Chapters to Go

Skillsoft

Chapter 6: The Architecture Development Method

6.1 The ADM Phases

6.1.1 Preliminary

The Preliminary Phase prepares the organization for development of the architecture, ensuring:

- Commitment to the process
- Principles and constraints are defined
- Scope and assumptions are defined
- Development team is established
- Framework and methodologies identified
- Criteria set

The Preliminary Phase defines many of the general aspects of the architecture by defining:

- The organizational context
- The key drivers and elements of the organization
- The requirements for architecture work
- The architecture principles
- The framework to be used
- The relationships between management frameworks
- The enterprise architecture maturity

Inputs to the Preliminary phase come from external and internal sources to the enterprise and consist of architectural and non-architecture products. The expected inputs include:

- TOGAF and other architecture framework(s)
- Strategies and business plans
- Business principles, goals, and drivers
- Major frameworks currently implemented in the business
- Governance and legal frameworks
- Project budget for scoping
- Partnership and contract agreements
- IT strategy
- Pre-existing Architecture Framework, Organizational Model, and Architecture Repository

The steps of the Preliminary phase include:

- Scoping the organizations impacted - identifying the enterprise units and communities directly affected (core), benefited (soft), and affected (extended) by the change as well as the governance involved.

- Confirming the governance and support framework – the framework needs to exist and be adequate to establish the organizational change require to adopt a new enterprise architecture. This step ensures that framework is in place and the architecture touch-points and impact is understood and agreed upon by stakeholders.

- Defining and establishing enterprise architecture team and organization -included determining the existing enterprise and business capability and maturity and defining the changes required to existing business programs and projects. The work required to perform this work and to resolve any gaps involved will determine the resources required for future work.

- Identifying and establishing architecture principles – performed after establishing the organizational context.

- Selecting and tailoring architecture framework – tailoring the framework focuses on the making appropriate adjustments to terminology, processes, and architectural content.

- Implementing architecture tools – dependent on the scale, sophistication, and culture of the architecture function.

The outputs of the Preliminary phase are:

- Organizational Model for Enterprise Architecture

- Tailored Architecture Framework

- Initial Architecture Repository

- Restatement of business principles, goals, and drivers

- Request(s) for Architecture Work

- Governance Framework

6.1.2 A. Architecture Vision

The Architecture Vision Phase (Phase A) focuses on defining the scope of the project, creating and embracing the vision and obtaining approvals to move forward. It develops the foundation by:

- Ensuring recognition and endorsement of the project

- Validating the business principles, goals and drivers

- Prioritizing the Baseline Architecture effort

- Defining the stakeholders and their concerns and objectives

- Defining the business requirements

- Understanding impact on any parallel efforts

Many of the elements of the Architecture Vision, such as enterprise mission, vision, strategy, and goals, may already be established elsewhere. The activities of the Architecture Vision phase are to clarify those elements and translated them into an architecture context. The vision provides the first attempt to provide a high-level description of the Baseline and Target Architectures. The Architecture Vision is documented within the Statement of Architecture Work, which is signed by the sponsoring organization and provides the consensus required to move forward.

The inputs to the Architecture Vision phase include a Request for Architecture Work and the business principles, goals, and strategic drivers to be used to shape the Architecture Vision. Reference materials on architectures from external sources may be used as well. From the Preliminary phase, the Organizational Model for Enterprise Architecture and the Tailored Architecture Framework is utilized. Finally, the Architecture Repository provides a location to access all existing architectural documentation.

The scope and goals of the Request for Architecture Work will define the level of detail to address in the phase. The steps involved in creating an Architecture Vision include:

1. Establishing the architecture project – the project may be part of a larger effort within the enterprise or be standalone.

2. Identifying stakeholders, concern, and business requirements – the purpose of engaging stakeholders is to identify stakeholder vision components and requirements, scope boundaries, concerns, issues, and cultural factors that may affect the effort.

3. Confirming business goals, drivers, and constraints

4. Evaluation business capabilities – using a business capability assessment, this step is used to understanding the realities of the organization to deliver on the target architecture and what is required to build up the organization's capabilities.

5. Assessing the business transformation readiness – In addition to the capabilities, the organization's ability to undergo a change in its architecture must be evaluated. The results of a readiness assessment can be used to scope the architecture project.

6. Defining scope – Specifically focusing on the breadth of coverage, level of detail, partitioning characteristics, covered architecture domains, extent of the time, and the leveraged architecture assets.

7. Confirming architecture and business principles

8. Developing the Architecture Vision – The Architecture Vision is developed as well as business scenarios for articulating that vision.

9. Defining the value propositions and KPIs of the Target Architecture – Develops the business case for the architecture, value propositions for each stakeholder grouping, assessing and defining the procurement requirements, defining the required performance metrics and measures, and assessing the business risk to the proposed Target Architecture.

10. Identifying the risk of business transformation and any mitigation activities – Identifying and classifying the initial and residual level of risk before and after mitigation.

11. Developing the Statement of Architecture Work – Ensures the proposed work products match the business performance requirements.

Remaining activities seeks acceptance of the Statement of Architecture Work by the sponsors and stakeholders.

The results of the Architecture Vision phase are:

- An approved Statement of Architecture Work

- Refined statements of business principles, goals, and strategic drivers

- Architecture principles

- Capability Assessment

- Tailored Architecture Framework

- Architecture Vision

- Communication Plan

The statement of Architecture Work is an important document in the Architecture Development Method as it lays the groundwork of consensus for the entire effort. The specific items addressed in the Statement of Architecture Work are:

- Scope and constraints

- Plan(s) for architecture work

- Roles and responsibilities

- Risks and mitigating activity

- Work product performance assessments

- Business case

- KPI metrics

6.1.3 B. Business Architecture

The Business Architecture Phase (Phase B) focuses on the development of the business aspects of the architecture, such as strategic business planning and business process re-engineering.

The objectives of the phase are:

- Establish a Baseline Business Architecture

- Develop a Target Business Architecture

- Analyze gaps between Baseline and Target

- Select relevant viewpoints of the architecture

- Select relevant tools and techniques

The business architecture is a prerequisite for work in any other architecture domain and it the first set of activities to be complete in developing the overall enterprise architecture. Business value and return on investment in architecture activity can be demonstrated to stakeholders because the business architecture is defined appropriately from the very start.

Architecture descriptions are used to develop the Baseline Description of the enterprise architecture. The development of the Baseline Description involves a bottom-up analysis of the current state of the environment. During the analysis, the intrinsic values of architecture components are determine. However, some of these components may not be used in developing the Baseline Description, knowledge and understanding of these components is necessary especially in determining the any residual value that may exist in including or not including them.

Several modeling tools and techniques may be employed at this point, including:

- Activity Models – describes the functional aspects of the activities within the organization. Also called Business Process Models.

- Use-Case Models – describes either business processes or system functions.

- Class Models – describes information and the relationships and behaviors of that information.

These model types are typically represented in the Unified Modeling Language (UML). Some industry sectors have specific modeling techniques used in their sector, such as:

- Node Connectivity Diagram

- Information Exchange Matrix

The expected inputs to the Business Architecture Phase include:

- Architecture reference from external sources

- Request for Architecture Work

- Business principles, goals and strategic drivers

- Capability Assessment

- Communications Plan

- Organizational Model for Enterprise Architecture

- Tailored Architecture Frameworks

- Approved Statement of Architecture Work

- Architecture and business principles

- Enterprise Continuum

- Architecture Repository

- Architecture Vision

One of the focuses of the Business Architecture phase is adequately defining business processes in the detail required to support the architecture. This is especially true for new business processes that are introduced.

The general steps of the phase include:

1. Selecting reference models, viewpoints, and tools – Provides the basis for developing, demonstrating, and communicating the business architecture and includes identifying the overall modeling process, the requirement service granularity, boundaries, and contracts, and the catalogs of relevant business building blocks, matrices, and diagrams. The types of requirements to be collected are also determined.

2. Developing the Baseline Business Architecture Description – Provides a current outlook on the existing business environment. Using the information discovered in the previous step can aid in developing the description.

3. Developing the Target Business Architecture Description - provides a future representation of the business architecture suitable to meet the new architecture requirements.

4. Performing gap analysis – Identifies the gaps between the baseline and target architecture. In the process, will resolve conflicts using trade-off analysis, validate that models support the principles, objectives, and constraints, and test for completeness in the architecture models.

5. Defining roadmap components – Aids in prioritizing activities in subsequent phases.

6. Resolving impact – Aids in determining the impact of implementing the target business architecture in the current environment and the ongoing activities of enterprise operations.

7. Conducting formal reviews – Ensures that target business architecture meets the requirements of the stakeholders.

8. Finalizing the Business Architecture – Selects the building blocks and the appropriate standards for those building blocks, as well as any supporting work products.

9. Creating the Architecture Definition Document – used to document the rationale for building block decisions and providing a description of several components of the business architecture.

The outputs of the Business Architecture Phase include:

- Refinement of Architecture Vision phase deliverables

- Draft version of the Architecture Definition Document including the baseline and target business architecture

- Draft Architecture Requirements Specification

- Business Architecture components

6.1.4 C. Information Systems Architectures

The Information Systems Architecture Phase (Phase C) handles the development of the data and/or application aspects of the architecture, specifically creating Target Architectures for business processes supported by IT implementations.

The approach used to develop information systems architectures utilizes tools and techniques for developing data and application

architectures, including Enterprise Architecture Planning (ERP), Enterprise Resource Planning (ERP), and Customer Relationship Management (CRM). The focus of the architecture effort is on the implementation and integration of core applications for mission-critical business processes.

Implementation of architecture is commonly approached by designing top-down and performing a bottoms-up implementation, though the steps for implementing can follow any order. Another approach is data driven; where applications systems that create data are first implemented, then applications, which process data, and then application that archive data.

The general inputs to the Information Systems Architecture include:

- Request for Architecture Work

- Capability Assessment

- Communications Plan

- Organization Model for Enterprise Architecture

- Tailored Architecture Framework

- Application principles

- Data principles

- Statement of Architecture Work

- Architecture Vision

- Architecture Repository

- Draft Architecture Definition Document

- Baseline and Target Architectures for Business, Data, and

Application

- Draft Architecture Requirements Specification

- Architecture Roadmap, specifically related to the business architecture

Specific steps are associated with both data and application architecture domains. In either case, the level of detail required is dependent on the scope and goals of the overall effort. Building blocks, whether new or existing, must be defined within this phase.

The specific steps related to developing the data architecture are:

1. Selecting reference models, viewpoints, and tools – Provides the basis for developing, demonstrating, and communicating the data architecture and includes reviewing and validating data principles, selecting relevant resources and viewpoints, and tools and techniques for data capture, modeling and analysis. Identifying the overall modeling process for each viewpoint, and the catalogs of relevant data building blocks, matrices, and diagrams are important steps at the very start, particularly:

2. Data Entity/Data Component catalog

3. Data Entity/Business Function matrix

4. Business Service/Information matrix

5. System/Data matrix

6. Class diagram

7. Data Dissemination diagram

8. Data Lifecycle diagram

9. Data Security diagram

10. Data Migration diagram

11. Class Hierarchy diagram

12. Developing the Baseline Data Architecture Description – Provides a current outlook on the existing business environment. Using the information discovered in the Architecture Vision phase can aid in developing the description.

13. Developing the Target Data Architecture Description - provides a future representation of the data architecture suitable to meet the new architecture requirements.

14. Performing gap analysis – Identifies the gaps between the baseline and target architecture. In the process, will resolve conflicts using

       trade-off analysis, validate that models support the principles, objectives, and constraints, and test for completeness in the architecture models.

15. Defining roadmap components – Aids in prioritizing activities in subsequent phases.

16. Resolving impact – Aids in determining the impact of implementing the target data architecture in the current environment and the ongoing activities of enterprise operations.

17. Conducting formal reviews – Ensures that target data architecture meets the requirements of the stakeholders.

18. Finalizing the Data Architecture – Selects the building blocks and the appropriate standards for those building blocks, as well as any supporting work products.

19. Creating the Architecture Definition Document – used to document the rationale for building block decisions and providing a description of several components of the data architecture, including:

20. Business data model

21. Logical data model

22. Data management process model

23. Data Entity/Business Function matrix

24. Data Interoperability requirements

The specific steps related to developing the application architecture are:

1. Selecting reference models, viewpoints, and tools – Provides the basis for developing, demonstrating, and communicating the application architecture and includes reviewing and validating application principles, selecting relevant resources and viewpoints, and tools and techniques for data capture, modeling and analysis. The types of requirements to be collected are determined.

2. Identifying the overall modeling process for each viewpoint, and the catalogs of relevant data building blocks, matrices, and diagrams are important steps at the very start, particularly:

3. Application Portfolio catalog

4. Interface catalogs

5. System/Organization matrix

6. Role/System matrix

7. Application Interaction matrix

8. System/Function matrix

9. Application Communication diagram

10. Application and User Location diagram

11. Enterprise Manageability diagram

12. Process/System Realization diagram

13. Application Migration diagram

14. Software Distribution diagram

15. Software Engineering diagram

16. Developing the Baseline Application Architecture Description – Provides a current outlook on the existing business environment. Using the information discovered in the Architecture Vision phase can aid in developing the description.

17. Developing the Target Application Architecture Description - provides a future representation of the data architecture suitable to meet the new architecture requirements.

18. Performing gap analysis – Identifies the gaps between the baseline and target architecture. In the process, will resolve conflicts using trade-off analysis, validate that models support the principles, objectives, and constraints, and test for completeness in the architecture models.

19. Defining roadmap components – Aids in prioritizing activities in subsequent phases.

20. Resolving impact – Aids in determining the impact of implementing the target application architecture in the current environment and the ongoing activities of enterprise operations.

21. Conducting formal reviews – Ensures that target application architecture meets the requirements of the stakeholders.

22. Finalizing the Application Architecture – Selects the building blocks and the appropriate standards for those building blocks, as well as any supporting work products.

23. Creating the Architecture Definition Document – used to document the rationale for building block decisions and providing a description of several components of the application architecture.

The primary outputs of the Information Systems Architecture are:

- Refining the Architecture Vision

- Drafting the Architecture Definition Document for Data and Application Architectures

- Drafting the Data and Application sections of the Architecture Requirements Specification

- Identifying the information system components of an Architecture Roadmap

6.1.5 D. Technology Architecture

The Technology Architecture Phase (Phase D) focuses on the technical aspect of the architecture, specifically those available within the Architecture Continuum.

The decisions made in previous phases of the Architecture Development Method may have implications on the technology components and platform, particularly those decisions around service granularity and service boundaries. The areas of impact within the Technology Architecture include:

- Performance – platform service requirements can contain services with several functionality units that with varying non-functional requirements and more services than required by the requesting system

- Maintainability – If service granularity is to general, the introduction of change to the system may be too difficult and costly.

- Location and Latency – Inter-service communication may be impacted by the inappropriate setting of service boundaries and granularity

- Availability – When defining service composition and service granularity, high availability concerns may be a key determiner.

The expected inputs to the Technology Architecture Phase include:

- Architecture reference materials from external sources

- Product information

- Request for Architecture Work

- Capability Assessment

- Communications Plan

- Organizational Model for Enterprise Architecture

- Tailored Architecture Frameworks

- Approved Statement of Architecture Work

- Technology principles

- Architecture Repository

- Draft Architecture Definition Document

- Draft Architecture Requirements Specifications

- Business, Data, and Application Architecture components of the Architecture Roadmap.

One of the focuses of the Technology Architecture phase is adequately defining technology building blocks, existing and new, in the detail required to support the architecture. The general steps of the phase include:

1. Selecting reference models, viewpoints, and tools – Provides the basis for developing, demonstrating, and communicating the technology architecture and identifying the overall modeling process, service portfolios, boundaries, and contracts, and the catalogs of relevant business building blocks, matrices, and diagrams, particularly:

2. Technology standards catalog

3. Technology portfolio catalog

4. System/Technology matrix

5. Environments and Locations diagram

6. Platform Decomposition diagram

7. Processing diagram

8. Networked Computing/Hardware diagram

9. Communications Engineering diagram

10. Developing the Baseline Technology Architecture Description – Provides a current outlook on the existing technical environment. Using the information discovered in the previous step can aid in developing the description.

11. Developing the Target Technology Architecture Description - provides a future representation of the technology architecture suitable to meet the new architecture requirements.

12. Performing gap analysis – Identifies the gaps between the baseline and target architecture. In the process, will resolve conflicts using trade-off analysis, validate that models support the principles, objectives, and constraints, and test for completeness in the architecture models.

13. Defining roadmap components – Aids in prioritizing activities in subsequent phases.

14. Resolving impact – Aids in determining the impact of implementing the target technology architecture in the current environment and the ongoing activities of enterprise operations.

15. Conducting formal reviews – Ensures that target technology architecture meets the requirements of the stakeholders.

16. Finalizing the Technology Architecture – Selects the building blocks and the appropriate standards for those building blocks, as well as any supporting work products.

17. Creating the Architecture Definition Document – used to document the rationale for building block decisions and providing a description of several components of the technology architecture, including:

18. Functionality and attributes

19. Dependent building blocks

20. Interfaces

21. Mapping to business and organizational entities and policies

The outputs of the Business Architecture Phase include:

- Refinement of Architecture Vision phase deliverables

- Draft version of the Architecture Definition Document including the baseline and target technology architecture

- Draft Architecture Requirements Specification

- Technology Architecture components

6.1.6 E. Opportunities and Solutions

The Opportunities and Solutions phase (Phase E) is a checkpoint in the process to verify the suitability of the environment and architecture for implementation. The specific objectives include:

- Evaluating and selecting the appropriate implementation options

- Identifying the strategic parameters for change

- Assessing the dependencies, costs and benefits of projects

- Generating an implementation and migration strategy and plan

The Opportunities and Solutions phase is where the architecture team starts to be concerned with the actual implementation of the Target Architecture, looking into best path for implementing the architecture, bot h from the corporate business and technical perspective. IT activities are logically grouped into project work packages.

From an enterprise strategic change perspective, opportunities and solutions are identifying from top-down based on the architecture work already performed. Because identify existing opportunities and solutions is a key function of this phase, the list of inputs is extensive and the information provide often has to e consolidated, integrated, and analyzed sufficiently to identify the best way to proceed.

An implementation and migration strategy is created to outline the critical path of the overall implementation approach. This strategy is supported by the results of dependency analysis where the requirements of specific work packages are identified and related to other work packages to isolate the critical path. These work packages are then organized into portfolios, projects, and initiatives by the architecture.

The size and complexity of the gap between the baseline and target architectures will decide the number of increments realistically possible to move the architecture from the baseline to the target. Each of these increments is considered a Transition Architecture and consists of sets of coordinated and defined building blocks grouped into work packages. Transition Architectures allow changes to architecture without too extensive of impact on the organization in any single increment. It also allows simultaneous work on several architectures to be conducted on different levels of detail.

The inputs of the Opportunities and Solutions phase include:

- Architecture reference materials

- Product information

- Request for Architecture Work

- Capability Assessment

- Communications Plan

- Planning methodologies

- Organizational Model for Enterprise Architecture

- Governance models and frameworks

- Tailored Architecture Framework

- Statement of Architecture Work

- Architecture Vision

- Architecture Repository

- Draft Architecture Definition Document

- Draft Architecture Requirements Specification

- Change Requests

The steps of the Opportunities and Solutions phase are:

1. Determining key corporate change attributes – ties in the organization's business culture to the best implementation approach for the enterprise architecture and includes the creation of an Implementation Factor Assessment and Deduction Matrix to store all architecture implementation and migration decisions.

2. Determining business constraints – identifies the business drivers that may constrain the sequence of implementation activities and includes a review of the corporate and corporate live-of-business strategic plans and the Enterprise Architecture Maturity Assessment.

3. Consolidating gap analysis results – consolidates and integrates the gap analysis results from the Business, Information Systems, and Technology Architectures and creates the Consolidated Gaps, Solutions, and Dependencies Matrix to easily find SBBs to address one or more gaps

4. Reviewing IT requirements – assessing the IT requirements, gaps, solutions, and factors with the intent to find the minimum set of functional requirements to implement the Target Architecture more effectively and efficiently.

5. Consolidating interoperability requirements – Uses the requirements found int eh previous phases to consolidate and reconcile the interoperability requirements.

6. Validating dependencies – identifies the business, information, workflow, IT, and Foundation dependencies as they relate to constraints on the Implementation and Migration Plans.

7. Confirming readiness and risk for business transformation – assess the organization's readiness to handle the business transformation changes and adapt to the associated risks.

8. Formulating Implementation and Migration Strategy – identifies the strategic approach to introduce the new architecture into the existing environment. Generally, there are three basic approaches:

9. Greenfield – starting from the beginning

10. Revolutionary – radical change to the environment

11. Evolutionary – phased approach to introduce capabilities

    Implementation planning attempt to identify quick wins, achievable targets, and value chain methods.

12. Grouping major work packages – major work packages are identified, analyzed, and classified as mainstream, contain, and replace systems.

13. Identifying Transition Architectures – When an incremental approach is required to realize the Target Architecture, Transition Architectures and Capabilities are identified

14. Creating portfolio and project charters – Each incremental work effort must have appropriate project documentation in place to move forward to realize the Transition and Target Architectures

The expected outputs of the Opportunities and Solutions phase include:

- Refined versions of the Architecture Vision, Business, Information Systems, and Technology Architecture deliverables

- Consolidated Architecture Roadmap

- Capability Assessment

- Transition Architecture(s)

- Implementation and Migration Plan

6.1.7 F. Migration Planning

The primary focus of the Migration Planning approach is to create a viable Implementation and Migration Plan with the assigned portfolio and project managers. This includes assessing the dependencies, costs and benefits of the transition architecture and migration projects.

The Implementation and Migration Plan is just one part of a series of plans issued by the enterprise management frameworks that must be co-ordinated with deliver business value and ensure resources are available when required. The Migration Planning phase ensures that all concerned organizational agencies are fully aware of the scope and adopt the Implementation and Migration Plan appropriately with their current activities.

Additionally, the architecture evolution cycle is established to ensure relevancy of the architecture in the midst of business and technological advancement.

The inputs to the Migration Planning phase include:

- Architecture reference materials

- Requests for Architecture Work

- Capability Assessment

- Communications Plan

- Organizational Model for Enterprise Architecture

- Governance models and frameworks

- Tailored Architecture Framework

- Statement of Architecture Work

- Architecture Vision

- Architecture Repository

- Draft Architecture Definition Document

- Draft Architecture Requirements Specification

- Change Requests

- Consolidated Architecture Roadmap

- Transition Architectures

- Implementation and Migration Plan

The steps of the phase are:

1. Confirming management framework interactions – Working through the Implementation and Migration Plan to co-ordinate and align activities with other frameworks, particularly Business Planning, Enterprise Architecture, Portfolio/Project Management, and Operations Management.

2. Assigning business value to each project – addresses various issues to ensure business value parameters are understood and utilized, including:

3. Performance Evaluation Criteria

4. Return on Investment Criteria

5. Business Value

6. Critical Success Factors

7. Measures of Effectiveness

8. Strategic Fit

9. Estimating requirements, timings, and vehicles – Determine the resource requirements, times for executing each project or project increment and provide initial cost estimates for each project. This includes the availability and delivery of the resources for each project.

10. Prioritizing migration projects – Using cost/benefit analysis and risk validation to identify the benefits and each project and determine the appropriate priority.

11. Confirming Transition Architecture Increments – Updates the Architecture Definition Document with updated information about the transition architecture(s).

12. Generating the Architecture Implementation Roadmap – Establishes the sequencing of the Implementation and Migration Plan to ensure consistent adding of business value through the transition architecture projects being executed in a timely and effective basis.

13. Establishing the architecture evolution cycle – Manages the Enterprise Architectures and Transition Architecture as configuration items that are maintained and evolved throughout the lifecycle of the varied solutions.

The expected outputs of the Migration Planning phase consist of:

- Implementation and Migration Plan

- Finalized Architecture Definition Document

- Finalized Architecture Requirements Specification

- Finalized Architecture Roadmap

- Finalized Transition Architecture

- Re-usable Architecture Building Blocks

- Requests for Architecture Work

- Architecture Contracts

- Implementation Governance Model

- Change Requests

6.1.8 G. Implementation Governance

The Implementation Governance phase (Phase G) provides architectural oversight to the implementation of the architecture int eh environment. It seeks to

- Provide recommendations for each project

- Construct an Architecture Contract

- Perform governance functions

- Ensure conformance with the defined architecture

The approach used by the Implementation Governance phase is to establish an implementation program to enable the delivery of transition architectures agreed upon in the Migration Planning phase and a phased deployment schedule based on business priorities and guided by the Architecture Roadmap.

Using the Architecture Contract, the implementation and architecture organizations are connected.

The inputs to the Implementation Governance phase include:

- Architecture reference materials

- Request for Architecture Work

- Capacity Assessment

- Organizational Model for Enterprise Architecture

- Tailored Architecture Framework

- Statement of Architecture Work

- Architecture Vision

- Architectures Repository

- Architecture Definition Document

- Architecture Requirements Specification

- Architecture Roadmap

- Transition Architectures

- Implementation Governance Model

- Architecture Contract

- Implementation and Migration Plan

The steps of the Implementation Governance phase consist of:

1. Confirming scope and priorities for deployment – review the outputs of migration planning and produce recommendation. Identify priorities, issues, and building blocks and perform gap analysis related to Solution Building Blocks.

2. Identifying deployment resources and skills – identify the system development methods required to develop solution and ensure the method allows feedback to be given to the architecture team on designs.

3. Guiding development of solutions deployment – formulates recommendations on the project, document the Architecture Contract and update any documentation or repositories.

4. Performing compliance reviews – Review the current governance and compliance for each building block and conduct post-development reviews with the intention of closing the development portion of the deployment projects.

5. Implementing business and IT operations - carry out each deployment project, ensuring that all new Baseline Architectures are published to the Architecture Repository and other repositories impacted are updated.

6. Performing post implementation review – conduct all reviews after implementation, publishing those reviews and closing out projects as they complete.

The expected outputs of the Implementation Governance phase include:

- Architecture Contract

- Compliance Assessments

- Change Requests

- Architecture-compliant solutions

6.1.9 H. Architecture Change Management

Architecture Change Management (Phase H) provides established procedures for controlling change to the new architecture. The principle activities within this phase concentrate on monitoring developments in technology and changes in the business horizon that may affect the architecture-compliant system and determine a need to introduce Requests for Architecture Work.

Changes to the existing infrastructure can be integrated with the enterprise architecture in the following ways:

- Strategically form a top down approach with directed changes to enhance or create new capabilities

- Bottom up changes to correct or enhance capability from operations management

- From experiences with previously delivered project that are in the care of operations management and delivered outside this function

An Architecture Board will typically assess and approve all Requests for Change (RFC) to the architecture. The reasons for changes requests generally come from technology or business reasons. Business reasons for change are a result of:

- Business-as-usual developments

- Business exceptions

- Business innovations

- Business technology innovations

- Strategic changes

The technological reasons include:

- New technology reports

- Asset management cost reductions

- Technology withdrawal

- Initiatives related to standards

The Change Management process determines how changes are managed and the techniques and methodologies used. Changes range for maintenance activities to architecture re-design.

Architectural changes are classified into three categories:

- Simplification change

- Incremental change

- Re-architecting change

Determining the category of a change requires that:

- All events impacting the architecture are registered

- Architecture tasks are properly resources and managed

- Assessment of activity by responsible party managing resources

- Evaluation of impact to the architecture

The inputs to the Architecture Change Management phase include:

- Architecture reference materials

- Requests for Architecture Work

- Organizational Model for Enterprise Architecture

- Tailored Architecture Framework

- Statement of Architecture Work

- Architecture Vision

- Architecture Repository

- Architecture Definition Document

- Architecture Requirements Specification

- Architecture Roadmap

- Change Request for technology or business change

- Transition Architecture

- Implementation Governance Model

- Architecture Contract

- Compliance Assessments

- Implementation and Migration Plan

The steps related to the Architecture Change Management phase are:
1. Establishing value realization process – Exploits value realization within business projects.

2. Deploying monitoring tools – Used to track a variety of influencing aspects, such as:

3. Technology changes

4. Business changes

5. Enterprise architecture capability maturity

6. Asset management

7. QoS performances

8. business continuity requirements

9. Managing risk – Manages the architecture risks and provides recommendations for IT strategy.

10. Providing analysis – Analyses performance, conducts performance reviews, assesses change requests, and performs gap analysis to ensure that changes conform to the enterprise architecture governance and framework.

11. Developing change requirements - Making recommendation on change requirements.

12. Managing governance process – Manage Architecture Board meetings.

13. Activating the process to implement change – produces a new Request for Architecture Work and ensures work products of changes are captured in the Architecture Repository

The outputs of the Architecture Change Management phase are:

- Updates to the Architecture for maintenance reasons

- Changes to the architecture framework and principles

- New Request for Architecture Work

- Statement of Architecture Work

- Architecture Contract

- Compliance Assessments

6.1.10 Requirements Management

Requirements management is an activity that encompasses and oversees all phases within the ADM with the purpose of managing architecture requirements.

There is no mandated process or tool for requirements management by TOGAF, despite its importance to the overall development cycle. Some of the sources for requirements are:

- Business Scenarios

- Volere Requirements Specification Templates

- Requirements Tools

The inputs to the Requirements Management phase are:

- Updated Architecture Repository

- Organizational Model for Enterprise Architecture

- Tailored Architecture Framework

- Statement of Architecture Work

- Architecture Vision

- Architecture requirements

- Requirements Impact Assessment

The steps of the Requirements Management phase are cooperation between requirement management and other ADM phases, and include:

1. Identify document requirements – From various ADM phases using business scenarios or analogous techniques.

2. Determining baseline requirements – Includes determining priorities, confirming stakeholders. In addition, recording the requirements in the requirements repository.

3. Monitoring baseline requirements.

4. Identifying changed requirements – remove and add priorities and or requirements through ADM phases

5. Identifying changed requirements – specific steps through the requirements management process to identify change requirements and crate new priorities. Identify any conflicts and generate Requirements Impact Statement.

6. Assess Impact on current and previous phases and create a Requirements Impact Statement.

7. Implement requirements

8. Document or update requirements repository.

9. Implement change in the current phase.

10. Assess and revise gap analysis for past phases.

The output of the requirements management process consists of:

- Requirements Impact Assessment

- Updated Architecture Requirements Specification

- Updated Requirements Repository

6.2 Adapting the ADM

The ADM process can be adapted in several types of usage scenarios and process styles.

6.2.1 Techniques for Architecture Development

The different techniques available support specific tasks within the ADM:

- Architecture Principles

- Stakeholder Management

- Architecture Patterns

- Business Scenarios

- Gap Analysis

- Migration Planning techniques

- Interoperability Requirements

- Business Transformation Readiness Assessment

- Risk Management

- Capability-Based Planning

6.2.2 Architecture Partitioning

Partitioning of architecture is an effort to establish or show boundaries between individual architectures or groupings of related architectures for a variety of reasons, such as:

- The complexity involved with addressing all existing problems within a single architecture.

- The conflict that exists between different architecture.

- The ability for specific architects to own and develop specific segments of the overall architecture.

- Enables modular re-use of architecture segments for more effective implementation and improvement of the architecture.

For successful architecture partitioning, the characteristics of both solutions and architectures must be defined. Any number of approaches can be used to provide a definition.

The more common set of characteristics for a solution include:

- Subject Matter – describes the content, structure, and function of the solution

- Time – the expected period of time for a solution's existence

- Maturity/Volatility – the extent of change likely over time for the subject matter and environment

The more common set of characteristics for architecture include:

- Subject Matter – describe specific solutions and consequently inherit objective characteristics represented by the solution.

- Viewpoint – a partial representation of the solution based on stakeholder needs built by architectural domains and specific artifacts.

- Level of Detail – represents the uses of architecture.

- Level of Abstraction – represents how abstracted a specific architecture is from the solution it represents.

- Accuracy – how accurate an architecture is as a description of the solution.

Once the characteristics have been defined to the solutions and architectures, the Enterprise Continuum can be partitioned and organized into a set of related solutions and architecture.

6.2.3 Architecture Patterns

A pattern is a reusable object that was useful in one practical situation and has the potential to be useful in other similar situations. Formalizing the process to capture patterns is beneficial for an organization as a way to acknowledge, build, and share best practices in support.

The content of a pattern contains:

- Name – unique heading reference for the pattern

- Problem – description of the situation where pattern is applied

- Context – the existing preconditions where the pattern is applicable

- Forces – description of the relevant forces and constraints

- Solution – description of pattern details

- Resulting Context – the post-conditions present after applying the pattern

- Examples – sample applications of the pattern

- Rationale – a explanation of the pattern

- Related Problems – a description of any relationships between this pattern and other patterns

- Known Uses – known applications of the pattern in the existing systems

6.2.4 Architecture Principles

Principles are general rules and guidelines intended to inform and support the organization's fulfillment of its mission.

Principles can be established on any or all levels of the organization:

- Enterprise – provides a basis for decision-making throughout the enterprise

- Information Technology – provides guidance on the use and development of all IT resources and assets

- Architecture – IT principles that relate to architecture work

Criteria have been identified to distinguish a good set of principles:

- Understandable

- Robust

- Complete

- Consistent

- Stable

Documentation format of a principle includes:

- Name

- Statement

- Rationale

- Implication

Below is an example list of principles from the US Government's Federal Enterprise Architecture Framework (FEAF):

- Business Principles
  - Primacy of Principles

- o Maximum Benefit to the Enterprise

- o Information Management is Everybody's Business

- o Business Continuity

- o Common Use Applications

- o Service Orientation

- o Compliance with Law

- o IT Responsibility

- o Protection of Intellectual Property

  - Data Principles

    - o Data is an Asset

    - o Data is Shared

    - o Data is Accessible

    - o Data Trustee

    - o Common Vocabulary and Data Definition

    - o Data Security

  - Application Principles

    - o Technology Independence

    - o Ease-of-Use

  - Technology Principles

    - o Requirements-Based Change

    - o Responsive Change Management

    - o Control Technical Diversity

    - o Interoperability

6.2.5 Risk Assessments

Measuring the effect and frequency of risks has no set rules. Best practices of risk management provide the following criteria to be used in assessments.

For Effect:

- Catastrophic – critical financial loss that has the possibility of bankruptcy

- Critical – serious financial loss in more than one line of business with a loss in productivity

- Marginal – financial loss in a single line of business and a reduced return on IT investment

- Negligible – minimal impact on a single line of business affecting their ability to deliver services or products

For Frequency:

- Frequent – likely to occur often or continuously

- Likely – occurs several times during a transformation cycle

- Occasional – occurs sporadically

- Seldom – remotely possible to occur

- Unlikely – Will not occur

Combining the criteria, corporate impact can be determined for risk:

- Extremely High Risk – most likely with fail with severe consequences

- High Risk – significant failure impacting in certain goals not being met

- Moderate Risk – noticeable failure threatening the success of certain goals

- Low Risk – Certain goals will not be successful

6.2.6 Gap Analysis

To validate a developing architecture, gap analysis is used throughout the Architecture Development Method.

The potential sources of gaps include:

- Business Domain

  o People

  o Process

  o Tools

  o Information

  o Measurement

  o Financial

  o Facilities

- Data Domain

  o Insufficient currency

  o Missing data

  o Wrong data

  o Data availability

  o Data not created

  o Data not used

  o Data relationships

- Application domain

  o Impacted applications

  o Eliminated applications

  o Created applications

- Technology domain

  o Impacted technologies

  o Eliminated technologies

  o Created technologies

6.2.7 Service Oriented Architectures

Business environments are becoming significantly more sophisticated. Service Oriented Architecture (SOA) as a concept provides an architectural style, which intends to simplify the business and its interoperability. When applied to software development, SOA structures applications in order to facilitate system flexibility and agility.

Service Oriented Architecture is becoming more present as a business opportunity to allow organizations to be structured to provide open, agile and flexible solutions. A business-led SOA approach has several fundamental aspects:

- Rich domain knowledge of horizontal and vertical concerns

- A structured, quantitative understanding of business value, costs, differentiations, and quality measures

- Broad understanding of current capability

- Broad understanding of the feasibility and viability of SOA technology-driven solutions

6.2.8 Applying Iteration

The Architecture Development Method is a process that can be used with other development or project management methods or as a stand-alone process. To support this flexibility, the ADM can be used iteratively. The factors to influence to what extent the method is iterative are:

- Formality and nature of established process checkpoints

- Level of stakeholder information

- Number of teams involved

- Maturity of the deployed solutions

- Attitude to risk

Iteration is characterized within ADM as:

- Allowing project teams to cycle through the entire ADM because of Architecture Change Management.

- Allowing project teams to cycle between ADM phases in planned cycles covering multiple phases.

- Allowing project teams to operate ADM cycles concurrently with relationships between different teams.

Iteration cycles span multiple phases of activity and allow formal review when each iteration cycle is complete. The suggested iteration cycles are:

Architecture Context Iteration – initial architecture activity that establish approach, principles, scope, and vision.

- Architecture Definition Iteration – creates the architecture content through the Business, Information system, and Technology Architecture phases.

- Transition Planning Iteration – creates formal change roadmaps for the defined architectures.

- Architecture Governance Iterations – manages change activity while reaching for a defined Target Architecture.

An important first step is defining the architecture. Two process styles to do this exist:

- Baseline First – baseline assessments assist in identifying problem areas and improvement opportunities and useful when target solutions are not understood and agreed upon.

- Target First – the target solution is defined further and mapped back to the baseline description to identify the required change activity.

6.2.9 Business Scenarios

Business Scenarios are used at various stages of the enterprise architecture to assist in identifying and understanding business needs and linking business requirements to the enterprise architecture.

A business scenario will describe:

- Business processes, applications , or set of applications enabled by the architecture

- Business and technology environment

- People and computing components executing the scenario

- Desired outcomes from proper execution

Used to represent a significant business need or problem and enabling vendors to understand the value of the architectural solution, business scenarios are 'SMART':

- Specific – defining what needs to be done

- Measurable – providing clear measures of success

- Actionable – determining the elements and plans for the solution

- Realistic – solving the problem within the physical reality, time, and cost constraints

- Time-bound – clearly stating the expiration of the solution opportunity

6.2.10 Security Architectures

Development of security architecture typically has a dual perception of remaining separate from the rest of the enterprise architecture development and needing to be integrated with that enterprise architecture. The security architect is tasked with the enforcement of security

policies, including within the new developments of the enterprise architecture.

Security architectures have the following characteristics:

- They have their own methods.

- They have their own discrete views and viewpoints.

- They address non-normative flows.

- They introduce their own normative flows.

- They introduce unique, single purpose components

- They require a unique set of skill requirements in the IT architect

The concerns of the security architect include:

- Authentication

- Authorization

- Audit

- Assurance

- Availability

- Asset Protection

- Administration

- Risk Management

The enterprise requirements management process should include the security policy and standards. The security policy is an executive creation and is generally long-term entities in the enterprise. Standards, however, change more frequently and are often tied to specific technologies.

New security requirements generally arise from:

- New statutory or regulatory mandates

- New threats

- New IT architecture initiatives with new stakeholders or requirements

6.2.11 Architecture Skills Framework

Skill frameworks provide a perspective on competency levels required for roles and define:

- The roles within a work area

- The skills required for each role

- The knowledge required to successfully fulfill a role

Skills are identified by the category they fall into:

- Generic Skills

- Business Skills and Methods

- Enterprise Architecture Skills

- Program or Project Management Skills

- IT General Knowledge Skills

- Technical IT Skills

- Legal Environment

Skills are further categorized by applying four levels of knowledge or proficiency, which are:

- Background – no required skill but can be managed and defined

- Assurance – understands the background and advise client accordingly

- Knowledge – detailed knowledge of subject area
- Expert – extensive and substantial practical experience.