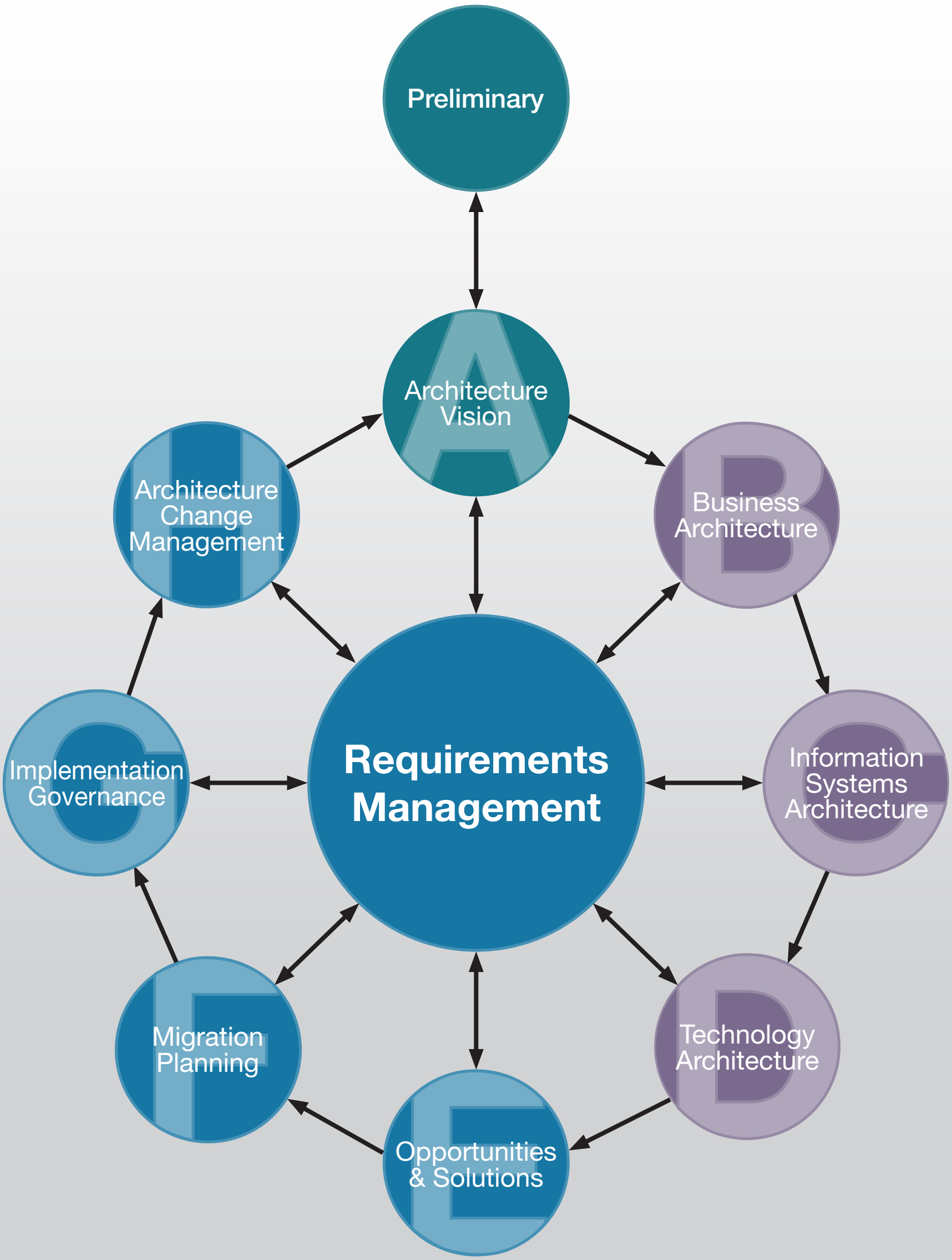
TOGAF®9.1 in Pictures



orbus software
www.orbussoftware.com

The TOGAF ADM Cycle

The ADM is about understanding existing architectures and working out the best way to change and improve them.

Never used without some adaptation, the ADM is more like a cookbook of recommendations, ideas and checklists than a set way of doing things.

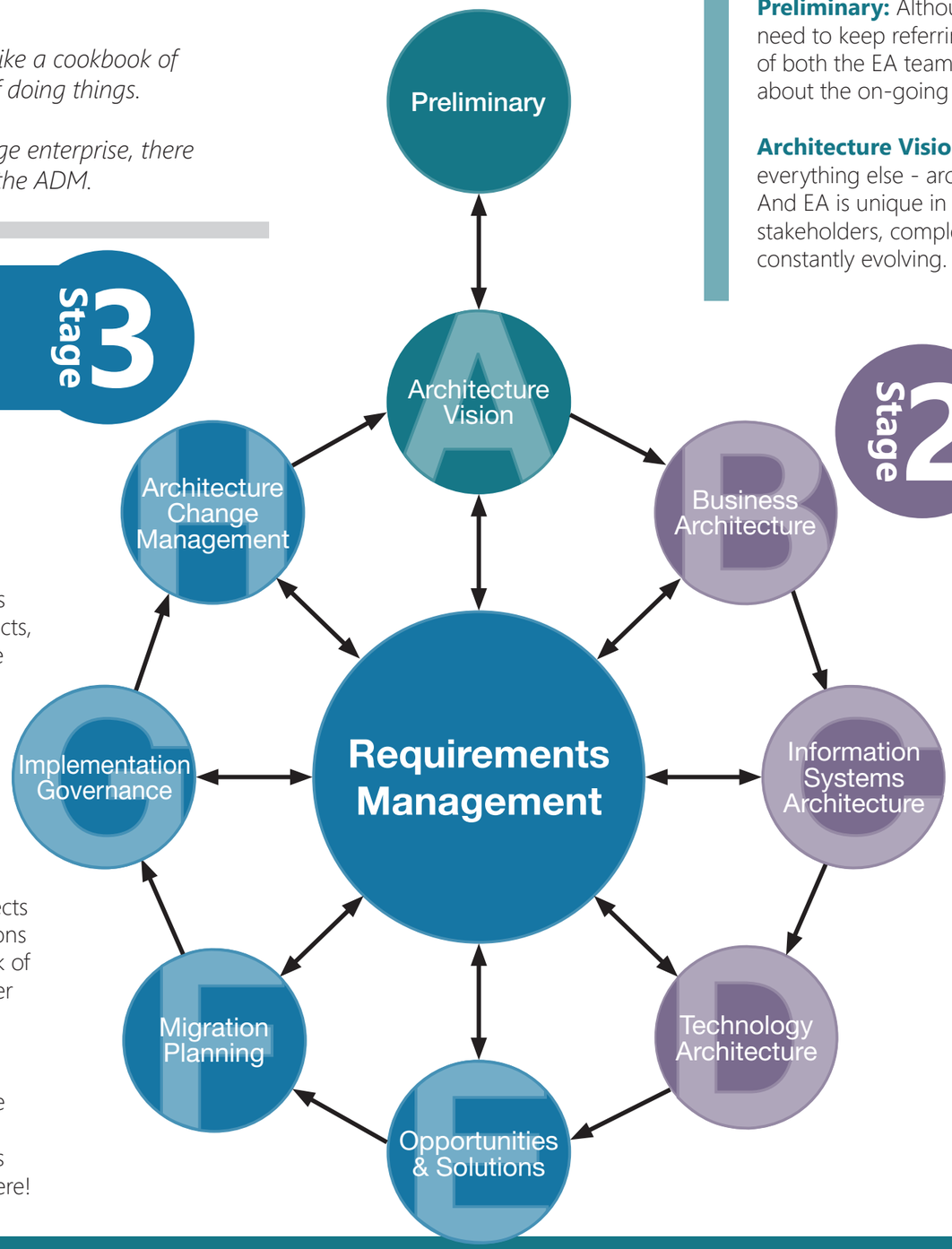
Think of it in three chunks and bear in mind that in a large enterprise, there may be quite a few projects all using different phases of the ADM.

Stage 1

Set up an EA team and make sure it can do its work

Preliminary: Although out of the main circle, you need to keep referring back to it to assess effectiveness of both the EA team and its initiatives. This stage is about the on-going improvement of EA capabilities.

Architecture Vision: This isn't a one-off before everything else - architecture visions emerge slowly. And EA is unique in having a holistic view of all stakeholders, complexity and change, and this is constantly evolving. Communication is the key.



Stage 2

Get a good picture of the architecture: Now and in the future

Business Architecture: It's important to be independent from technology - planned or current. Focus on business capabilities, process, and products, and relate all analysis to business from an architectural perspective.

Information System Architcture: ISA breaks down into data and applications. It doesn't matter which one you start with - it's likely that you'll have to adjust both as the bigger picture emerges.

Technology Architecture: Focus here is on architecture of IT platforms, especially hardware and communications. It's important to separate the different concerns of business, information systems and technology stakeholders.

Stage 3

Find ways to make the changes, and then make it happen

Opportunities & Solutions: Here we move away from a wholly architectural perspective to figure out how you're going to deliver, fund and resource the changes.

Migration Planning: The detailed planning here is more the province of project managers than architects, but get involved to make sure commitment is in line with the architecture vision.

Implementation Governance: Along with the policing role of monitoring each project and solution, this plase needs a delicate political sensitivity to remind people of the long term vision and persuade them not to compromise.

Architecture Change Management: When projects and solutions are unable to meet original expectations - due to cuts in spending, changes in priority or lack of funding and resources - you need to revisit the other phases to address the consequences.

Requirements Management: At the heart of the EA role, this is where a good EA can manage diverse stakeholder concerns and create an integrated view of how the architecture will evolve. All work products created or used in the other phases are managed here!

orbus software
www.orbussoftware.com

The Preliminary Phase

Specifically, the Preliminary Phase is where definitions are established for:

- What the enterprise is
- Key drivers and elements in the organizational context
- Requirements for architecture work
- Architecture principles
- The framework to be used
- The relationships between management frameworks
- Evaluating the enterprise architecture maturity

Inputs

Inputs are gathered from many resources both internal and external. Ideally, they are obtained from previous architecture work stored as artifacts and building blocks in a repository, but they can also be pulled from industry standards.

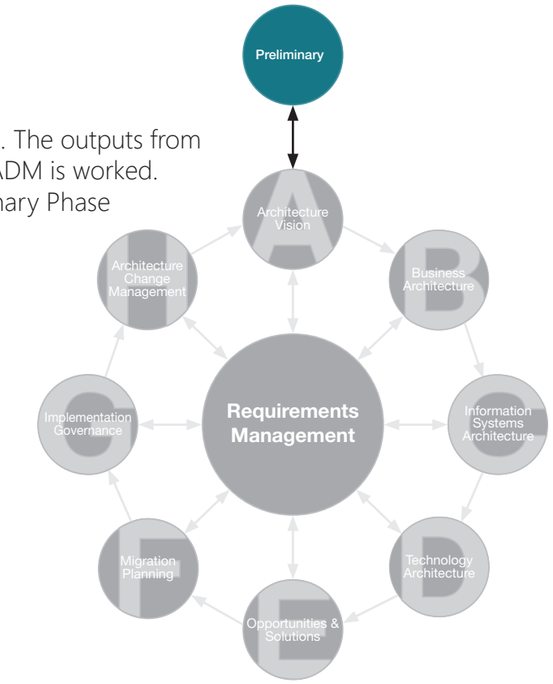
- Executives
- Stakeholders
- Architecture Board

- Architecture capability
- Organizational Model for Enterprise Architecture
- Board strategies and board business plans, business strategy, etc
- Major frameworks
- Partnership and contract agreements
- Governance and legal frameworks

Outputs

This phase prepares the way for the initiation of the ADM. The outputs from the steps conducted are the foundation from which the ADM is worked. Almost all of the documentation produced in the Preliminary Phase will be used as inputs to the other phases and/or will be updated in each phase.

- Architecture Governance Framework
- Organizational Model for Enterprise Architecture
- Tailored Architecture Framework
- Request for Architecture Work
- Principles
  - *1. Business*
  - *2. Data*
  - *3. Application*
  - *4. Technology*



Architecture Repository

- Architecture Metamodel
- Architecture Landscape
- Reference Library
- Standards Information Base
- Governance Log
- Architecture Capability

Steps

Preliminary Phase steps center on identifying organizations involved, how the enterprise is governed, finding the right people to conduct the transition from current to target architectures, firmly define principles by which all aspects of the transition can be judged, integrating TOGAF into the corporate environment, and selecting the right tools for the right job.

1. Scope Enterprise Organizations
2. Define Principles
3. Confirm Governance and Support
4. Implement Architecture Tools
5. Establish Architecture Team
6. Tailor Frameworks

Phase A - Architecture Vision

Starts with receipt of a Request for Architecture Work.

Its objectives are:

- To develop a high-level vision of the capabilities and business value delivered by the proposed enterprise architecture
- To gain approval for a Statement of Architecture Work that defines the program of works to develop and deploy the proposed architecture.

Inputs

The key input is the Request for Architecture Work, together with everything necessary to outline an effective vision and proposed future architectures.

Reference Materials

- Any useful architecture reference materials *(often from external sources)*

Non-Architectural Inputs

- The Request for Architecture Work, plus related business principles, goals and drivers

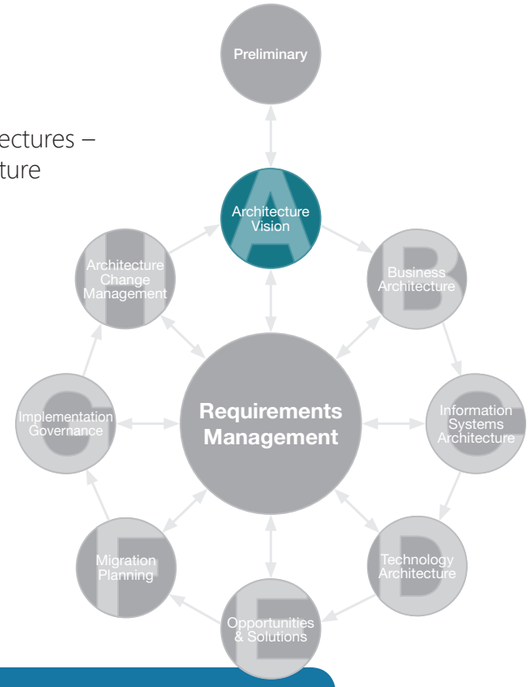
Architectural Inputs

- The Organizational model for EA, including which organizations are impacted by the changes, maturity analysis, roles and responsibilities, and governance and support strategy
- Tailored Architecture Framework, covering the tailored method, content, principles and tools
- Populated Architecture Repository, including any existing documentation

Outputs

This is where we start to get a definition of the future architectures – as a Vision, as a Statement of Work, and as a draft Architecture Definition Document.

Later Phases expand these initial outputs to produce the detailed plan for delivering the proposed changes.



- **Architecture Vision** *including a problem description, key requirements, summary views and objectives*
- **Approved Statement of Architecture Work** *including an overview of the Architecture Vision and a project description, scope, plan and schedule*
- **Draft Architecture Definition Document** *including version 0.1 of baseline and target business, data, application and technology architectures*
- **A Capability Assessment**
- **A Communication Plan**
- **Updated principles, goals, drivers, and architecture framework**

Steps

This Phase is vital for outlining a resolution to Stakeholder concerns in architectural terms – as an architecture vision and value propositions – and securing Stakeholder commitment and approval. All steps are important, but key steps are shown in purple!

1. Establish the Architecture Project
2. Identify Stakeholders, Concerns and Business Requirements
3. Evaluate Business Capabilities
4. Assess Readiness for Business Transformation
5. Define Scope
6. Confirm and Elaborate Architecture Principles
7. Develop Architecture Vision
8. Define Target Architecture Value Propositions and KPI
9. Identify Business Transformation Risks and Mitigation Activities
10. Develop Statement of Architecture Work and Secure Approval

Phase B, C & D - Common Elements

Although Phases B, C and D deal with different architecture domains, the basic structure for each Phase is very similar.

Each domain has to:

- Develop the Target Architectures in a way that addresses the Request for Architecture Work and stakeholder concerns.
- Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Targert Architectures
- The Business Architecture describes how the enterprise needs to operate to achieve the business goals, and respond to the strategic drivers set out in the Architecture Vision
- The Information Systems Architecture describes how it will enable the Business Architecture and the Architecture Vision
- The Technology Architecture shows how it enables the logical and physical data components and the Architecture Vision

Steps

Select Reference Models, Viewpoints, and Tools

- Determine Overall Modeling Process
- Identity Required Service Granularity Level, Boundaries, and Contracts
- Identify Required Catalogs of [Business, Data, Application, Technology] Building Blocks
- Identify Required Matrices
- Identify Required Diagrams
- Identify Types of Requirement to be Collected
- Select Services

Inputs

Reference Materials External to the Enterprise:

Reference Materials

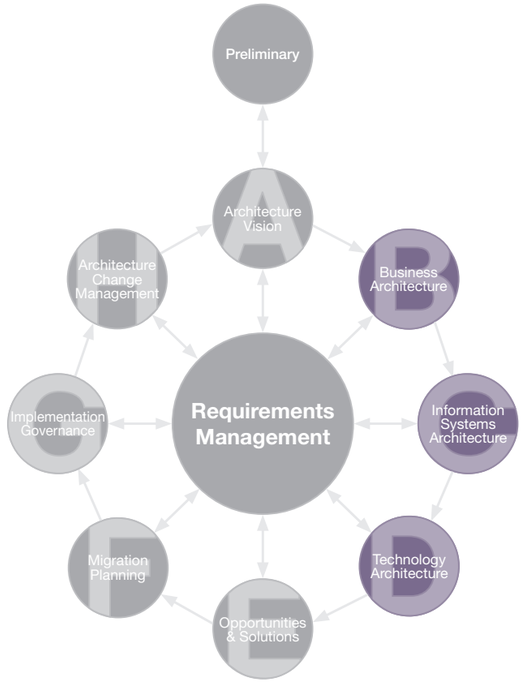
- Product information on candidate products

Non-Architectural Inputs

- Request for Architecture Work
- Business principles, business goals, and business drivers
- Capability Assessment
- Communications Plan

Architectural Inputs

- Organizational Model for EA
- Tailored Architecture Framework
  - Architecture principles
  - Application principles
  - Data principles
  - Technology principles
- Approved statement of Architecture Work
- Enterprise Continuum
- Architecture Vision
- Architecture Repository
- Draft Architecture Definition Document
- Draft Architecture Requirements Specification
- Domain Architecture components of an Architecture Roadmap



Architecture domains described by TOGAF Key

- Business Architecture
- Information System Architecture
- Data Architecture
- Application Architecture
- Technology Architecture

Outputs

Refined and updated versions of the Architecture Vision phase deliverables, where applicable

- Draft Architecture Definition Document
- Domain Architecture components of an Architecture Roadmap
- Draft Architecture Requirements Specification

Phase E - Opportunities and Solutions

Phase E covers the process to:

- Generate the initial complete version of the Architecture Roadmap, based on:
  - The Gap Analysis
  - Candidate Architecture Roadmap components from Phases B, C, and D
- Determine whether an incremental approach is required - and if so, to identify Transition Architectures that will deliver continuous business value

Inputs

The key inputs are from the Architecture Definition Phases (B, C & D), which are then consolidated and matched to investment opportunities & solution products

Reference Materials

- Architecture reference materials & product information

Non-Architectural Inputs

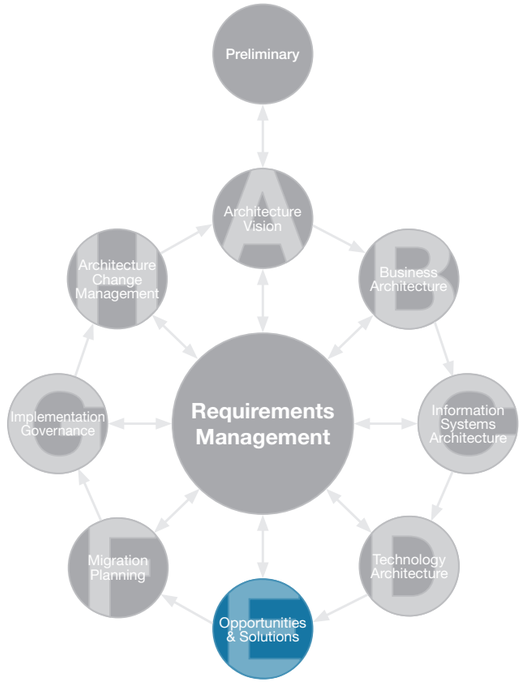
- The Request for Architecture Work, Capability Assessment, Communications Plan, & Planning Methodologies

Architectural Inputs

- The Organizational model for EA, Governance Model & Framework, Tailored Architecture Framework, Architecture Repository
- Statement of Architecture Work & Architecture Vision
- Draft Architecture Definition Document (including baseline & target architectures)
- Draft Architecture Requirements Specification
- Candidate Architecture Roadmap components from Phases B, C & D

Outputs

Here we have a consolidated view of all four architecture domains, and the first outline of how we are going to implement the architecture requirements – which will become more detailed & be confirmed in Phase F



- Refined Architecture Vision
- Draft Architecture Definition Document
- Draft Architecture Requirements Specification
- Capability Assessments
- Implementation & Migration Plan (version 0.1)
- Architecture Roadmap *including Work Package Portfolio, Transition Architectures, & Implementation Recommendations*

Steps

Phase E is about architecture delivery. It amalgamates the gaps between Target & Baseline Architectures in all architecture domains, & groups changes into work packages to build a best-fit roadmap based on stakeholder requirements, the enterprise's business transformation readiness, identified opportunities & solutions and implementation constraints.

1. Identify Key Business Drivers Constraining Sequence of Implementation
2. Review Gap Analysis from Phase D
3. Brainstorm Technical Requirements from Functional Perspective
4. Brainstorm Co-existence and Interoperability Requirements
5. Perform Architecture Assessment and Gap Analysis
6. Identify Major Work Packages or Projects

Phase F - Migration Planning

Phase F is where we create an Implementation and Migration Plan in co-operation with portfolio and project managers.

- Finalize the Architecture Roadmap
- Finalize the supporting Implementation and Migration Plan, making sure that it is coordinated with the enterprise change management approach and the overall change portfolio
- Ensure the value and cost of work packages and Transition Architectures is understood by stakeholders

Inputs

The key inputs are the incomplete Architecture Roadmap and Implementation and Migration Plan from Phase E

Reference Materials

- Any useful architecture reference materials *(often from external sources)*

Non-Architectural Inputs

- The Request for Architecture Work, Capability Assessment and Communications Plan

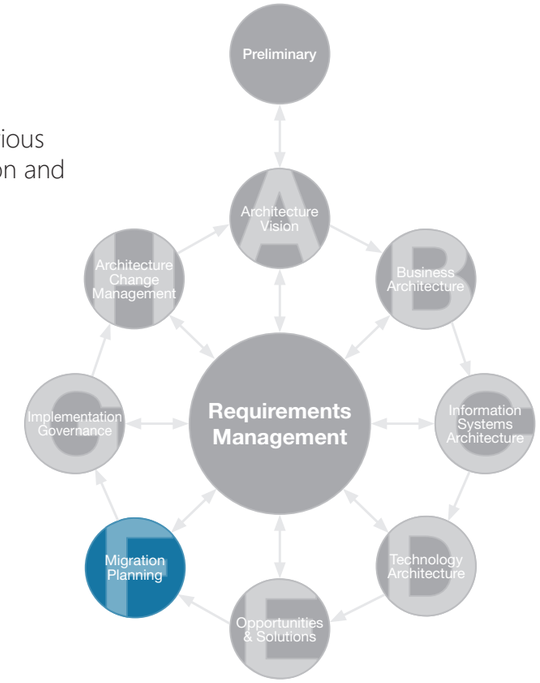
Architectural Inputs

- The Organizational Model for EA; Governance models and frameworks; Tailored Architecture Framework; Statement of Architecture Work and Architecture Vision
- Populated Architecture Repository, including reusable building blocks
- Draft Architecture Definition Document and Architecture Requirements Specification
- Architecture Roadmap and Implementation and Migration Plan (v0.1)

Outputs

Outputs show dependencies, costs, and benefits of the various migration projects in the final version of the Implementation and Migration Plan.

The architecture development cycle is completed here, with lessons learned enabling continuous improvement to the EA process.



- Implementation and Migration Plan (Version 1.0) *including the Implementation and Migration Strategy, and the Project and portfolio breakdown of the implementation*
- Finalized Architecture Definition Document *including any Finalized Transition Architectures*
- Finalized Architecture Requirements Specification
- Finalized Architecture Roadmap
- Reusable Architecture Building Blocks
- Request for Architecture Work (for a new iteration of the ADM)
- Possible Change Requests for Architecture Capability from lessons learned

Steps

The level of detail addressed in Phase F will depend on the scope and goals of the overall architecture effort. All steps are important, but key steps are shown in purple!

1. Confirm Management Framework Interactions for the Implementation and Migration Plan
2. Assign a Business Value to Each Work Package
3. Estimate Resource Requirements, Project Timings, and Availability/Delivery Vehicle
4. Prioritize the Migration Projects through the Conduct of a Cost/Benefit Assessment and Risk Validation
5. Confirm Architecture Roadmap and Update Architecture Definition Document
6. Generate the Implementation and Migration Plan
7. Complete the Architecture Development Cycle and Document Lessons Learned

orbus software
www.orbussoftware.com

Phase G - Implementation Governance

Phase G is where all the information for successful management of the various implementation projects is brought together. In parallel is the execution of the development process, where the actual development happens. Here we:

- Ensure conformance with the Target Architecture by implementation projects
- Perform appropriate Architecture Governance functions for the solution and any implementation-driven architecture Change Requests

Inputs

Phase G establishes the connection between architecture and implementation organization, through the Architecture Contract.

Reference Materials

- Any useful architecture reference materials *(often from external sources)*

Non-Architectural Inputs

- The Request for Architecture Work and Capability Assessment

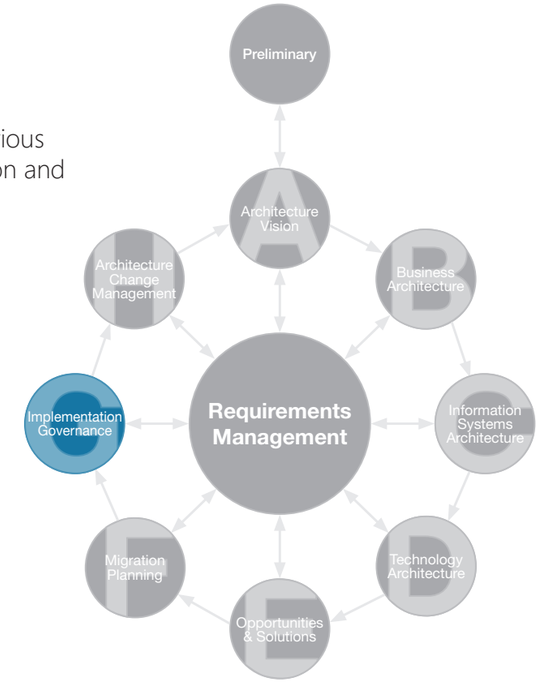
Architectural Inputs

- The Organizational Model for EA; Tailored Architecture Framework; Request for Architecture Work; Statement of Architecture Work and Architecture Vision
- Populated Architecture Repository, including reusable building blocks
- Architecture Definition Document and Architecture Requirements Specification
- Architecture Roadmap and Implementation and Migration Plan
- Architecture Contract and Implementation Governance Model

Outputs

Outputs show dependencies, costs, and benefits of the various migration projects in the final version of the Implementation and Migration Plan.

The architecture development cycle is completed here, with lessons learned enabling continuous improvement to the EA process.



- Architecture Contract (signed)
- Compliance Assessments and Change Requests
- Architecture-Compliant Solutions Deployed *including the implemented system, populated architecture repository, compliance recommendations & dispensations, recommendations on service delivery requirements & performance metrics, Service Level Agreements (SLAs)*
- Business and IT operating models for the implemented solution
- Request for Architecture Work (for a new iteration of the ADM)
- Post-implementation update of Architecture Vision and Architecture Definition Document

Steps

A key aspect of Phase G is ensuring compliance with the defined architecture(s), not only by the implementation projects, but also by other ongoing projects. All steps are important, but key steps are shown in purple!

1. Confirm Scope and Priorities for Deployment with Development Management
2. Identify Deployment Resources and Skills
3. Guide Development of Solution Deployment
4. Perform Enterprise Architecture Compliance Reviews
5. Implement Business and IT Operations
6. Perform Post-Implementation Review and Close the Implementation

Phase H - Architecture Change Management

Phase H ensures that the architecture achieves its original target business value, by managing changes to the architecture in a cohesive and architected way. Here we ensure that:

- We maintain and follow the architecture lifecycle
- We work within the Architecture Governance Framework
- The Enterprise Architecture Capability meets current requirements

Inputs

Phase H is closely related to the architecture governance processes,and to management of the Architecture Contract between the EA function and business users of the enterprise

Reference Materials

- Any useful architecture reference materials *(often from external sources)*

Non-Architectural Inputs

- The Request for Architecture Work

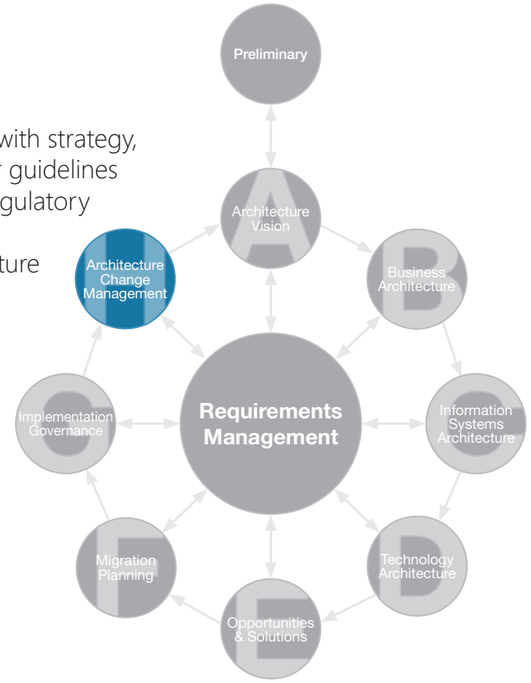
Architectural Inputs

- The Organizational Model for EA; Tailored Architecture Framework; Request for Architecture Work; Statement of Architecture Work and Architecture Vision
- Populated Architecture Repository, including reusable building blocks
- Architecture Definition Document and Architecture Requirements Specification
- Architecture Roadmap and Implementation and Migration Plan
- Architecture Contract and Implementation Governance Model
- Change Requests for business and technology changes and from lessons learned; Compliance Assessments

Outputs

When the Foundation Architecture needs to be re-aligned with strategy, substantial change is required to components, standards or guidelines for their use that have a significant end-user impact (e.g. regulatory changes), then a refreshment cycle (partial or complete re-architecting) is required, and a new Request for Architecture Work must be issued (to move to another cycle).

Changes are classified as Simplification, Incremental, or Re-Architecting.



- Architecture updates and changes to architecture framework and principles *(for maintenance changes)*
- New Request for Architecture Work, to move to another cycle *(for major changes)*
- Statement of Architecture Work, Architecture Contract
- Compliance Assessments *(updated if necessary)*

Steps

The architecture change process determines how changes are to be managed, what techniques are applied, and what methodologies used. It also identifies which phases of the ADM are impacted by changes e.g. changes that affect only migration may be of no interest to architecture development phases.

1. Establish Value Realization Process
2. Deploy Monitoring Tools
3. Manage Risks
4. Provide Analysis for Architecture Change Management
5. Develop Change Requirements to Meet Performance Targets
6. Manage Governance Process
7. Activate the Process to Implement Change

Architecture Requirements Management

The "Requirements Management" circle at the centre of the ADM graphic reminds us that ADM is continuously driven by the requirements management process. In this phase we:

- Ensure that Requirements Management process is sustained and operates for all ADM phases
- Manage architecture requirements identified during any execution of the ADM cycle or a phase
- Ensure that relevant architecture requirements are available for use by each phase

Steps

Requirements Management itself does not dispose of, address, or prioritize any requirements, which is done in the relevant phase of the ADM. It is merely the process for managing requirements throughout the overall ADM. Hence the split between steps below:

Requirements Management Steps

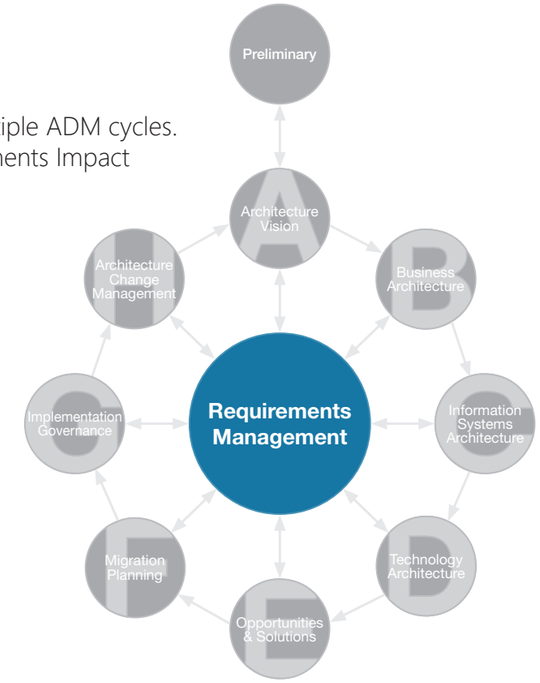
1. Baseline requirements
2. Monitor baseline requirements
3. Identify changed requirements and record priorities
4. Update the Requirements Repository with information relating to the changes requested, including stakeholder views affected

ADM Phase Steps

1. Identify / Document Requirements
2. Identify changed requirements
3. Assess impact of changed requirements and determine whether to implement change
4. Implement changes arising from Phase H
5. Implement change in the current Phase
6. Assess and revise gap analysis from past Phases

Inputs

The Requirements Repository holds information from multiple ADM cycles. The Architecture Requirements Specification and Requirements Impact Assessment hold information for a specific project.



Architecture Requirements Specification

- A populated Architecture Repository
- Organizational Model for Enterprise Architecture
- Tailored Architecture Framework
- Statement of Architecture Work
- Architecture Vision
- Architecture requirements, populating an Architecture Requirements Specification
- Requirements Impact Assessment

Architecture requirements are invariably subject to change because architecture deals with uncertainty and change. Dealing with changes in requirements is crucial -the "grey area" between what stakeholders aspire to and what can be delivered as a solution.

Outputs

The Requirements Repository will be updated as part of the Requirements Management phase and should contain all requirements information.

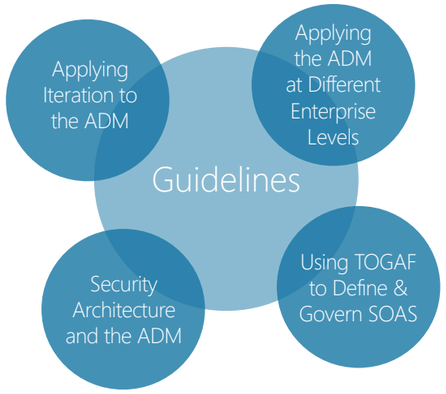
Requirements Impact Assessment

Architecture Requirements Specification, if necessary

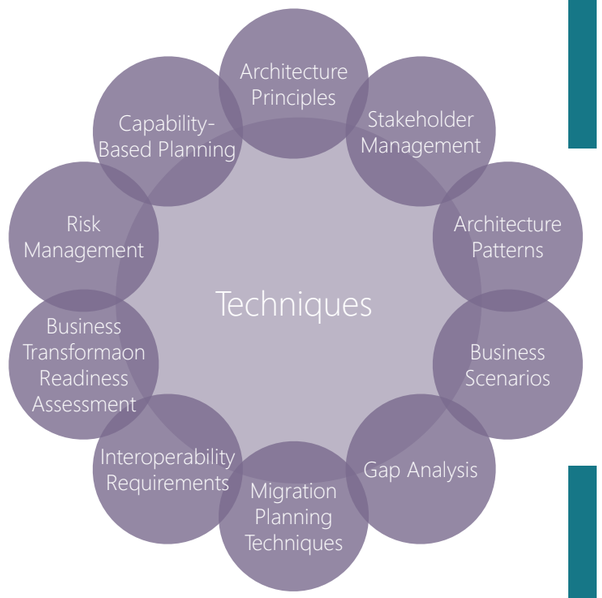
When new requirements arise, or existing ones are changed, a Requirements Impact Statement is generated identifying phases of the ADM that need to be revisited. The statement goes through various iterations until the final version, which includes the full implications of the requirements (e.g., costs, timescales, and business metrics). Once requirements for the current ADM cycle have been finalized, the Architecture Requirements Specification should be updated.

TOGAF 9.1: Guidelines and Techniques

Adapting the ADM Process

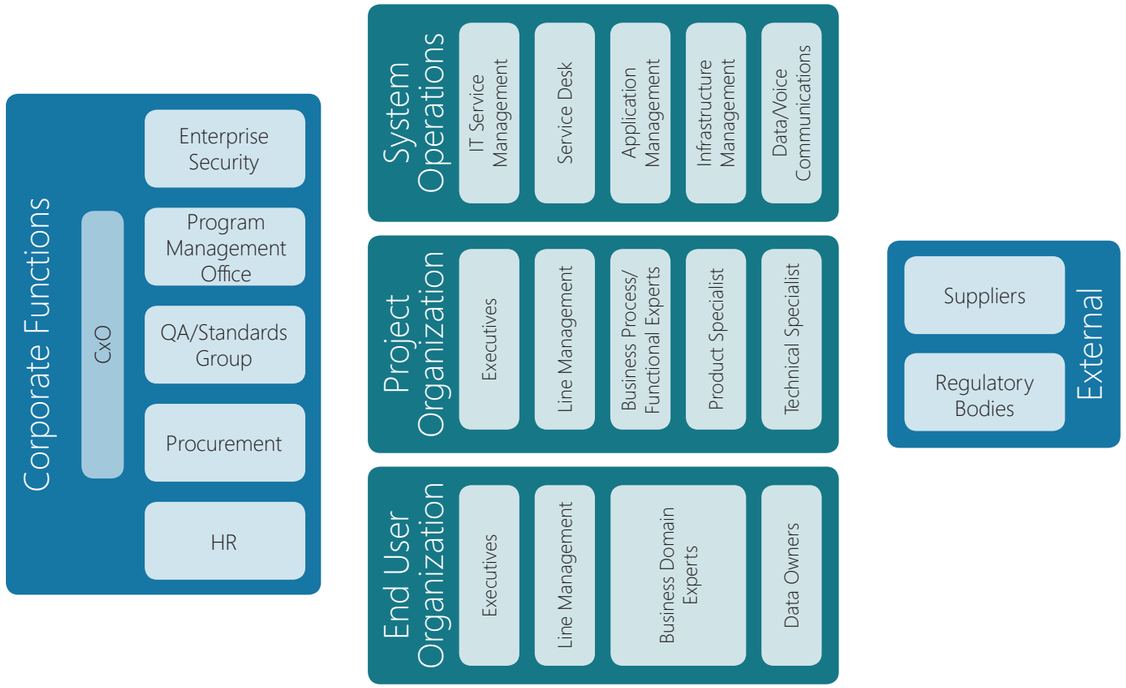


Architecture Development



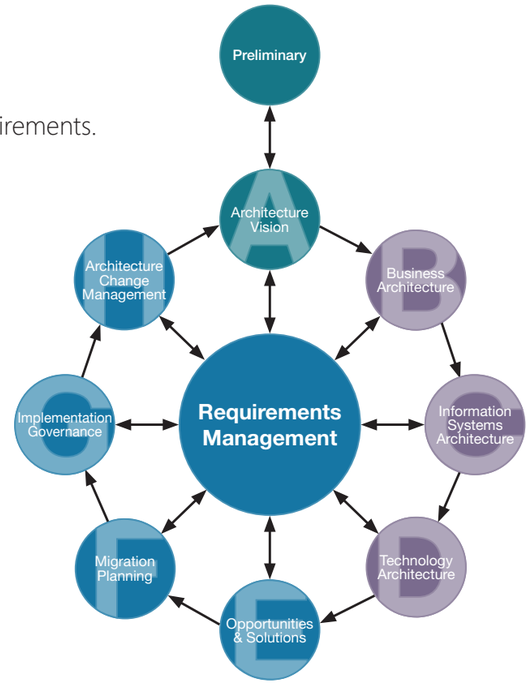
Stakeholder Analysis

Win support from stakeholders.



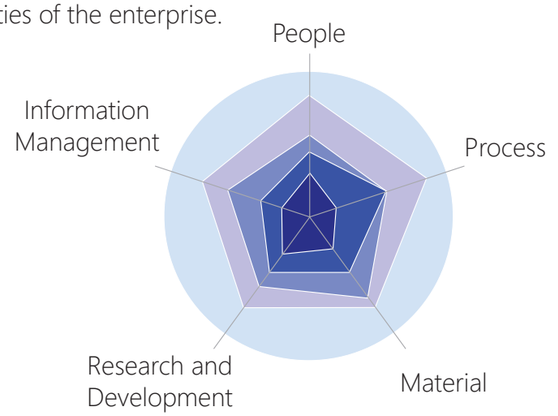
Business Scenarios

Method within a method to identify and articulate business requirements.



Capability Based Planning

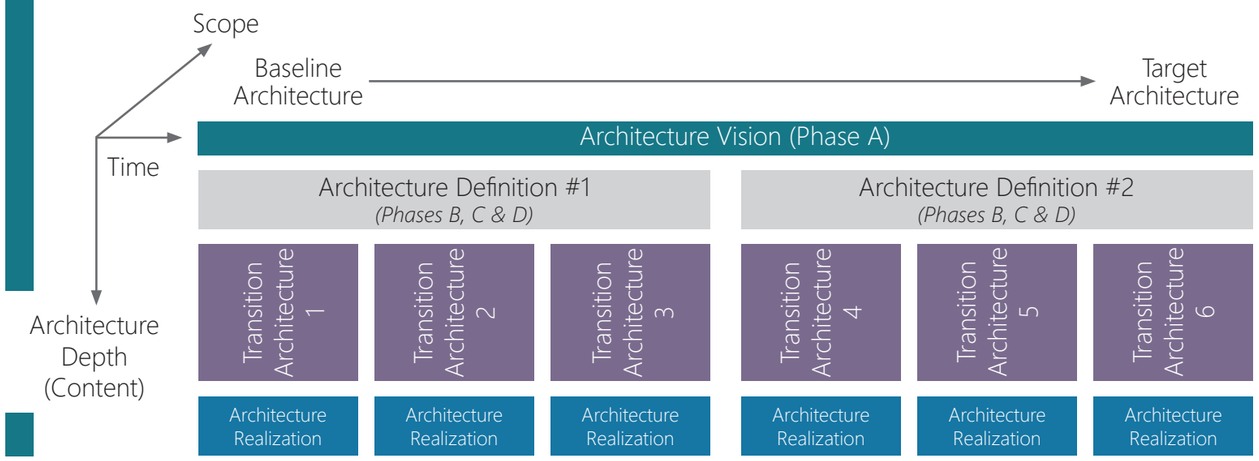
Capabilities of the enterprise.



Architecture Partitioning

Break into bite-size chunks:

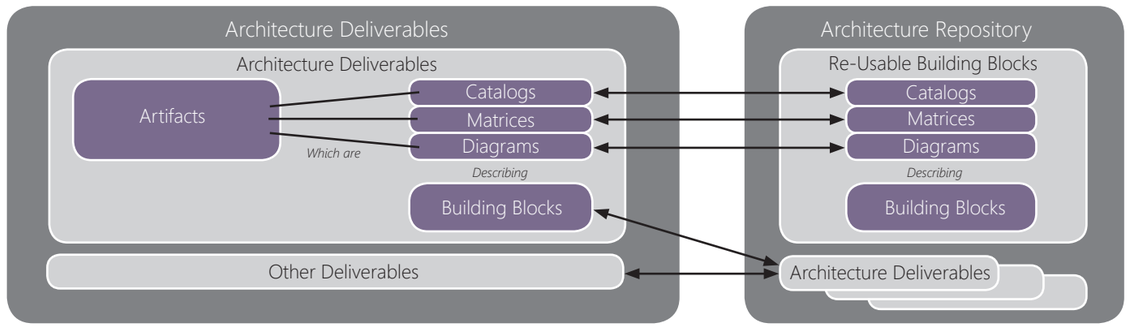
- Enterprise Scope
- Architecture Domains
- Level of Detail
- Project Schedules



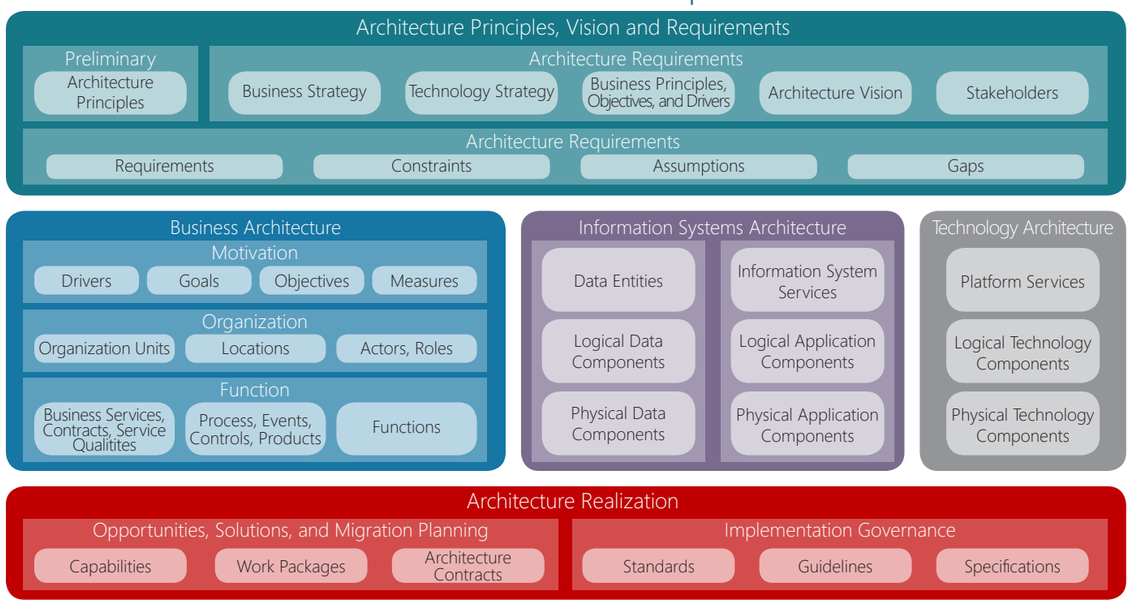
TOGAF 9.1: Content and Continuum

Content Framework - Description of Architectural Work Products

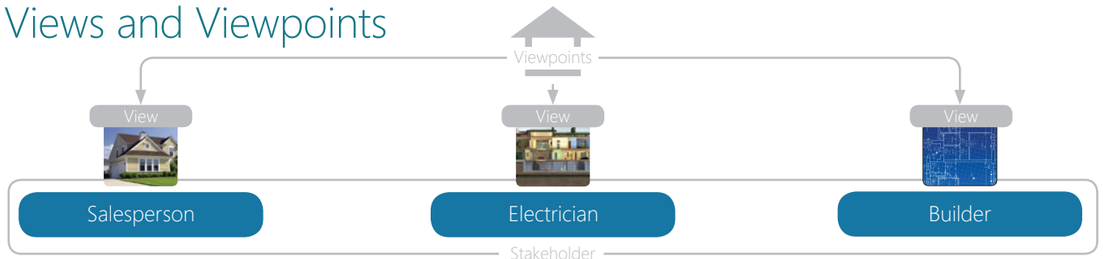
Deliverables, artifacts, building blocks and relationships



Content Meta-Model - Description of Building Blocks and Relationships



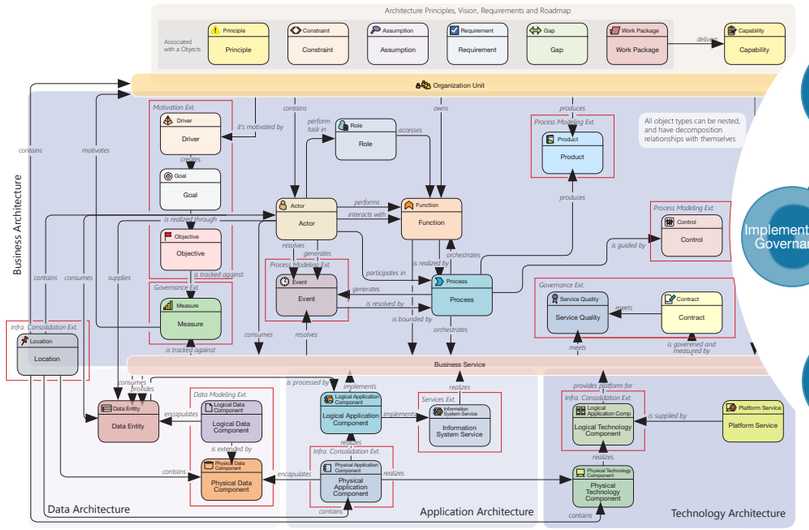
Views and Viewpoints

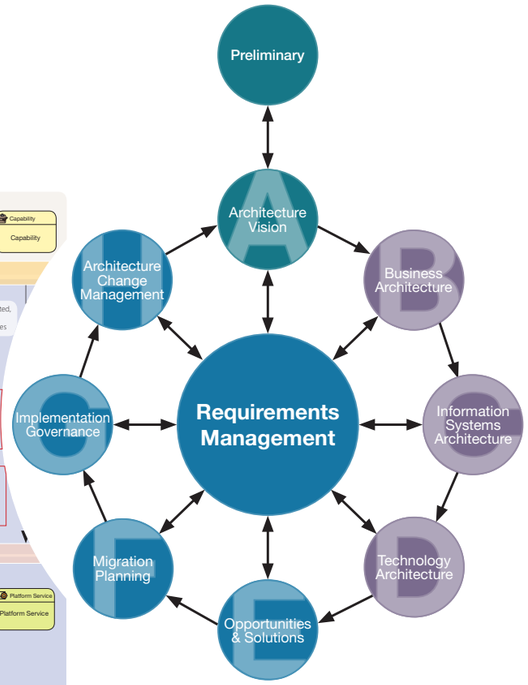


Content MetaModel - Broken Down

Entitles and their Interactions

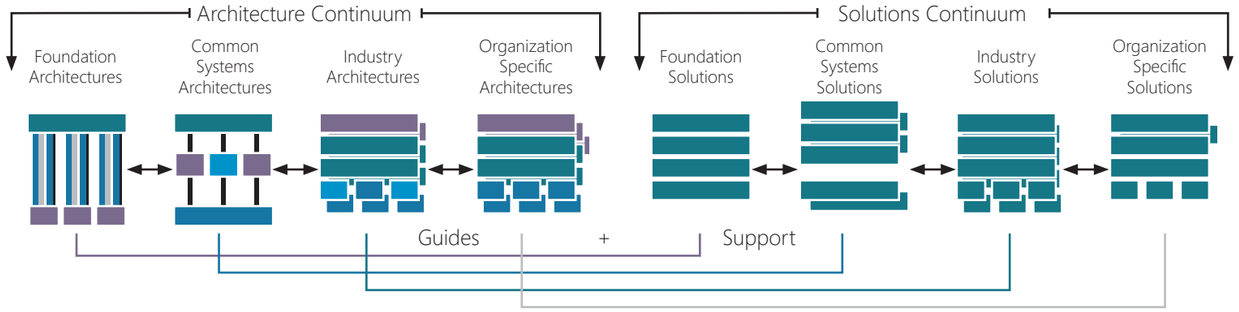
Select and customize...



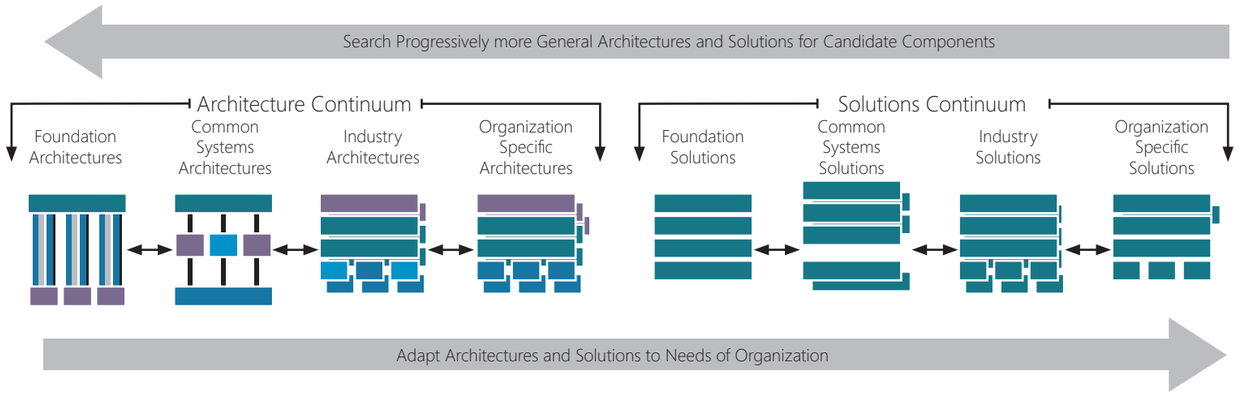


Enterprise Continuum

A Classification Framework



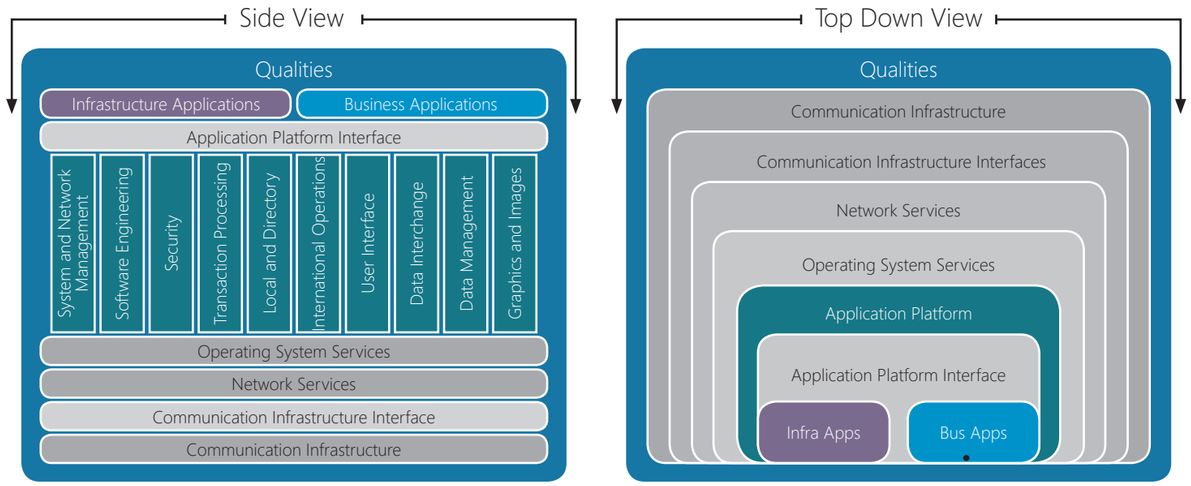
Architecture Continuum



TOGAF 9.1: Models and Architecture

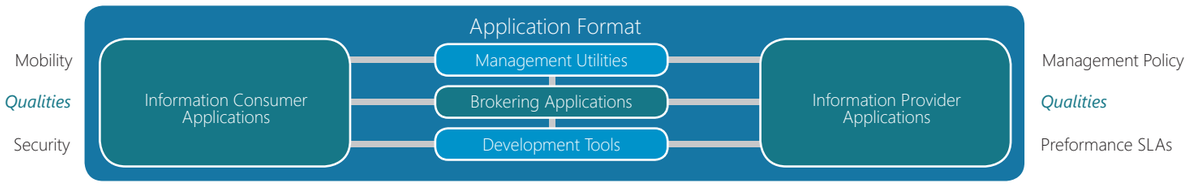
Technical Reference Model (TRM)

A model and taxonomy of generic platform services



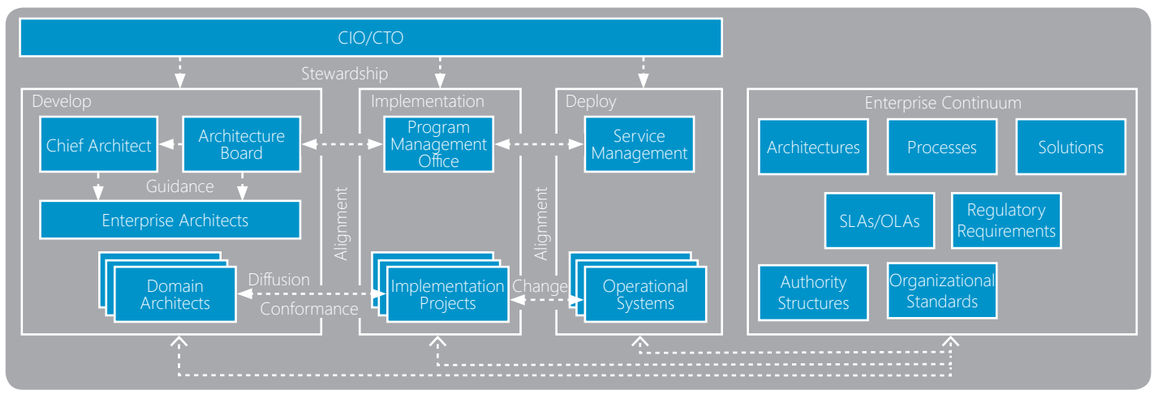
Integrated Information Infrastructure Reference Model (III-RM)

Model for business applications and infrastructure applications



Governance

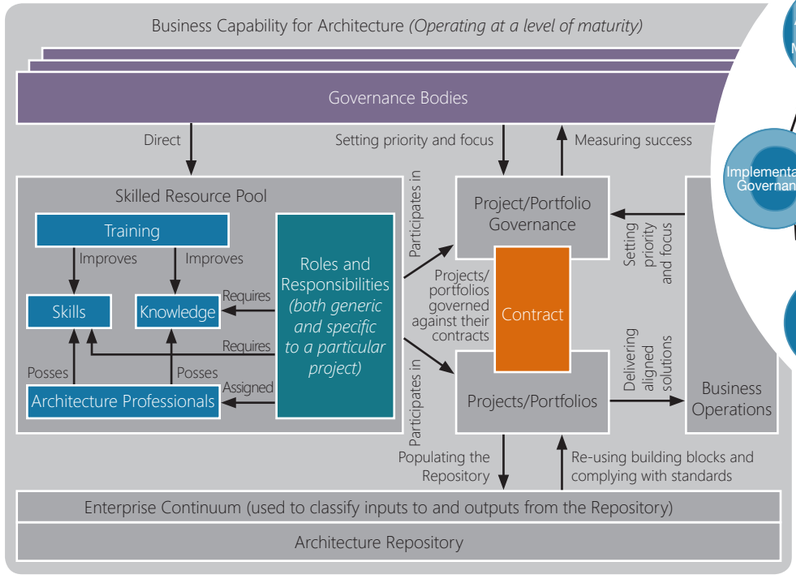
Creation and monitoring of architectural components

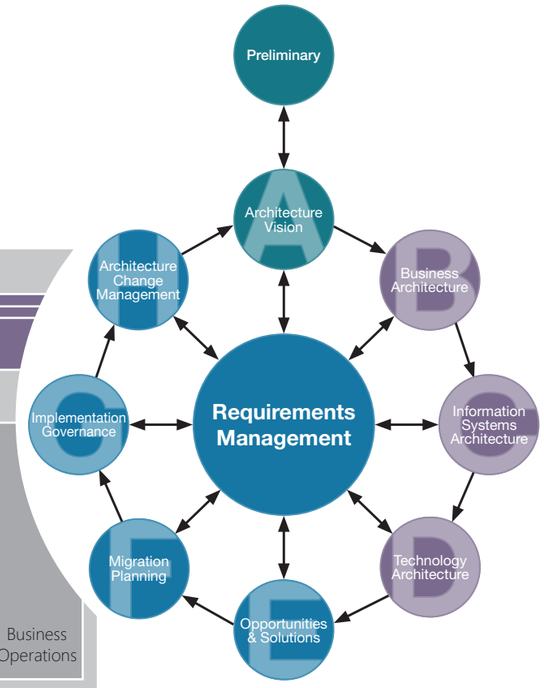


Architecture Capability Framework

Structure Definition

How to establish an Enterprise Architecture function
Who organizes
What skills and roles

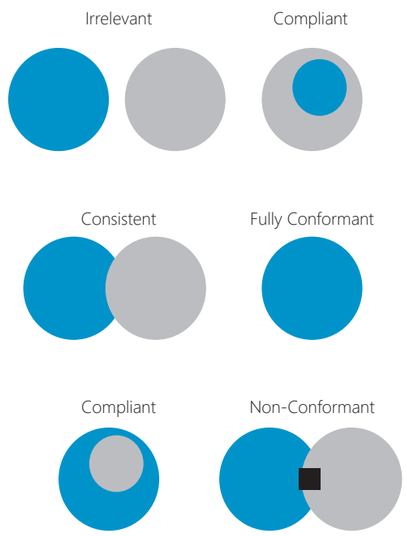




Compliance Levels

Compliance of projects

Essential part of architecture governance
Formulate IT compliance strategy



Skills Framework

Define roles, skills and experience
Measure staff development right fit

Roles	Enterprise Architecture Business	Program/ Project Manager	IT Designer
Architecture Views and Viewpoints Design	4	2	2
Building Block Design	4	2	3
Solutions Modeling	4	2	3
Benefits Analysis	4	4	2
Business Interworking	4	3	1
Systems Behavior	3	3	2
Project Management	3	4	2

1 2 3 4