TOGAF

Version 9 Enterprise Edition

Module 22
Phase D
Technology Architecture

TOGAF

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Making standards work™

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Module Objectives

The objectives of this module are to understand:

- The objectives of Phase D, Technology Architecture
- What it consists of
- What inputs are needed for it
- What the outputs are

Technology Architecture

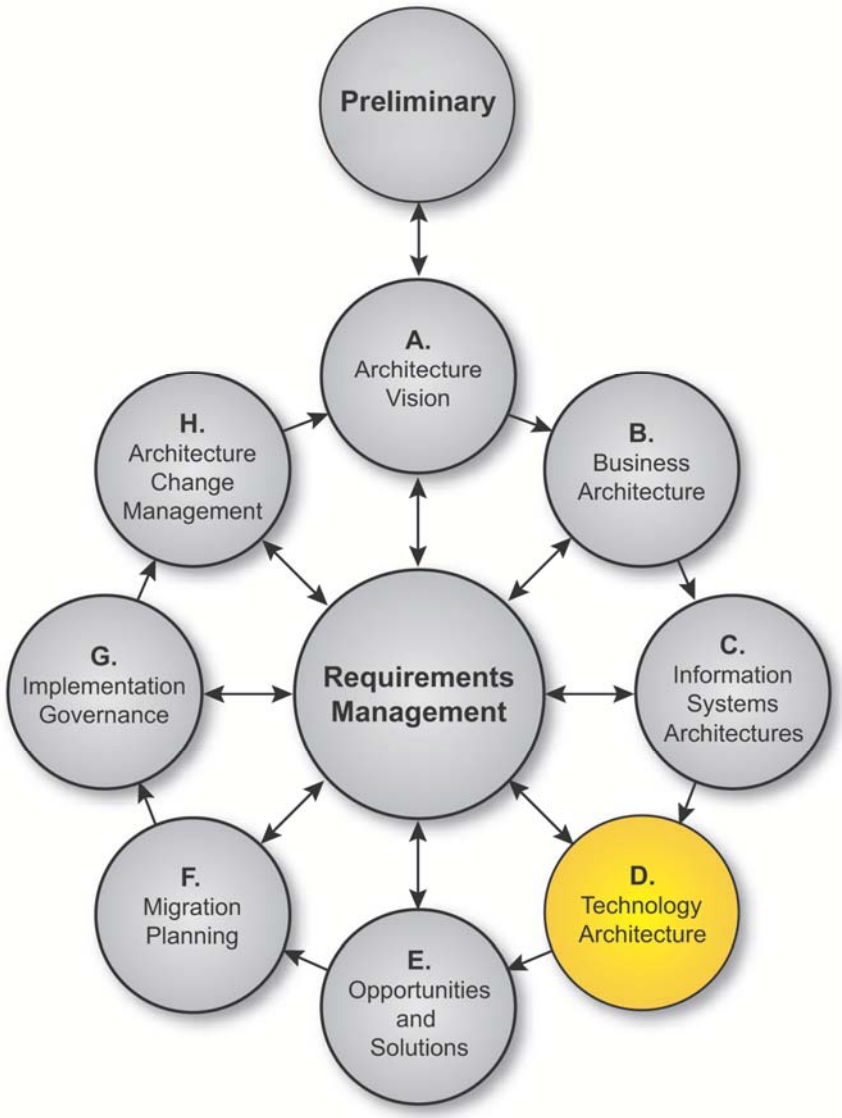
Objective of Phase D:

- to develop a Technology Architecture that will form the basis of the subsequent implementation and migration planning

Approach

- Review the Technology Architecture Resources available in the Architecture Repository
  - Existing IT Services in the IT Repository or IT Service Catalog
  - The TOGAF TRM
  - Technology models relevant to the organization

Technology Architecture: Inputs



- Request for Architecture Work
- Capability Assessment
- Communications Plan
- Organization model for enterprise architecture
- Tailored Architecture Framework
- Technology principles
- Statement of Architecture Work
- Architecture Vision
- Architecture Repository

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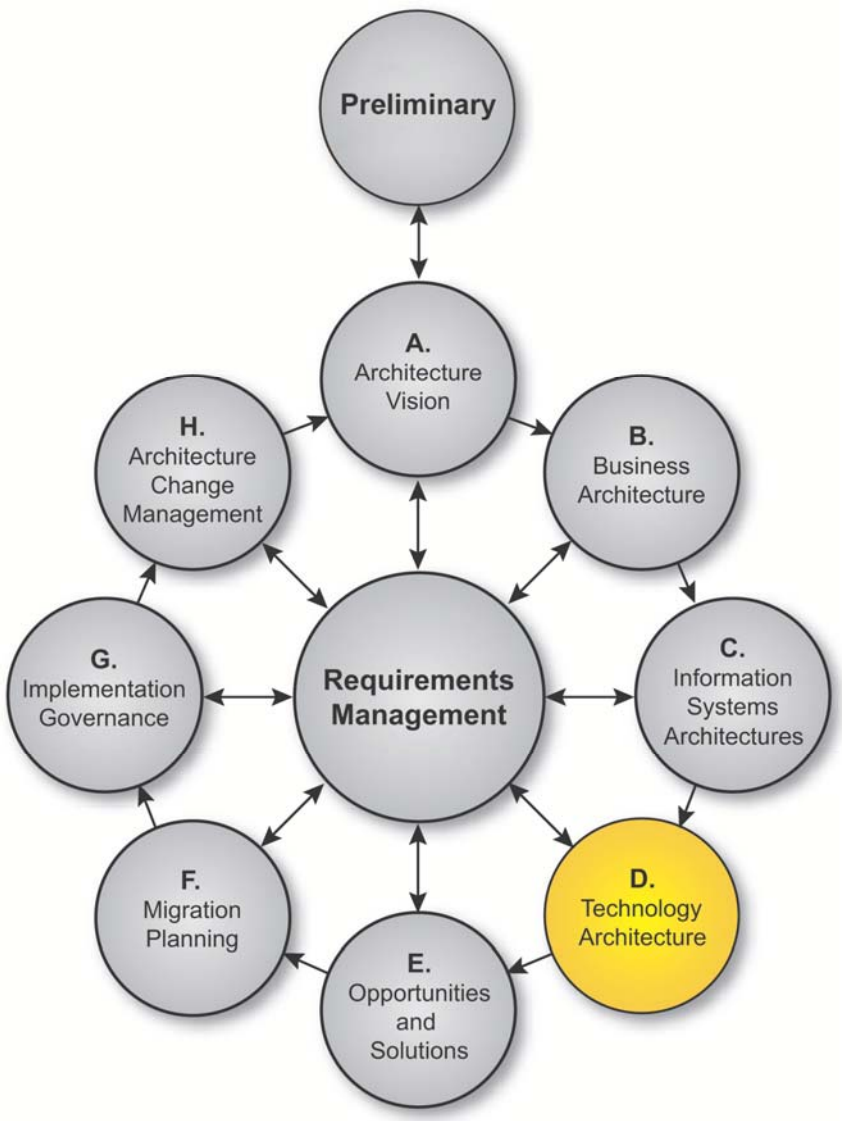
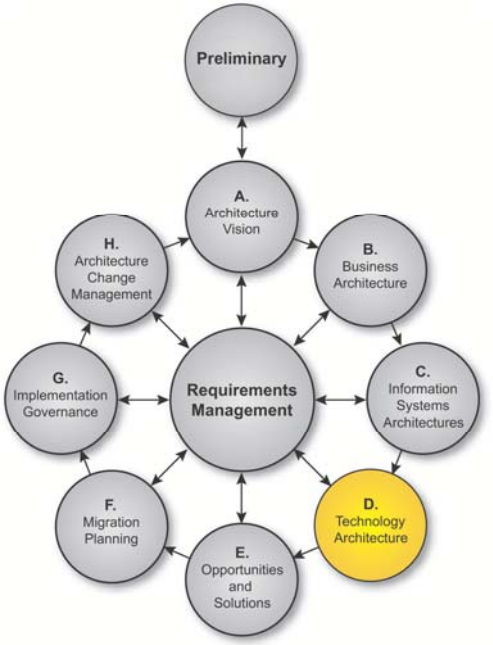
Technology Architecture: Inputs



- Draft Architecture Definition Document, containing:
  - Baseline Business Architecture (detailed)
  - Target Business Architecture (detailed)
  - Baseline Data Architecture (detailed)
  - Target Data Architecture (detailed)
  - Baseline Application Architecture (detailed)
  - Target Application Architecture (detailed)
  - Baseline Technology Architecture (vision)
  - Target Technology Architecture (vision)
- Draft Architecture Requirements Specification, including gap analysis results and technical requirements
- Business, Data, and Application Architecture components of an Architecture Roadmap

Steps



9. Create Architecture Definition Document

8. Finalize the Technology Architecture

7. Conduct formal stakeholder review

6. Resolve impacts across the Architecture Landscape

5. Define roadmap components

4. Perform gap analysis

3. Develop Target Technology Architecture Description

2. Develop Baseline Technology Architecture Description

1. Select reference models, viewpoints, and tools

Step 1: Select reference models, viewpoints, and tools

- Review/generate and validate technology principles – see Architecture Principles
- Select Technology Architecture resources (reference models, patterns, …)
- Select relevant Technology Architecture viewpoints
- Identify appropriate tools and techniques (including forms) to be used for data capture, modeling, and analysis, in association with the selected viewpoints.
- these may be simple documents and spreadsheets, or more sophisticated modeling tools and techniques.

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Step 1: Select reference models, viewpoints, and tools

- Determine Overall modeling Process
  - For each viewpoint, select the models needed to support the specific view required, using the selected tool or method. Confirm all stakeholders' concerns are addressed. If not, create new models to address concerns not covered, or augment existing models

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Example Artifacts

Preliminary Phase

- Principles catalog

Phase A, Architecture Vision

- Stakeholder Map matrix
- Value Chain diagram
- Solution Concept diagram

Phase B, Business Architecture

- Organization/Actor catalog
- Driver/Goal/Objective catalog
- Role catalog
- Business Service/Function catalog
- Location catalog
- Process/Event/Control/Product catalog
- Contract/Measure catalog
- Business Interaction matrix
- Actor/Role matrix
- Business Footprint diagram
- Business Service/Information diagram
- Functional Decomposition diagram
- Product Lifecycle diagram
- Goal/Objective/Service diagram
- Use-Case diagram
- Organization Decomposition diagram
- Process Flow diagram
- Event diagram

Phase C, Data Architecture

- Data Entity/Data Component catalog
- Data Entity/Business Function matrix
- System/Data matrix
- Class diagram
- Data Dissemination diagram
- Data Security diagram
- Class Hierarchy diagram
- Data Migration diagram
- Data Lifecycle diagram

Phase C, Application Architecture

- Application Portfolio catalog
- Interface catalog
- System/Organization matrix
- Role/System matrix
- System/Function matrix
- Application Interaction matrix
- Application Communication diagram
- Application and User Location diagram
- System Use-Case diagram
- Enterprise Manageability diagram
- Process/System Realization diagram
- Software Engineering diagram
- Application Migration diagram
- Software Distribution diagram

Phase D, Technology Architecture

- Technology Standards catalog
- Technology Portfolio catalog
- System/Technology matrix
- Environments and Locations diagram
- Platform Decomposition diagram
- Processing diagram
- Networked Computing/Hardware diagram
- Communications Engineering diagram

Phase E. Opportunities & Solutions

- Project Context diagram
- Benefits diagram

Requirements Management

- Requirements catalog

Step 1: Select reference models, viewpoints, and tools

- Identify Required Catalogs of Data Building Blocks

The following catalogs should be considered for development within a Technology Architecture:

- Technology Standards catalog
- Technology Portfolio catalog

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Step 1: Select reference models, viewpoints, and tools

- Identify Required Matrices
  - Matrices show the core relationships between related model entities.
  - Recommended to develop a System/Technology Matrix
- Identify Required Diagrams
  - Diagrams present the Technology Architecture information from a set of different viewpoints
  - The following diagrams are recommended
    - Environments and Locations diagram
    - Platform Decomposition diagram
    - Networked Computing / Hardware diagram
    - Communication diagram

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Step 1: Select reference models, viewpoints, and tools

- Identify Types of Requirements to be Collected
  - e.g. Functional requirements, Non-functional requirements, Assumptions, Constraints, Domain-specific Business Architecture principles, Policies, Standards, Guidelines, Specifications

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Step 1: Select reference models, viewpoints, and tools

- Select Services
  - The services portfolios are combinations of basic services from the service categories in the TOGAF TRM.
  - For each building block, build up a service description portfolio as a set of non-conflicting ser vices.
  - The set of services must be tested to ensure that the functionality provided meets application requirements.

Step 2 Develop a Baseline Technology Architecture Description

If possible, identify the relevant Technology ABBs, drawing on the Architecture Repository.

- If nothing exists, define each application in line with the Technology Portfolio catalog
- Where new architecture models need to be developed use the models identified in Step 1 as a guideline for creating new architecture content to describe the Baseline Architecture.

Step 3 Develop Target Technology Architecture Description

- If possible, identify the relevant Technology Architecture building blocks, drawing on the Architecture Repository
- Where new architecture models need to be developed use the models identified within Step 1 as a guideline

Step 4 Perform Gap Analysis

Verify the architecture models for internal consistency and accuracy

Note changes to the viewpoint represented in the selected models from the Architecture Repository, and document

Test architecture models for completeness against requirements

Identify gaps between the baseline and target:

- Create the gap matrix
- Identify building blocks to be carried over, classifying them as either changed or unchanged.
- Identify eliminated building blocks.
- Identify new building blocks.
- Identify gaps and classify as those that should be developed and those that should be procured.

Step 5: Define roadmap components

- This initial Technology Architecture roadmap will be used as raw material to support more detailed definition of a consolidated, cross-discipline roadmap within the Opportunities & Solutions phase.

Step 6: Resolve impacts across the Architecture Landscape

- Architecture artifacts in the Architecture Landscape should be examined to identify:
  - Does this Technology Architecture create an impact on any pre-existing architectures?
  - Have recent changes been made that impact on the Technology Architecture?
  - Are there any opportunities to leverage work from this Technology Architecture in other areas of the organization?
  - Does this Technology Architecture impact other projects ?
  - Will this Technology Architecture be impacted by other projects?

Step 7 Conduct Formal Stakeholder Review

Check the original motivation for the architecture project and the Statement of Architecture Work against the proposed Technology Architecture.

- Is the Technology Architecture fit for the purpose of supporting subsequent work in the other architecture domains?
- Refine the proposed Technology Architecture only if necessary.

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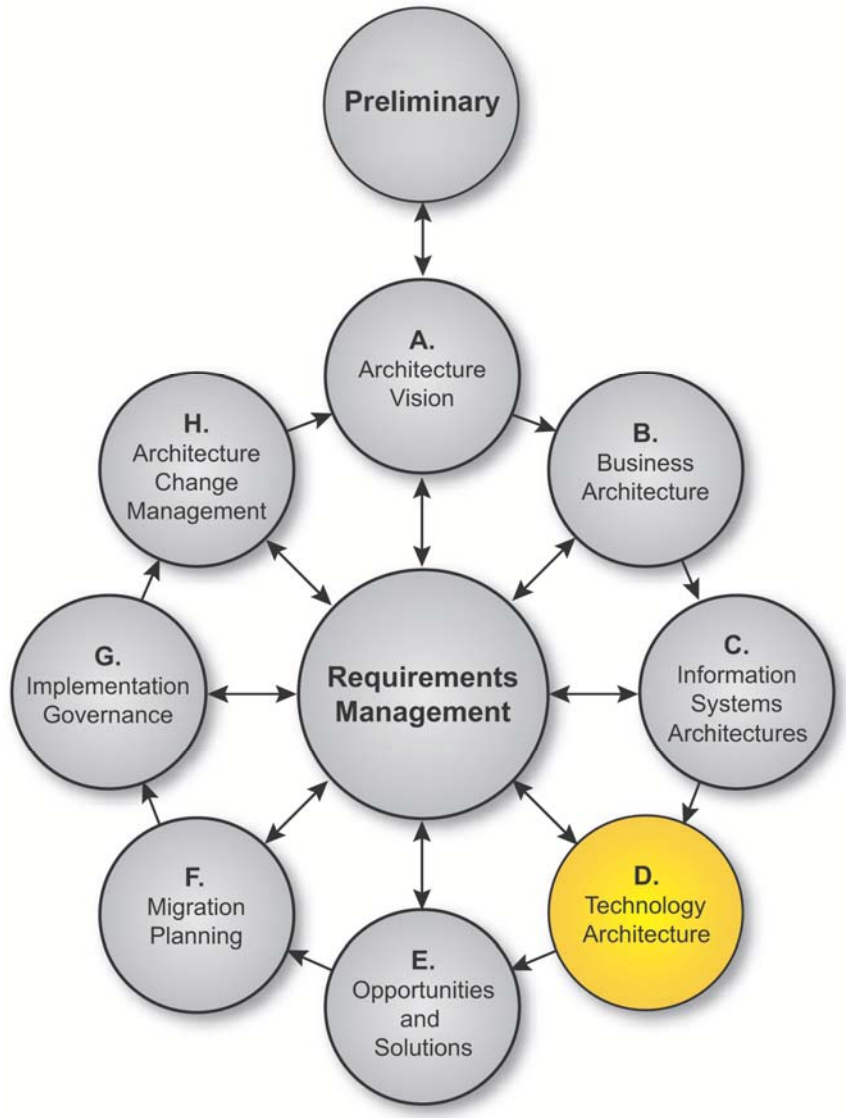
Step 8 Finalize the Technology Architecture

- Select standards for each of the ABBs, reusing as much as possible.
- Fully document each ABB.
- Cross check the overall architecture against the business goals.
- Document the final requirements traceability report.
- Document the final mapping of the architecture within the Architecture repository. Identify the ABBs that might be reused and publish them via the Architecture Repository.
- Finalize all the work products, such as gap analysis

Step 9: Create Architecture Definition Document

- Document the rationale for all building block decisions in the architecture definition document.
- Prepare the Technology Architecture sections of the architecture definition document report.
- If appropriate, use reports and/or graphics generated by modeling tools to demonstrate key views of the architecture. Send the document to relevant stakeholders for review and incorporate feedback.

Technology Architecture Outputs



- Statement of Architecture Work, updated if necessary
- Validated technology principles or new technology principles
- Draft Architecture Definition Document
- Draft Architecture Requirements Specification
- Technology Architecture components of an Architecture Roadmap

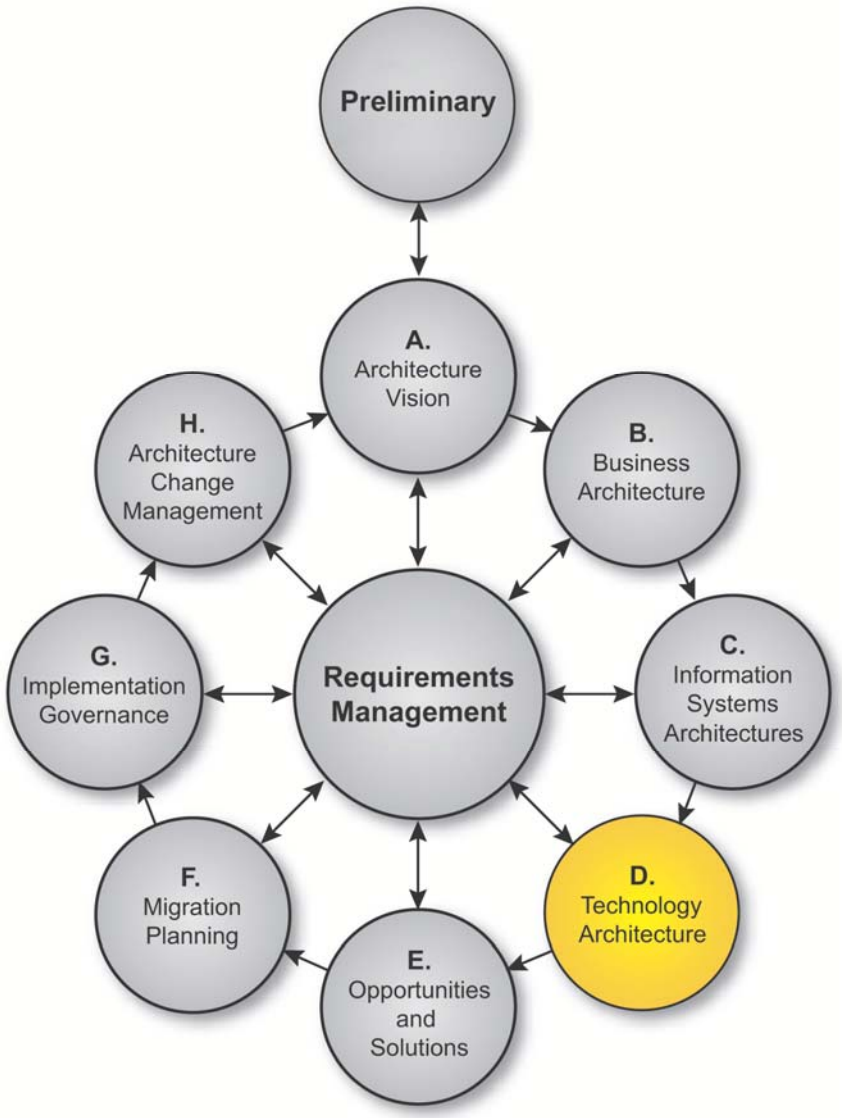
Architecture Definition Document – Technology Architecture Components

- Baseline Technology Architecture, if appropriate
- Target Technology Architecture, including:
  - Technology components and their relationships to information systems
  - Technology platforms and their decomposition, showing the combinations of technology required to realize a particular technology “stack”
  - Environments and locations – a grouping of the required technology into computing environments (e.g., development, production)
  - Expected processing load and distribution of load across technology components
  - Physical (network) communications
  - Hardware and network specifications
- Views corresponding to the selected viewpoints addressing key stakeholder concerns

Architecture Requirements Specification – Technology Architecture Components

- Gap analysis results
- Updated technology requirements

Summary



- The objective of Phase D: Technology Architecture is to transform application components into a set of technology components.
- The technology components ca be both software and hardware components, available from the market or configured within the organization