution of requirements derived from the key competencies.

A formalized description of the business challenges and how these should be addressed in the structure as well as operations of the green-field. For each, statements have been included about the implications for both architectural level and operational level.

[18] See the referenced Frameworx from the TM Forum.

C.3 Business Architecture in a Full Transformation Cycle

This use-case demonstrates how the focus of the Business Architect role varies during the full transformation cycle. Basically three different phases can be distinguished: preparing investment decisions for enterprise transformations, defining and assuring compliance criteria for the target operations, and monitoring the effectiveness and appropriateness of current capabilities. Each of these three phases of the transformation lifecycle needs a different role. However, the different roles can all be applied by the same discipline.

Background

As a result of innovations and acquisition over many years the company identifies the opportunity to streamline its operation, create more efficiency and growth. This is the start of a transformational strategy. Leadership wants to communicate the end state in a way to make that new strategy tangible to employees. At the same time it triggers the alignment of a strategic roadmap into transformation portfolios.

An Actionable Transformation Strategy

The Business Architects join the company's leaders to identify and subsequently describe a set of common business models which will be used by the distinct business groups. The responsibilities are to facilitate the work, capture the business model descriptions, and create insights based on business and technology practices about their validity.

One deliverable is a common map of the organizational competencies and capabilities, named the Business Capabilities Map or the "company in one page". The map is then used in the elaboration of strategic assessments of each business model. Key capabilities are highlighted for being drivers of competitiveness and market differentiators, or for being mission-critical for the company's operations.

Understanding the Implications

As a next step, the Business Architects work with business and transformation leaders to define each capability's target maturity level. Describing a target maturity level is similar to visualizing the end state of operations in a clear narrative. In the continuation they describe strategic requirements, which are associated to processes, structures, technology, and people. Effectively those requirements become the guiding set of principles for implementing new processes and IT systems.

Business Architects possess the skills to be a connector of different disciplines at the time of business and transformation planning. They create alignment amongst strategists, transformation leaders, and architects. By understanding the transformation strategy they discover explicitly dependencies between business, process, and information technology architecture. Thus Business Architects play an integrator role in decision-making and preparation of enterprise transformations.

Transformation Governance

The company launches a multi-year transformation program to re-engineer its processes accordingly and deploy a new IT landscape as a foundational pillar of its strategic transformation. In scope are the processes (or functions) and IT systems the business and IT

architects identified to be affected by the new requirements that are the result of deploying the business model capabilities.

The Business Architects take an advisory role to program managers, business, and IT owners. A key theme is to ensure adherence to the target architecture. They work on setting up criteria for validation of design and support program stage gate-based governance. Another key theme is to loop business feedback into architecture improvements and additions. As such, Business Architects play a role in design decisions and design validation.

Strategy Realization Monitoring

The transformation portfolio consists of multiple programs, each one addressing affected processes and IT systems, and running at different time, length, and complexity. The Business Architects participate in the works of each strategic review cycle by validating that the target capabilities yet make sense or eventually need any amendment. This is like a lighter version of the assessment conducted during development of the strategy.

Leadership's question at this stage is about how far is the company in deploying the defined business models. The Business Architects define and apply metrics to measure the progress of business capability development, each business model, and at an aggregated level of the transformation strategy. These metrics are also used as criteria for the strategic review cycle to prioritize and advise a sequence to the launch of transformation programs. This is the third major task of the Business Architect. He reviews and monitors compliance with the business transformation vision and strategy.

Conclusion

This use-case illustrates the participation of the Business Architects alongside the "strategy to transformation" cycle. Their role is to create visibility and inform decision-making during strategy formulation, execution, and monitoring. Working with competencies and capabilities they connect organizational design, business, and technology architectures to the accomplishment of business requirements. They play a role as integrator by partnering with business owners, transformation leaders, and program managers. Their architecture thinking and skills allow them to take on roles during the management lifecycle distinct from business consulting and technology architect roles as well as from business analysts. They become key contributors for leadership communication, business and IT alignment, and governance of transformation strategies and priorities.

D Realizing Vertical and Horizontal Traceability

This appendix is composed because comments on the draft Business Architecture standard requested clarification of the relation between competence and capability.

At first a theoretical foundation is given. Then this will be applied to the Business Architecture standard.

This theoretical background is applied by large communities in the European region either explicitly or implicitly. One of the major messages from this theory is the differentiation between the conceptual perspective and the operational perspective for implementation. The conceptual perspective is independent of how the business operates. The operational perspective shows the key elements of operations considering people, process, technology, and managerial aspects.

D.1 Theoretical Background

The theoretical background[19] described can be found in the work of Jan Dietz. This theory on design had a direct and indirect impact on the development of the Business Architecture standard since this thinking on design has been adopted by large communities in the architecture discipline. Besides this design thinking, many other disciplines have influenced this standard: strategic planning, marketing discipline, governance practices, system development practice, process re-engineering, and the different architecture disciplines. However, the design thinking gives guidance to all these disciplines and can be considered as core thinking. Here is an abstract of the theory.

In this standard the differentiation between the teleological system and ontological system notion is important. The teleological is concerned with the function and the (external) behavior of a system. It is adequate for the purpose of using or controlling a system. The ontological system notion is concerned with the construction and the (internal) operation of a system. It is adequate for the purpose of building or changing a system.

The black-box model represents the function perspective on systems; it is actually identical to the teleological system notion. In terms of a car, the driver's perspective is about the function (relationship between input and output) and behavior. The white-box model is a direct conceptualization of the ontological system definition. In terms of a car, the mechanic's perspective is about construction (like components and their interaction relationships) and operation.

The *purpose* of a system is not an inherent system property but the relationship between the system and a stakeholder. The *function* of a system is a socially agreed purpose. In the Business Architecture standard the system is a socio-technical system. And, it is useful to distinguish between active influencing, called *interaction*, and passive influencing, called *interstriction*.

[19] See the work of J.L.G. Dietz: Is it phi-tao-psi or bullshit? More information about Jan can be found at www.demo.nl.

Something is a *system* if it has the following properties: *composition* of a set of elements; *environment* and composition have elements of the same category but are *disjoint*; *production* – the elements in the composition produce a thing (or a service); and, *structure* – a set of bonds among the elements in the composition, and between them and the elements in the environment.

The elements of the system are atomic and may cause restrictions or opportunities for the stakeholder. The effect of the production of a system is conceived as state changes of the system. Interaction is also conceived as a state change. Interstriction is derived from the system's world elements in the composition when being active.

The Business Architecture standard view is more focused on a teleological view of the business.

D.2 Application to Vertical Traceability

Vertical traceability is required to ensure the stakeholder's purpose and intent about the performance of the system can be communicated and realized. The standard realizes this by prescribing how to represent vertical traceability. In the standard the stakeholder's relation with the system is defined by three domains: external vision, strategic intent, and strategic priorities. Each domain contains specific concepts that need to be included to communicate the stakeholder's purpose and behavioral view.

External vision concepts capture insights relevant to the situation and are related to the challenges and opportunities the environment poses on the organizational system. It identifies those elements in the environment that have relevance for the system itself. The explicit relevance is expressed in insights, beliefs, or assumptions on the industry in relation to the organizational system.

The strategic intent represents the ideas derived from these insights on how the organization should respond to them. Basically this is expressed in statements that shape the target behavior and function of the organization. Strategic principles and competencies are key concepts for vertical traceability. The strategic principles[20] are statements that prescribe how external challenges should be dealt with internally. The competencies prescribe how stakeholders have decided to accomplish the organizational purpose and strategic principles.

Competencies apply to one or more capabilities. Capabilities prescribe the functional level of specific solutions. Since the effectiveness of competencies depends on cultural aspects as well as experience and organizational effectiveness, a maturity matrix is a useful aid in developing enterprise transformations.

[20] Strategic principles can be both functional and construction principles. Functional principles shape the purpose and behavioral aspects, and construction principles set direction for strategic aspects of the operations; e.g., do brand managers adopt the trend in social media fully, or do they work with other means to manage their brand? The choice to include it in their strategy has a big impact on the type and duration of the transformation.

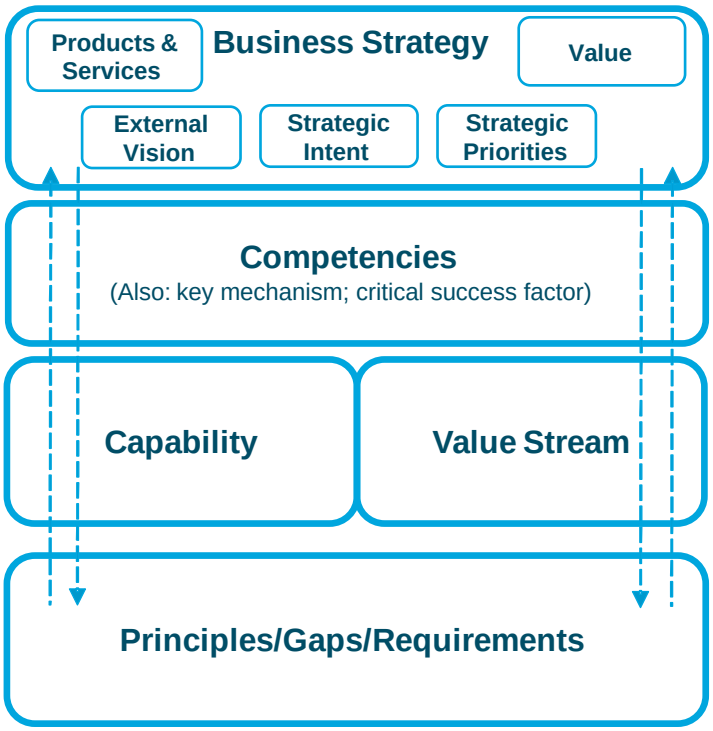


Figure 28: Vertical Traceability Demonstrated

Competencies and capabilities can be decomposed into people, process, technology, management, and information aspects. Both represent an added value that contributes to higher-level goals. The difference between the two is that competence is a feature of the business system (as an emergent property), and capability is a capacity that is part of the business system providing an added value and contributing to accomplishing the strategic intent.

Competencies impose requirements for cross-domain dependencies. Business capabilities indicate specific capacities an organization must possess to accomplish its goals, and the inter-dependencies between them. Two common practices are known about how to arrange capabilities for communicating the structure of the business. Capabilities can also be represented at different levels of detail. At the lowest level of detail it is intended to be an atomic entity for a specific product market technology combination. The different arrangements show dependencies between capabilities. Competencies and capabilities are key for communication of the transformation vision and strategy.

Besides the strategic intent, short-term priorities are also distinguished. The difference between the two informs about the ambition of the stakeholders and the feasibility of short-term action and changes. This is an important aspect to discover step-changes and phases of a transformation. The priorities communicate short-term objectives and what is the next step with respect to products and services, markets, capabilities, enterprise architecture, governance structure, competencies/capabilities, partnering, and suppliers.

In summary, vertical traceability is accomplished through applying the strategic statements through competencies and capabilities to implications for resources and operations that are part of a capability.

D.3 Application to Horizontal Traceability

Capabilities can have several levels of detail. Usually three to four are sufficient to show the essence of an industry. Competencies as well as capabilities can both be applied to (lower level) capabilities to discover horizontal dependencies. Both concepts enable explicit business *integration* and are a key part of the holistic view of a business. Competencies are more focused on communicating the quality of the output of a capability. The capabilities have translated the quality into implications for what type of elements need to be part of the solution. "Application of state-of-the-art High Performance Computing in field trials" would be a competence. The different value streams show that often several capabilities can be distinguished to accomplish the intent of the competence (see Section C.1).

A capability can be decomposed into people, process, technology, information, and managerial aspects. These elements can be easily analyzed using the IDEF0 technique. When analyzing the different aspects, which sets of lower-level capabilities contribute to capabilities or to competencies are discovered. In other words, competencies and capabilities can be used to distribute requirements to the capacity areas in the architecture.

D.4 Applying Traceability

Vertically, statements can be linked from strategy to structure and specific capabilities. Horizontally, dependencies are identified by mapping competencies to capabilities to lower-level capabilities. The next step is to integrate the vertical and horizontal dependencies to the operational context. This can be done by analysis of the characteristics of a capability and applying relevant statements to its operations. During this process insight is generated in how the target operations need to be organized and what the implications are for the current situation.

A key aid in this analysis is a capability map or hierarchy. The hierarchy is a decomposition of the mission statement into capabilities. Usually elaboration up to level three is sufficient. One technique for integrating all elements is the IDEF0. It can be applied to each level of the capability hierarchy; either mission statement or, for example, order fulfillment or lower-level capability.

For each capability, its added value and key characteristics for that area should be described. This can be done by describing the relation between input and output. Also, key inputs, the enabling means, involved disciplines, and major tasks can be described and a description of the operations can be prepared to convey the future mode of operations. The quality of the outcome of a capability can be derived from the business strategy or transformation vision. Thus a fully integrated view can be composed of the operational context and the applied elements.

When strategy or technology change it has now become possible to understand the impact for each capability and overall for the business in a controlled and repeatable way. An additional aid may be the application of a Capability Maturity Matrix for setting the stage between as-is and to-be.

Figure 29 shows how statements from the strategy domain are inherited as business needs that impose requirements on the elements of a capability.

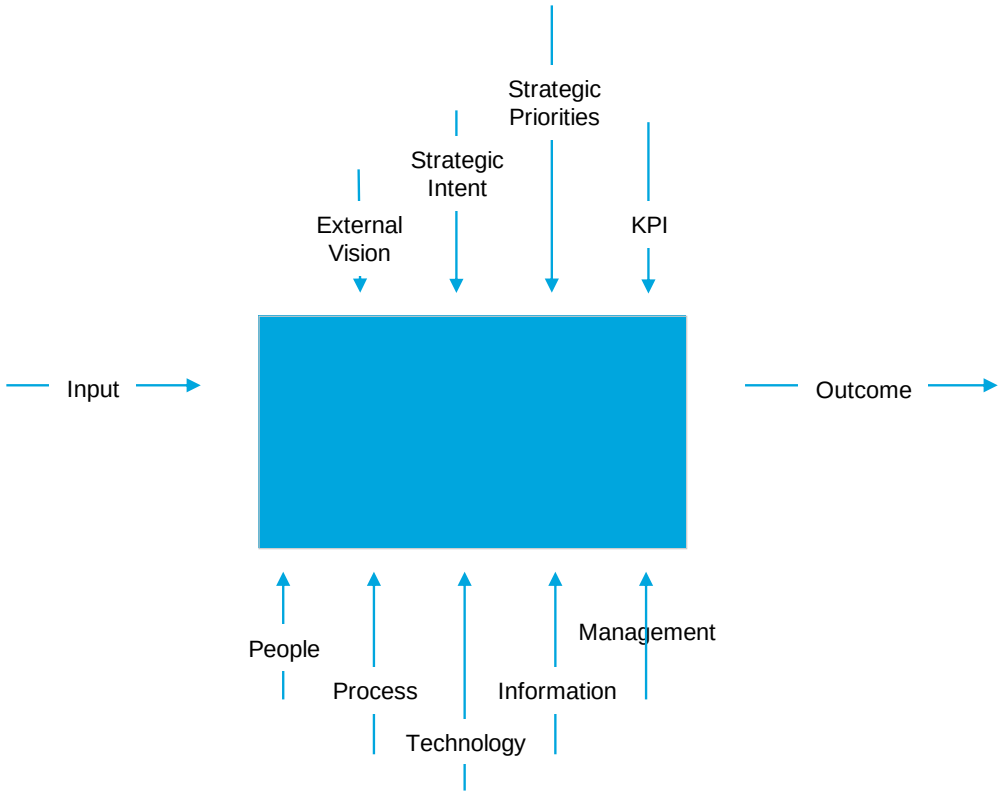


Figure 29: IDEF0 Applied to Demonstrate Vertical Traceability

E Definition of Concepts in Common Language

The purpose of this appendix is to summarize the concepts that enable the Business Architecture practice in a controlled way. The concepts are integrated in the *way of thinking* and the *way of modeling*. They are aligned with each other. They give guidance when following the process defined in this standard. The definitions may differ from other accepted definitions, but in that case there is justification to do so. Often the *way of thinking* determines the definition as it appears. Sometimes the integration with other concepts in the common language shapes its use.

E.1 External Vision

Aspect	Definition
Vision	A vision is a comprehensive set of insights that form the foundation for choices and priorities in the business. The vision is the justification of the mission statement.
External Factor	A factor in the environment that can change and influence the direction of the strategy, and have a high impact on success/failure of the strategy.
Assumption	A statement to guide decision-making or design in the case uncertainty exists.
Belief	A conviction that has an impact on the decisions or operations. Beliefs may be subjective, and are often hidden in the stakeholder's mind. Surfacing them is a strong way to understand how the business is expected to operate.
Constraint	A limitation of the way to accomplish the aspiration
Opportunity	A chance to exploit a set of market conditions in favor of the strategic intent.
Principle	A simple and direct statement of intent and purpose that shapes the business operations or IT operations. Principles provide the bridge between different disciplines, management levels, or departments.
Brand	The style of customer approach. This has a leverage to the business operations in the market place.
External Challenge	A difficult problem or issue that has to be resolved and of which resolution is critical for accomplishing the business vision and strategic intent. Trends always need to be addressed in some way.

E.2 Strategic Intent

Aspect	Definition
Mission Statement	The expression of the need in the market place, which the organization wants to address with its products and services. It informs about the boundary of a business.
Strategic Principle	A general statement on short and long-term, clarifying how the business will be operated. How does the business create value? • The value proposition is an important part of the strategic intent. It shows and defines the quality that is needed to fulfill the needs of its target customers. The better the match, the more successful the business. Values may be: newness; performance; customization; getting the job done; design; brand/status; price; cost reduction; risk reduction; accessibility; convenience; usability. How does the business generate revenues? • Asset sale; usage fee: subscription fee; lending/renting/easing; licensing; brokerage fee; advertising How does the business ensure operational excellence? • Cost-driven; value-driven; characteristics: fixed cost; variable cost; economies of scale; economies of scope • Especially the opportunity of internet of things is important How does the business attain competitive advantage?
Competence	An organizational mechanism composed of related capabilities, commitments, knowledge, and skills that enable an organization to accomplish its strategic intent and objectives.
Ambition	The risk appetite that sets the direction for the risk or the change intensity the sponsor or the team of stakeholders is prepared to undertake.
Internal Challenge	A difficult problem or issue that has to be resolved within the boundary of the organization and which resolution is critical for accomplishing the business vision and strategic intent.

E.3 Strategic Priorities

Strategic priorities set direction on specific aspects of the business. These priorities should be applied on that aspect in the structure view and the operations view.

Aspect	Definition
Objective	A specific statement that is simple, money-related, assertive, realistic, and time-related and that shows shorter-term priorities.

Aspect	Definition
Customer Segment	A homogeneous customer group that shares a set of common characteristics. Customer groups represent a separate segment if: • Their needs require and justify a different offer. • They are reached through different distribution channels. • They require different types of relationships. • They have substantially different profitability. • They are willing to pay for different aspects of the offer. • They need similar interaction types with the vendor.
Marketing Mix	A combination of policies and objectives that address the strategic ambition. Seven marketing mix variables are recognized: product/service; price; place; promotion; process; physical appearance, and people. A combination of products and services that will be provided to the market. In which price segment? • Fixed menu pricing: list price; product feature-dependent; customer segment-dependent; volume-dependent • Dynamic pricing: negotiation; yield management; real-time-market; auctions How to do advertising and promotion? • Customer relationship as a driver? • Customer experience as a driver? • Context awareness as a driver? • Location as a driver? Where will I do the business? • Regional scope • Physical/regional scope • Context scope: portal or location
Position	The result of a comparison of the organization, its key capabilities, and its products and services with competitors and their key capabilities and products and services. What is the position compared to competitors? What is the position compared to other products and services? What is key capability? Customer interaction or product fulfillment? Or, broker?
Timing	The prioritization of segments or products/services.
Customer Approach	The definition of the channels to approach the customer, when to use those channels, and how to approach the customer in each channel (own/partner? direct/indirect)/ • How do we create awareness? • How do we enable the customer to evaluate the product? • How do we allow the customer to purchase the product? • How do we deliver the value proposition to the customer? • How do we arrange post-purchase support?

Aspect	Definition
Strategic Capability	A [business] capability important in achieving a plan or strategy. Note: For the definition of business capability see Section 2.4. A capability is strategic if the vision and strategy require a transformation.
Partner	A party with which the organization collaborates to attain its goals. Which partners do I need to execute my business well and attain my goals? • Strategic alliances between non-competitors • Competition: strategic partnerships between competitors • Joint ventures to develop new businesses • Buyer-supplier relationships to ensure reliable supplies Goals may be: optimization economies of scale; reduction risk and uncertainty; acquisition of particular resources and activities.

E.4 Business Structure

Aspect	Definition
Capability Map	The decomposition of the business into essential capabilities required for delivering the services as defined by the mission statement. The capability map conveys how capabilities are related and, if represented as a hierarchy map, by the level position, their importance in the overall structure.
Organization	A social unit of people that is structured and managed to meet a need or to pursue collective goals.
Value Stream	A sequence of activities an enterprise undertakes to deliver on a customer request. More broadly, the sequence of activities required to design, produce, and deliver a good or service to a customer, and it includes the dual flows of information and material. (Source: Value Stream Mapping, by Karen Martin and Mike Osterling.)

E.5 Operational Context

Aspect	Definition
Business Outcome	A statement that indicates the expectation of the business on what will be the outcome quality. It defines the desired quality of the outcome of the business.

Aspect	Definition
Enabling Means	A statement that indicates the requirements of people skills and behavior, processes, technology (both business and IT), and management. To integrate with the digital world of social media and analytics special attention should now be paid to: • Apps (small self-contained stand-alone coding) • Service (small, function-based, designed to interconnect into extended activity threads by the process of orchestration) – relatively easy to develop, and quick to deploy in a virtual environment) • Roles and permission- driven management of operations – this creates flexibility, but also requires mature governance and policies
Implication	An impact on the as-is structure and operations of the business. For example, the exploitation of new trends like cloud, mobile, analytics, and social media demands different architecture, different governance, and different management style.
Resource	A human, financial, physical, or knowledge factor that provides an organization the means to perform its business processes.
Input	The data or objects that are transformed by the capability into output.

E.6 Syntax

During modeling, the holistic vision is represented and the business needs (competencies) are determined. These formalized descriptions can be decomposed into requirements that are distributed over capabilities or elementary resources. These requirements in turn are unified into solutions.

Predefined syntax to leverage standardized concepts, predefined semantics to avoid ambiguity, and explicit techniques to link the different levels are required for traceability. For instance, external vision and strategic intent are linked through the mission statement. Strategic intent and strategic objectives are linked with each other through objectives that express measurable priorities. Architecture-level and solution-level are connected through policies that impose the performance characteristics of a capability and its enabling means. These connection points are central to the common language and required to ensure integration of the different levels of abstraction in a business.

External vision: The external vision contains concepts described in Figure 3. It conveys the contextual factors and developments applied to the business, and its syntax ensures that challenges are explicit and understood by all stakeholders. With a common syntax, stakeholders can more easily have a conversation on the implications of trends or ambition. The following syntax is proposed for the external vision:

*Considering the <**trend**(s); **event(s)**>, and the following <**assumptions**; **beliefs**; **insights**> the organization identifies an <**opportunity**; **threat**> to build a successful business with the following <**business logic**> and <**mission; ambition; priorities**>. However, to accomplish this aspiration the following <**external challenges**> and <**internal challenges**> have to be addressed.*

Business logic: Top managers are concerned about getting the vision and strategy embedded in operations. The business logic is a critical element to ensure this. It is in fact the result of the interpretation of the external vision into a strategy. It should at least include strategic statements – also referred to as strategic principles – on the following aspects: value creation, revenue generation, operational excellence, and competitiveness. Sometimes one or two other principle statements are added. Common additional ones refer to, for example, globalization (how to deal with the challenge of globalization) or collaboration (how to deal with the organizational culture).

As an example, the business logic for IKEA may look like this:

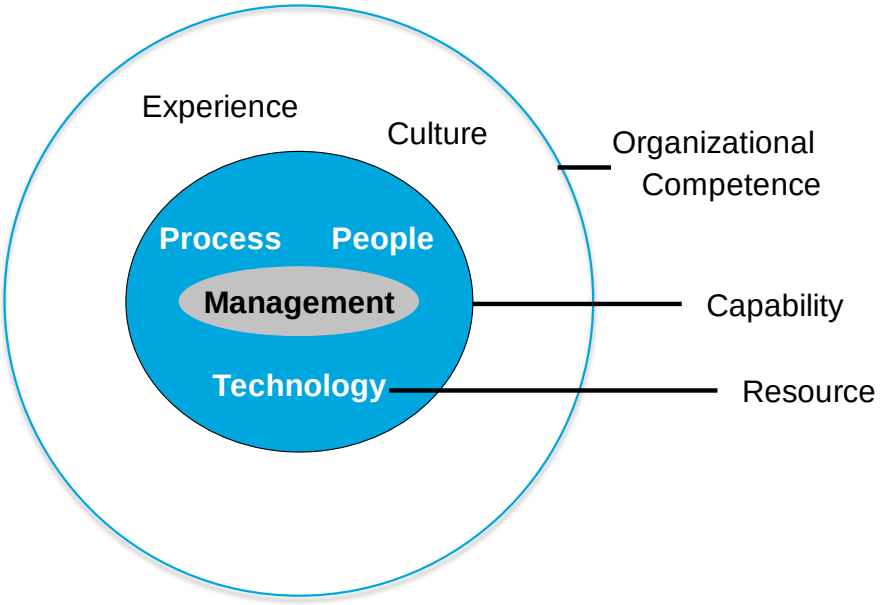
*IKEA creates <**value**> by fully modular furniture design, generates <**revenue**> through direct sales channels, achieves <**operational excellence**> through a fully E2E integrated supply chain and warehousing function, and is <**competitive**> through mass production of design furniture at a low price.*

*From these statements <**strategic principles**> the IKEA <**competencies**> can be derived essential to realize strategic intent and objectives.*

Figure 30: Syntax for Capturing the Business Logic

Mission: Once the business logic has been understood, the organization needs to establish boundaries of its business. What products and services does the organization provide, what goals does the executive team formulate, and what is the geographical boundary? These aspects are part of the ambition and will result in the formulation of the mission statement and strategic objectives. <Mission> is the formulation that conveys both the need in the market place that the organization wants to provide its products and/or services for, and at the same time clarifies the boundary of the business. <Strategic principles> on the other hand are explicit statements on the business logic that express how executives believe their working model can accomplish the vision.

Competencies: The strategic principles imply that specific competencies are required to accomplish the strategic intent. Competencies express the business needs, and policies are derived from these. These policies inform about the quality of the performance of operations. And, from the policy and performance requirements, solution requirements can be derived. A decomposition of the mission statement into a capability map or hierarchy is a very helpful aid to distribute the requirements over the business. At capability level the integration and fit of activities can be analyzed. An advantage is that requirements of resources can now be derived without getting lost in the details.



Note: A capability may combine tasks from different business functions into a solution.

Figure 31: Competence-Capability-Resource Relations

Competence – capability – resource: The relation between competence, capability, and resource needs formalization to maintain traceability. A business is composed of resources, resources combined provide a capability (skills, tools, and techniques combined), and once an organization has a company-specific way to operate the capability contributes to accomplish a competence. Vertically, requirements become traceable between competence and resources. Horizontally, strategic fit becomes traceable through the dependencies/combinations of parts of the capabilities that jointly compose a capability. By applying a formalized description for these concepts, traceability of requirements is ensured. As an example, in Figure 7 the concepts of the common language have been analyzed through IDEF0 modeling.

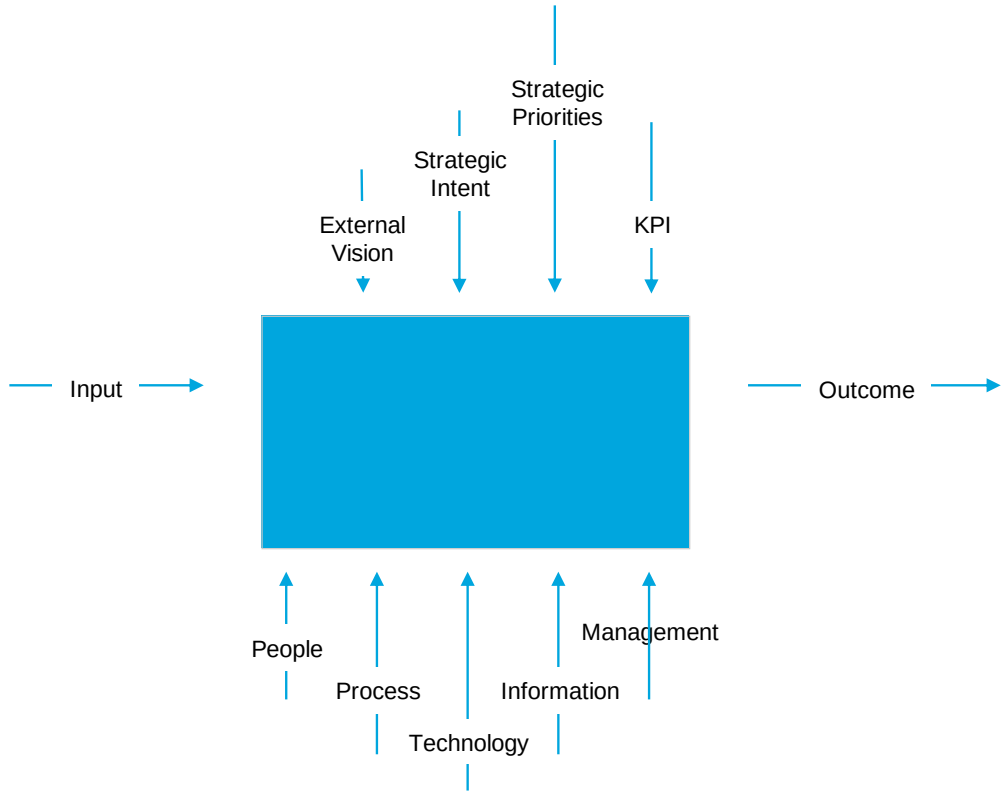


Figure 32: Common Language Applied with the IDEF0 Modeling Technique

At "resource level", requirements can be attributed to one aspect of operations: an automated system, an activity, or a particular skill when it concerns people. Requirement analysis is guided by the hierarchy of capabilities. At the lowest level, a capability represents an atomic piece of added value. Capabilities may also be an aggregation in order to provide meaningful boundaries for parts of the business.

We have discussed how the external vision and strategic intent can be represented and how these can be linked to the operational level. The next step is to understand how business priorities are represented. The above concepts have proven effective for giving direction to planning operations and prioritizing requirements.

This section has explained how and with what concepts the holistic view can be described and how the controlled relation between domains can give rigor to enterprise transformations.

E.7 Vertical Dependencies

Vertical traceability is required to ensure the stakeholder's purpose and intent about the performance of the system can be communicated and realized. The standard realizes this by prescribing how to represent vertical traceability. In this standard, three factors define the relationship of a stakeholder with the system: external vision, strategic intent, and strategic priorities. Each factor is described by specific concepts that need to be included to communicate the stakeholder's purpose and behavioral view.

External vision concepts capture insights derived from the external business context and relevant to the situation and are related to the challenges and opportunities the environment poses on the

organizational system. It identifies those elements in the environment that have relevance for the system itself. The explicit relevance is expressed in insights, beliefs, or assumptions on the industry in relation to the organizational system.

The strategic intent represents the ideas derived from these insights on how the organization should respond to them. Strategic principles and competencies are key concepts for vertical traceability. The strategic principles[21] are statements that prescribe how external challenges should be dealt with internally. The competencies prescribe how stakeholders have decided to accomplish the organizational purpose and strategic principles.

Competencies apply one or more capabilities. Capabilities prescribe the implementation-dependent level of specific solutions. Since the effectiveness of competencies depend on cultural aspects as well as experience and organizational effectiveness, a maturity matrix is a useful aid in developing enterprise transformations.

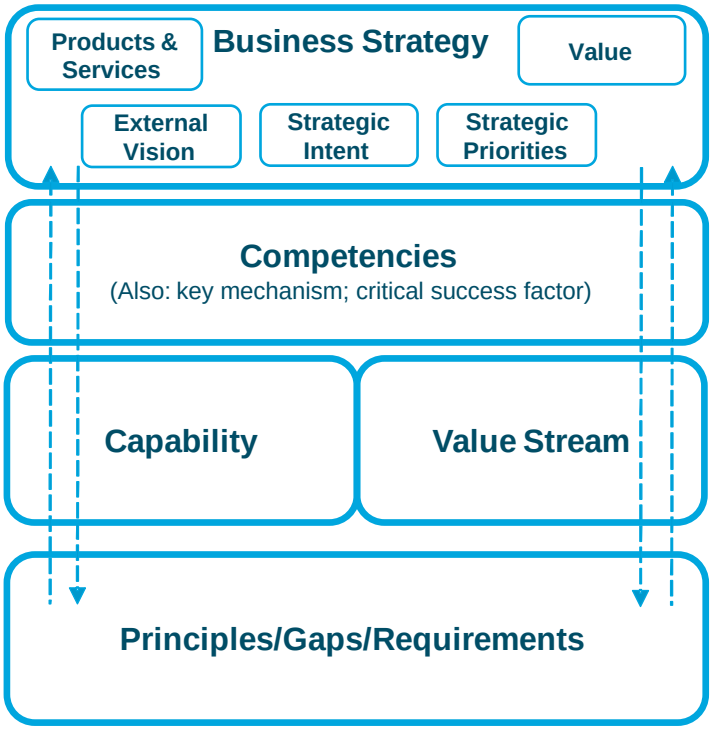


Figure 33: Vertical Traceability Demonstrated

Competencies and capabilities have the same dimension. All three represent an added value that contributes to higher-level goals. The difference is that capabilities have only a hierarchical relationship and are besides that strictly disjoint (have no overlap). Competencies show features that can be fulfilled by combinations of capabilities only to meet the required targets. Capabilities refer to a more atomic level. Both are key for communication of the transformation vision and strategy.

[21] Strategic principles can be both functional and construction principles. Functional principles shape the purpose and behavioral aspects, and construction principles set direction for strategic aspects of the operations; e.g., "do brand managers adopt the trend in social media fully, or do they work with other means to manage their brand?". The choice to include it in their strategy has a big impact on the type and duration of the transformation.

Besides the strategic intent, short-term priorities are also distinguished. The difference between the two informs about the ambition of the stakeholders and the feasibility of short-term changes. This is an important aspect to discover step-changes and phases of a transformation. The priorities communicate short-term objectives and what is the next step with respect to products and services, markets, capabilities, enterprise architecture, governance structure, competencies/capabilities, partnering, and suppliers.

In summary, vertical traceability is accomplished through applying the strategic statements through competencies and capabilities to implications for resources and operations.

E.8 Cross-Domain Dependency Mapping

Cross-domain dependencies can be defined through applying competencies and strategy elements to capabilities. Once dependency is identified it can be detailed through the Dependency Network Diagram[22] (shown in Figure 17).

The scope of an opportunity can be discovered by mapping it to the different capabilities, and then further analyzed by envisioning the implications of changing an application or technology as enabler for that capability. A visualization per business capability as done by the IDEF0 is quite helpful when doing this.

E.9 Implication Mapping

To complete the holistic view the Business Architect applies the strategy not only to the structure but also to the operations. This can be done by implication mapping to demonstrate the traceability of changes.

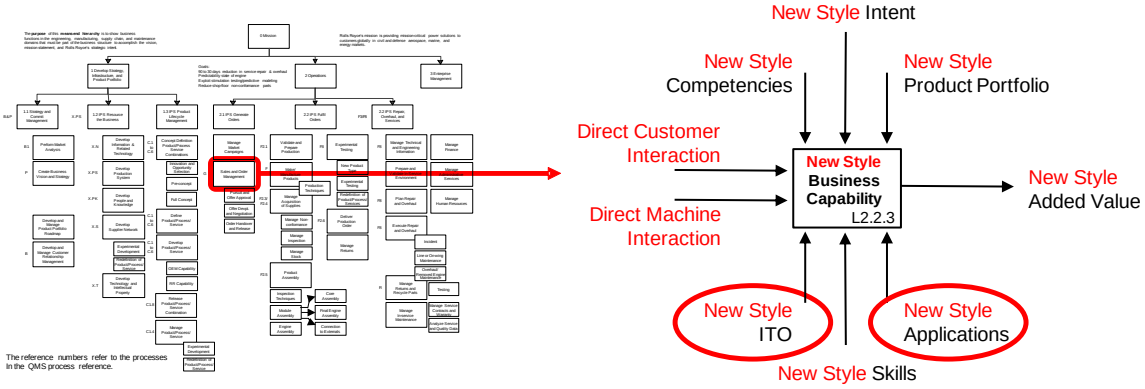


Figure 34: Demonstrating Traceability of Changes

[22] See the referenced Representational Scheme for Analyzing Information Technology and Organizational Dependency.

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