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TOGAF® Enterprise Architecture Foundation

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About this Courseware

These Materials are based on...

- The Open Group TOGAF® Standard, 10th Edition
- Prepared by the Architecture Forum, a Forum of The Open Group®
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TOGAF® Enterprise Architecture Foundation

- The foundation of the learning path for Enterprise Architecture
- The fundamental concepts
- A basic understanding of Enterprise Architecture using the TOGAF approach



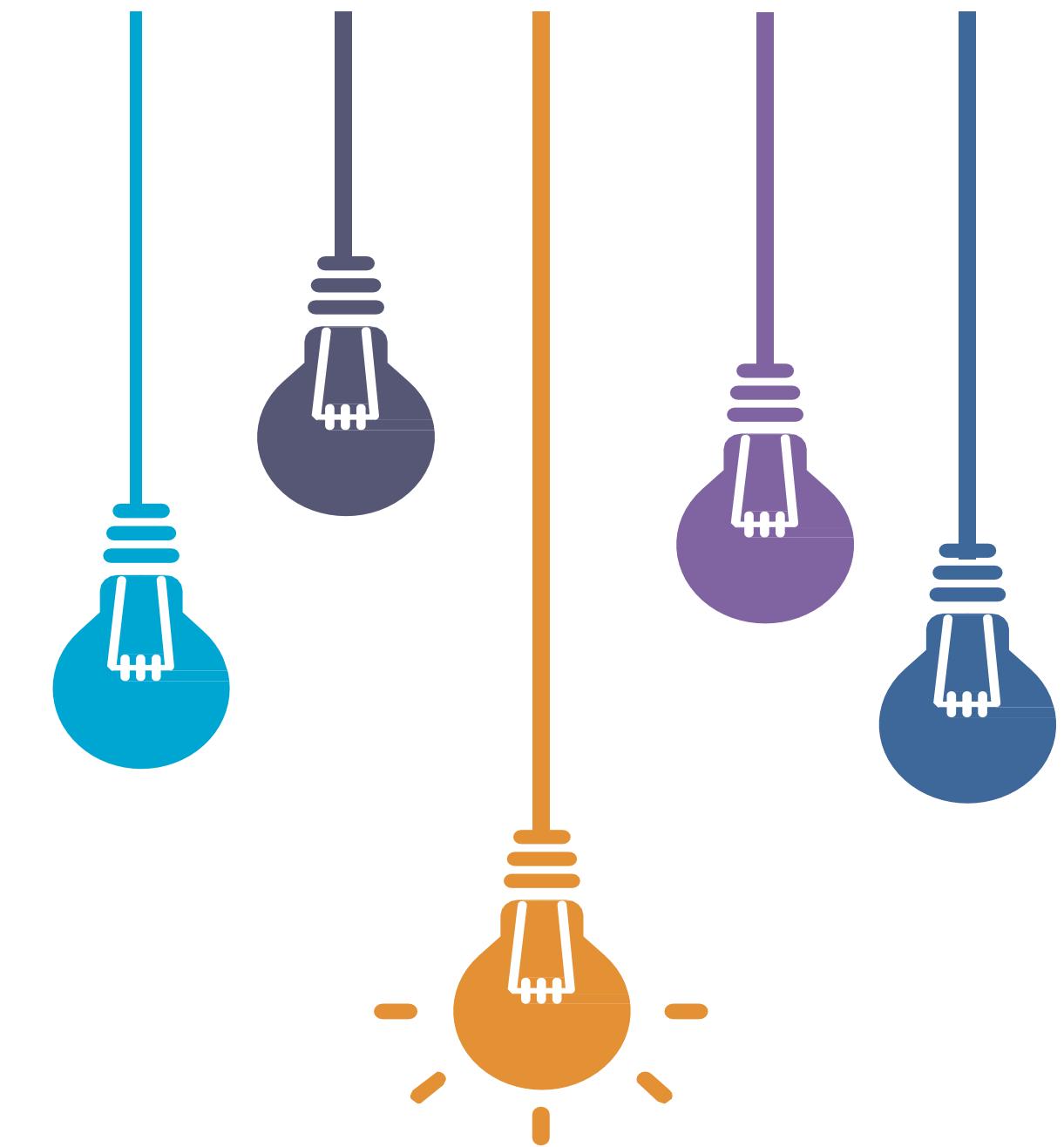
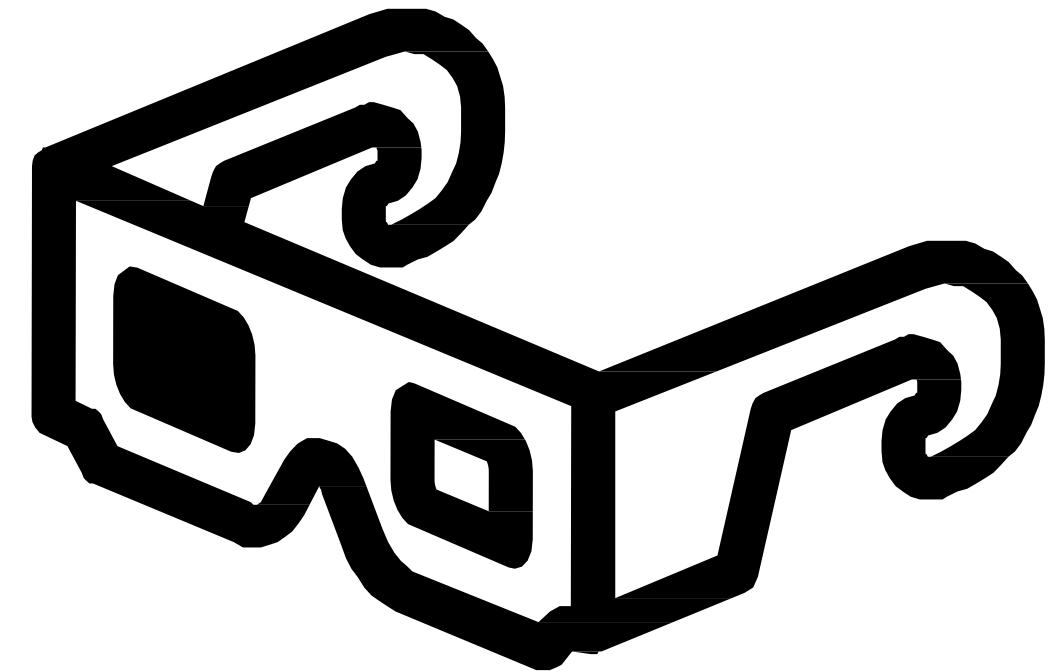
Target Audience

- Individuals who need a basic understanding of a proven Enterprise Architecture methodology
- Individuals who work for or join an organization applying the TOGAF Standard
- Individuals who need to start to learn the TOGAF method



How to Use

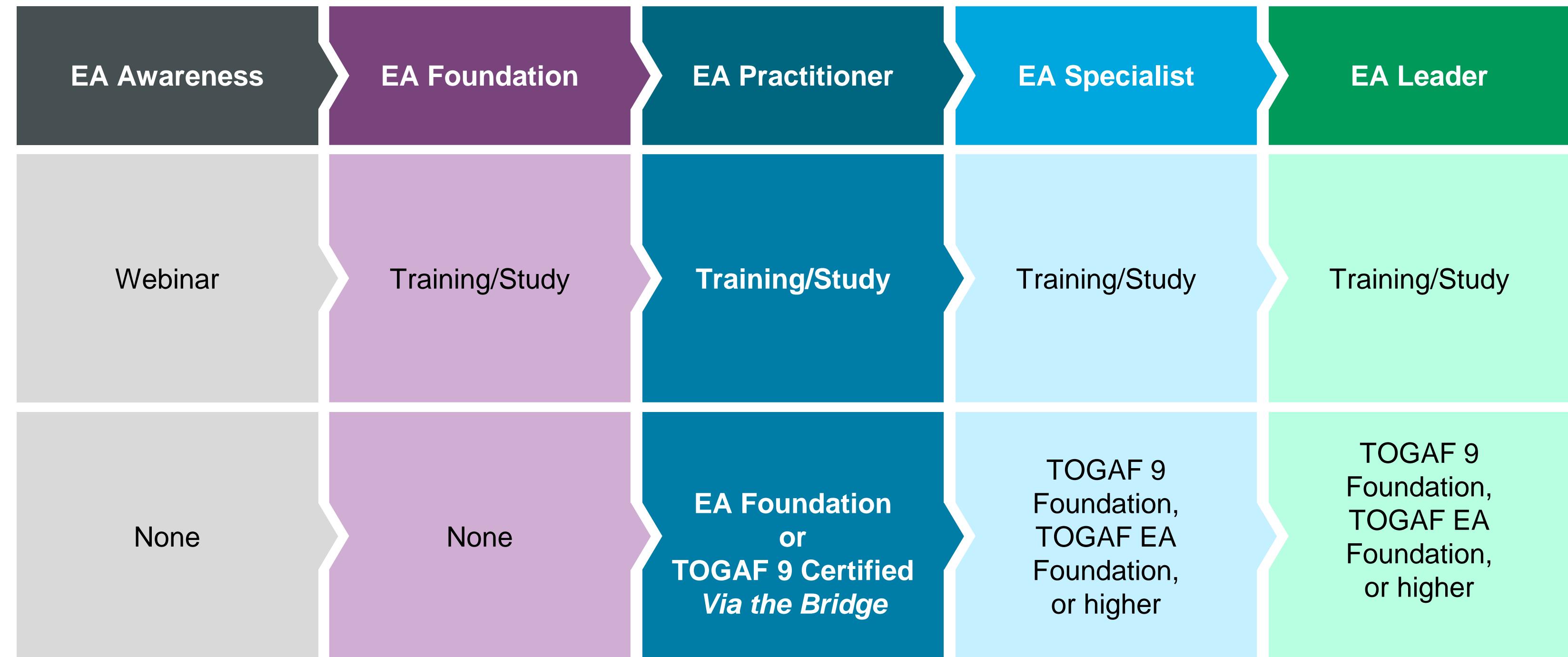
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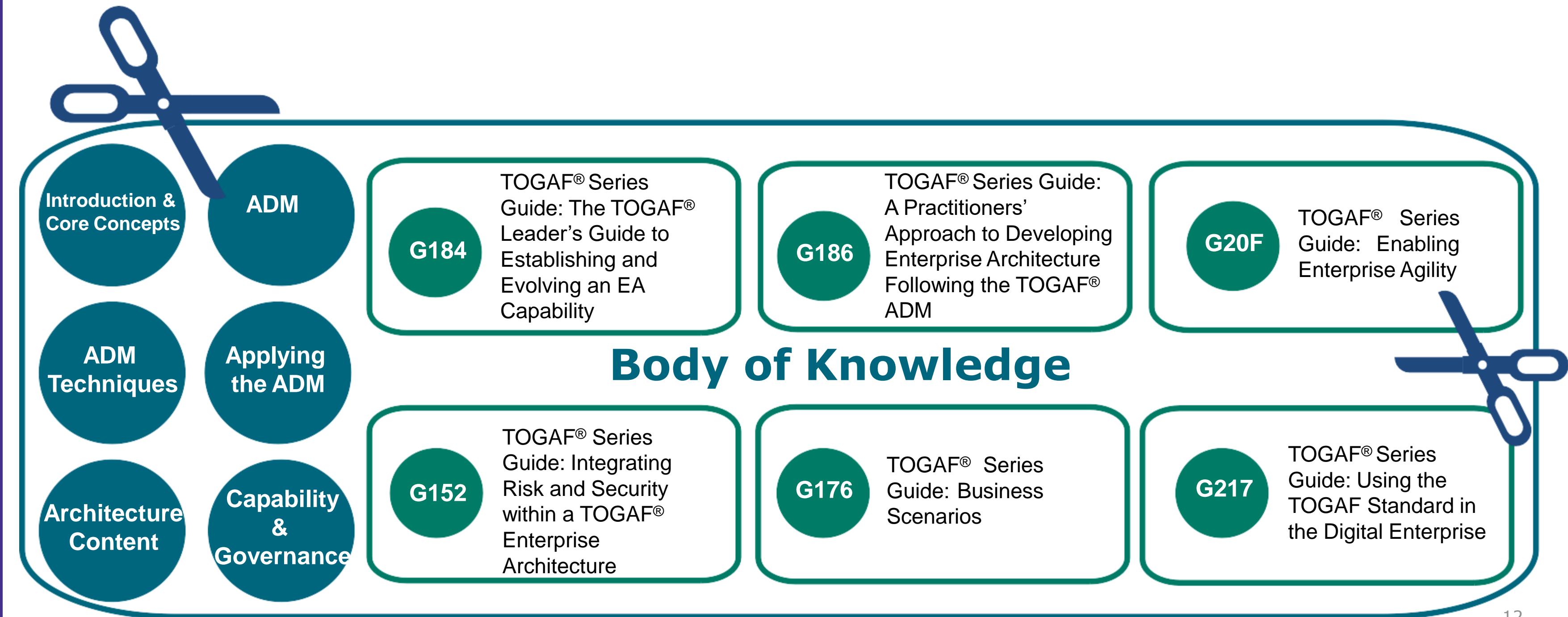
TOGAF® Certification

TOGAF® Enterprise Architecture Learning Path

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Body of Knowledge: TOGAF Enterprise Architecture



TOGAF Enterprise Architecture Foundation

Learning Units

- Unit 1 – Introduction and Concepts
- Unit 2 – Definitions
- Unit 3 – Introduction to the ADM Phases
- Unit 4 – Introduction to ADM Techniques
- Unit 5 – Introduction to Applying the ADM
- Unit 6 – Introduction to Architecture Governance
- Unit 7 – Architecture Content
- Unit 8 – TOGAF® Certification Program
(not examinable – covered in Module 0)



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TOGAF® Enterprise Architecture Foundation Unit 1- Concepts

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TOGAF®
Enterprise Architecture
Foundation

Unit 1

Concepts

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Enterprise

1.2

The Purpose of Enterprise Architecture

1.3

The Benefits of Having an Enterprise Architecture

1.4

A Framework for Enterprise Architecture

1.5

Architecture Domains

1.6

Architecture Abstraction in Enterprise Architecture

Unit 1

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The TOGAF® Content Framework and Enterprise Metamodel

1.10

A Architecture Capability for Enterprise Architecture

1.11

Risk Management

1.12

Gap Analysis

1.1 Enterprise

Enterprise

- The TOGAF Standard considers an “enterprise” to be any collection of organizations that have common goals.
- The term “Enterprise” in the context of “Enterprise Architecture” can be applied to either an entire enterprise, or to one or more specific areas of interest within the enterprise.
- An enterprise may include partners, suppliers, and customers as well as internal business units.

Examples

- A whole corporation or a division of a corporation
- A government agency or a single government department
- A chain of geographically distant organizations linked together by common ownership
- Groups of countries, governments, or governmental organizations (such as militaries) working together to create common or shareable deliverables or infrastructures
- Partnerships and alliances of businesses working together, such as a consortium or supply chain

1.2 The Purpose of Enterprise Architecture

What is Enterprise Architecture?

- The process of translating business vision and strategy into effective enterprise change by creating, communicating, and improving the key principles and models that describe the enterprise's future state and enable its evolution. (Source: Gartner®)

- A set of abstractions and models that simplify and communicate complex structures, processes, rules, and constraints to improve understanding, implementation, forecasting, and resourcing. (Source: DoDAF)

Purpose of Enterprise Architecture

- It provides a framework for change, linked to both strategic direction and business value and a sufficient view of the organization to manage complexity, support continuous change, and manage the risk of unanticipated consequences.
- It enables achievement of the right balance between business transformation and continuous operational efficiency.
- A good Enterprise Architecture facilitates effective governance, management, risk management, and exploitation opportunities.

Why is it Important?

- An Enterprise Architecture is developed to guide effective change. Guidance on effective change will take place during the activity to realize the approved Enterprise Architecture.
- During implementation, Enterprise Architecture is used by the stakeholders to govern change.

1.3 The Benefits of Having an Enterprise Architecture

Key Benefits – More Effective

- More effective strategic decision-making by C-Level executives and business leaders:
 - Support for quick responses to change and support for enterprise agility
- More effective and efficient business operations:
 - Lower operational costs due to capabilities shared across the organization
- More effective and efficient Digital Transformation and operations:
 - Bringing components of the enterprise into a harmonized environment

Key Benefits – ROI and Procurement

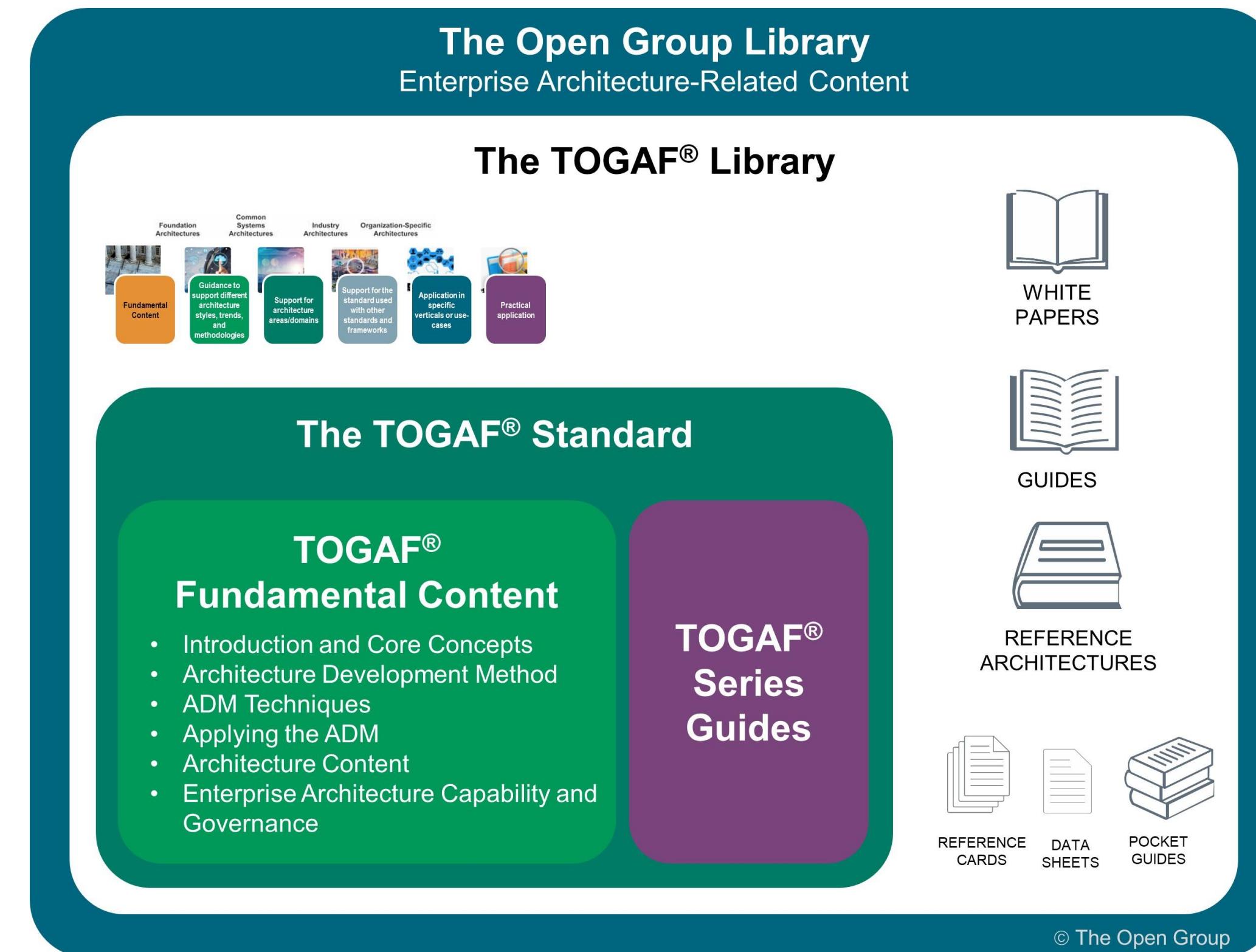
- Better return on existing investment, reduced risk for future investment:
 - Reducing complexity, maximizing return on investment
- Faster, simpler, and cheaper procurement:
 - Information governing procurement is more readily available

Key Benefits – Balancing Conflicting Demands

- A good EA enables the sponsors and the enterprise as a whole to achieve the right balance across conflicting demands.
- Without the EA, it is highly unlikely that all the concerns and requirements will be considered and addressed with an appropriate trade-off.

1.4 A Framework for Enterprise Architecture

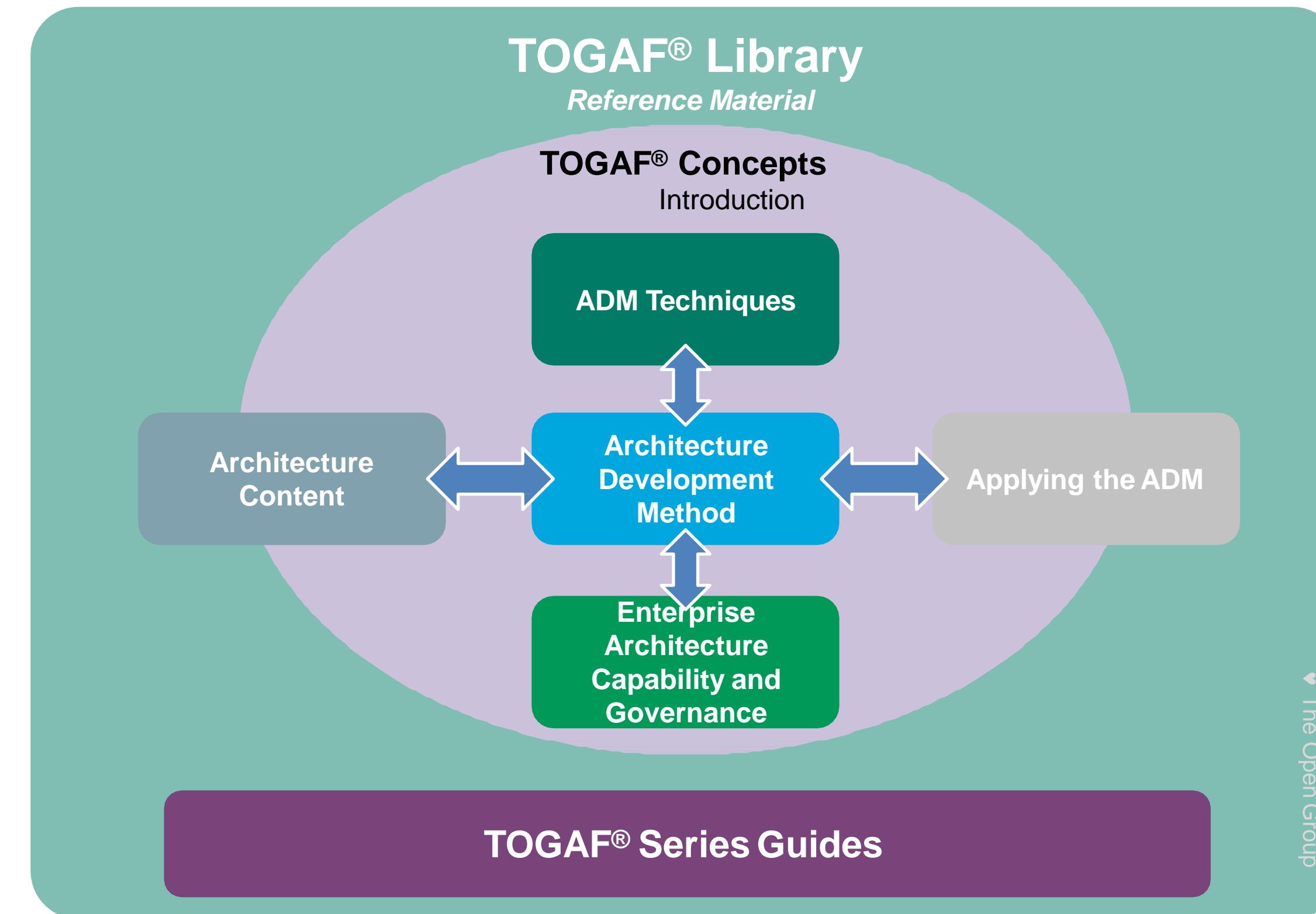
The TOGAF® Standard and the TOGAF® Library



A Framework Suitable for EA

- The TOGAF Standard is suitable for EA since it plays an important role in standardizing and de-risks the architecture development process.
- It provides a best practice framework for adding value, and enables the organization to build workable and economic solutions which address their business issues and needs.
- Using the TOGAF Standard results in Enterprise Architecture that is consistent, reflects the needs of stakeholders, employs best practice, and gives due consideration both to current requirements and the perceived future needs of the business.

A Framework for Identifying and Implementing Change



1.5 Architecture Domains

Four Architecture Domains

- Business Architecture
- Data Architecture
- Application Architecture
- Technology Architecture

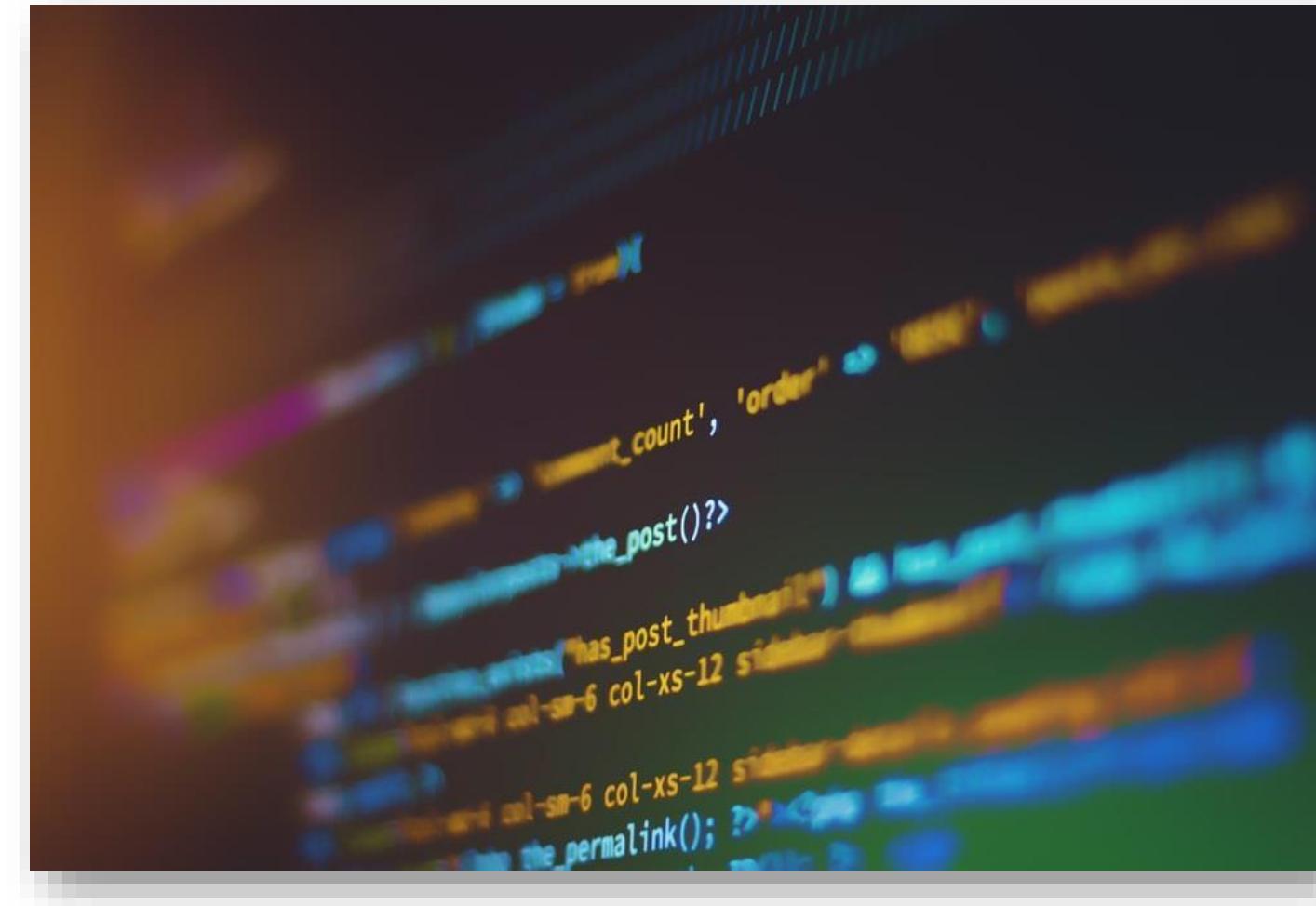
Business and Data Architecture

- The Business Architecture defines the business strategy, governance, organization, and key business processes.
- The Data Architecture describes the structure of an organization's logical and physical data assets and data management resources.



Application Architecture

- The Application Architecture provides a blueprint for the individual applications to be deployed, their interactions, and their relationships to the core business processes of the organization.



Technology Architecture

- The Technology Architecture describes the digital architecture and the logical software and hardware infrastructure capabilities and standards that are required to support the deployment of business, data, and applications services.



1.6 Architecture Abstraction in Enterprise Architecture

Architecture Abstraction

- An architectural technique for dividing a problem area into smaller problem areas that are easier to model and therefore easier to solve.
- Architecture effort can be divided into abstraction levels to answer the four fundamental questions about an architecture:
 - ❖ **Why** – why is the architecture needed?
 - ❖ **What** – what functionality and other requirements need to be met by the architecture?
 - ❖ **How** – how do we structure the functionality?
 - ❖ **With what** – with what assets shall we implement this structure?

Four Abstraction Levels

- Contextual
- Conceptual
- Logical
- Physical

Contextual Abstraction

Contextual

- Understanding the environment in which an enterprise operates and the context in which architecture work is planned and executed. It answers why an enterprise undertakes architecture work, what is the scope of work, and the motivation in terms of goals, drivers, and objectives.

Conceptual

Logical

Physical

Conceptual Abstraction

- Contextual
- Conceptual**
 - Decomposing the requirements to understand the problem, and what is needed to address the problem, without unduly focusing on how the architecture will be realized
- Logical
- Physical

Logical Abstraction

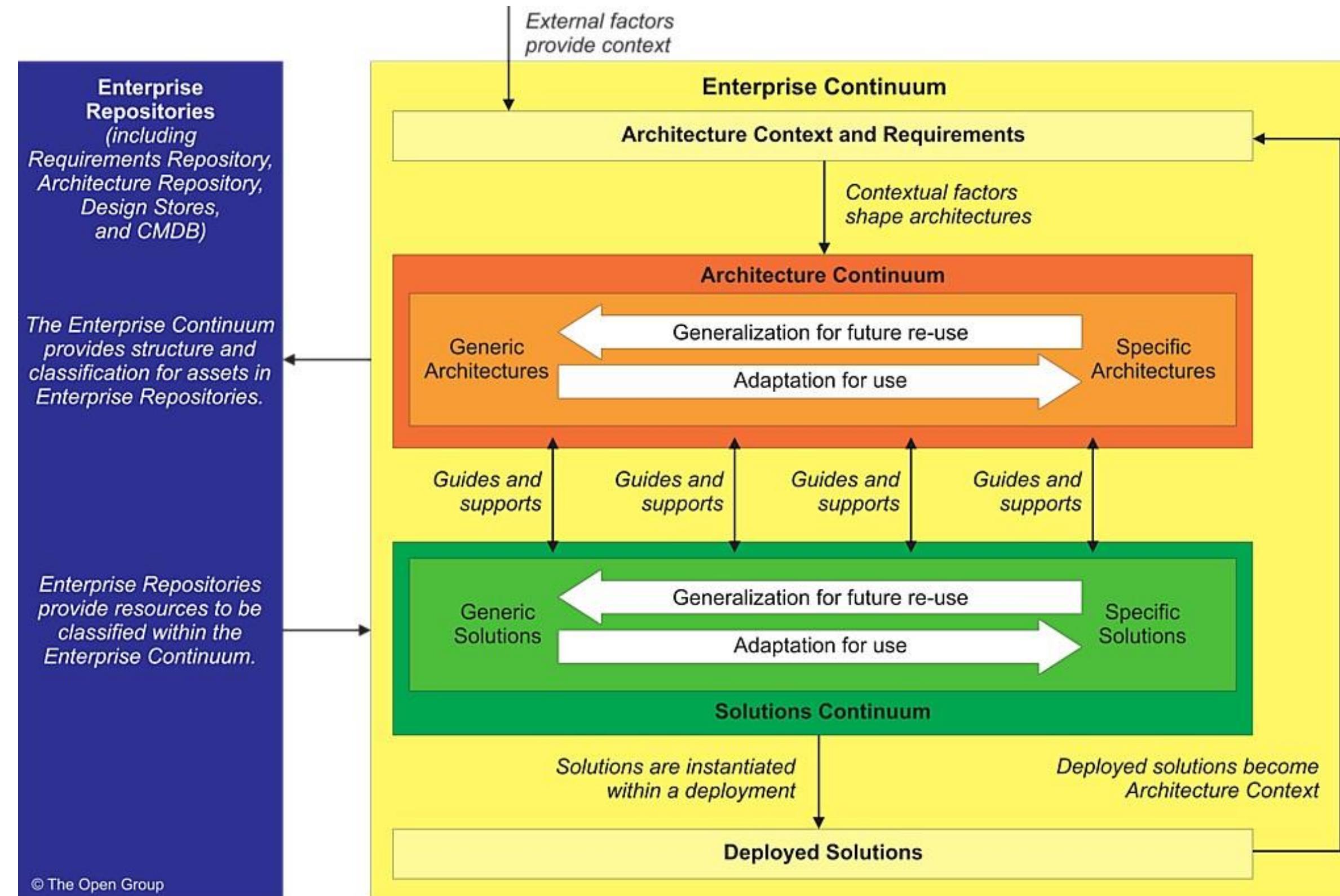
- Contextual
- Conceptual
- Logical**
 - Identifying the kinds of business, data, application, and technology components needed to achieve the services identified in the conceptual level. It is about identifying how an architecture can be organized and structured, in an implementation-independent fashion
- Physical

Physical Abstraction

- Contextual
- Conceptual
- Logical
- Physical
 - The allocation and implementation of physical components to meet the identified logical components. It is about determining with what physical components the logical-level components can be realized

1.7 The Enterprise Continuum

The Enterprise Continuum

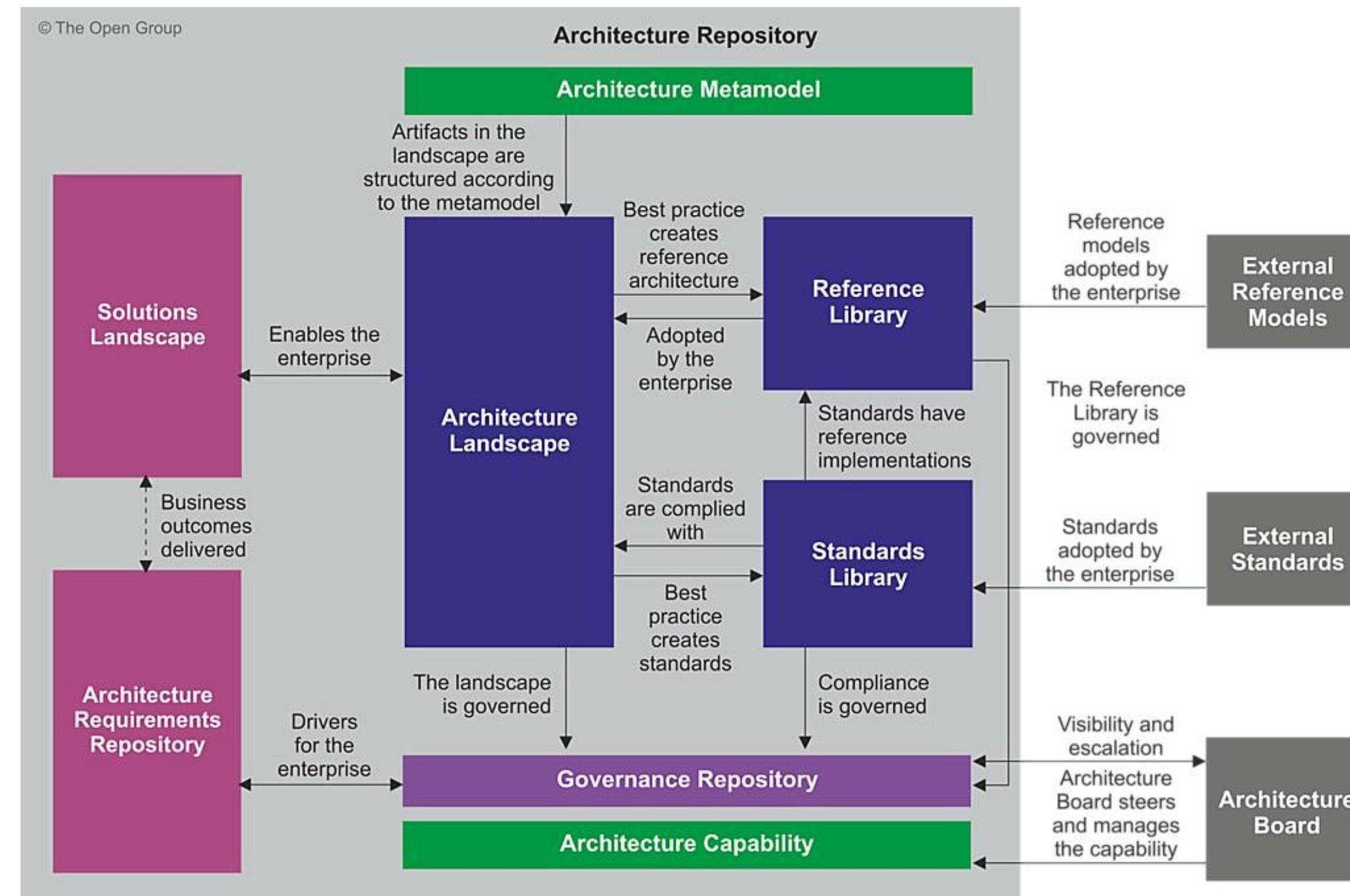


The Enterprise Continuum

- The concept of the Enterprise Continuum sets the broader context for an architect and explains how architecture assets can be leveraged and specialized in order to support the requirements of an individual organization.
- It comprises two complementary concepts:
 - The Architecture Continuum
 - The Solutions Continuum

1.8 The Architecture Repository

The Architecture Repository



The Architecture Repository

- The TOGAF Standard identifies a broad set of materials that will be contained within the Architecture Repository.
- Enterprise Architecture practitioners are directly concerned with the Architecture Landscape, Reference Library, Standards Library, Architecture Requirements Repository, and the Compliance Assessments in the Governance Repository.
- Typically, these are implemented by a modeling and analytic tool, and a file repository.

1.9 The TOGAF® Content Framework and Enterprise Metamodel

The TOGAF® Content Framework and Enterprise Metamodel

- The Content Framework and Enterprise Metamodel define a formal structure and also provide guidance for organizations that wish to implement their architecture within an architecture tool.

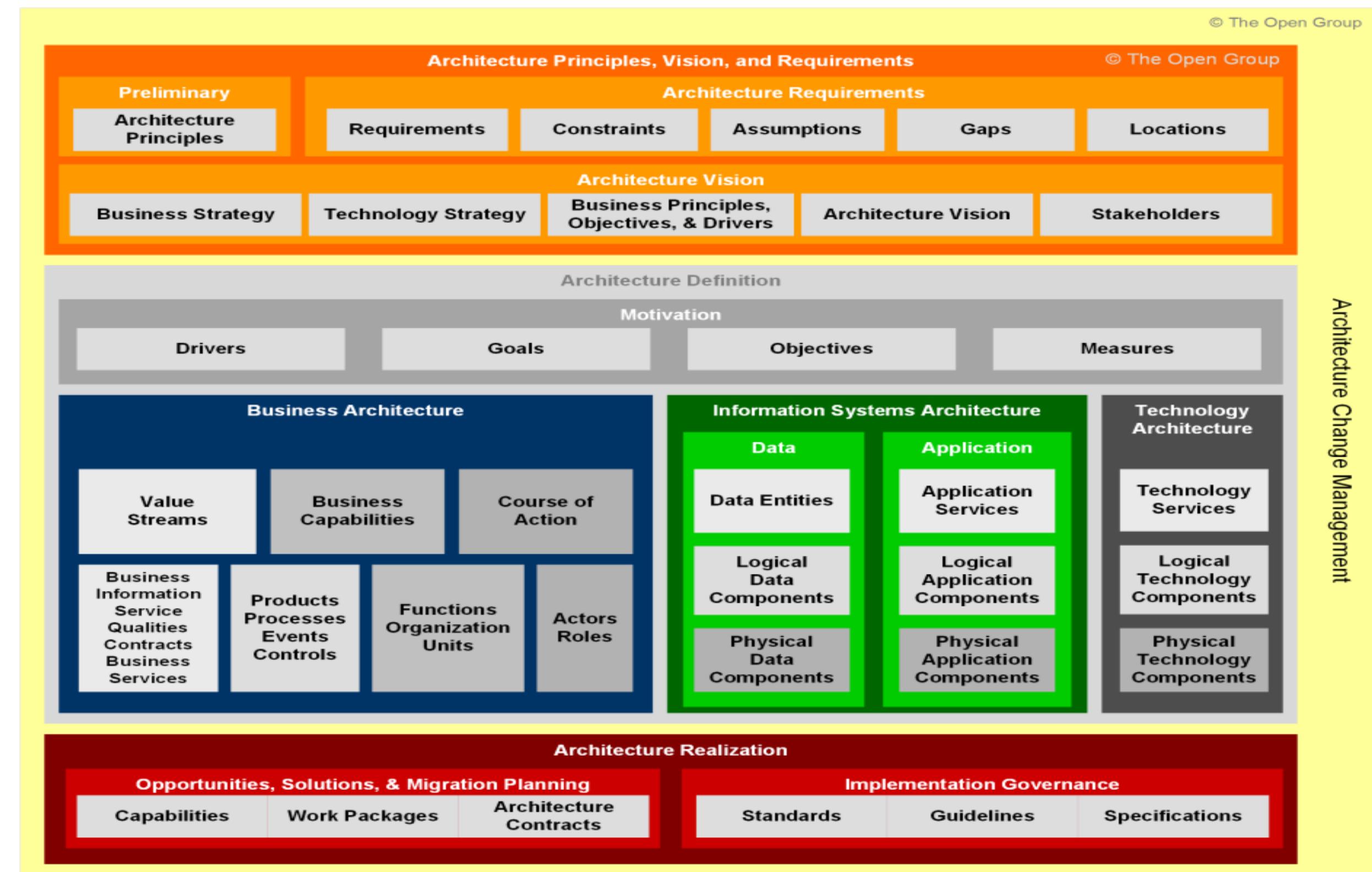
Content Framework

- A categorization framework to be used to structure the Architecture Descriptions, the work products used to express an architecture, and the collection of models that describe the architecture; this is referred to as the Content Framework.

Enterprise Metamodel

- The Enterprise Metamodel defines the types of entities to appear in the models that describe the enterprise, together with the relationships between these entities. It allows architectural concepts to be captured, stored, filtered, queried, and represented in a way that supports consistency, completeness, and traceability.
- The Enterprise Metamodel is used to structure architectural information in an orderly way so that it can be processed to meet stakeholder needs.
- The TOGAF Enterprise Metamodel provides a good starting point for examining the information the Enterprise Architecture Capability requires.

Content Framework Overview

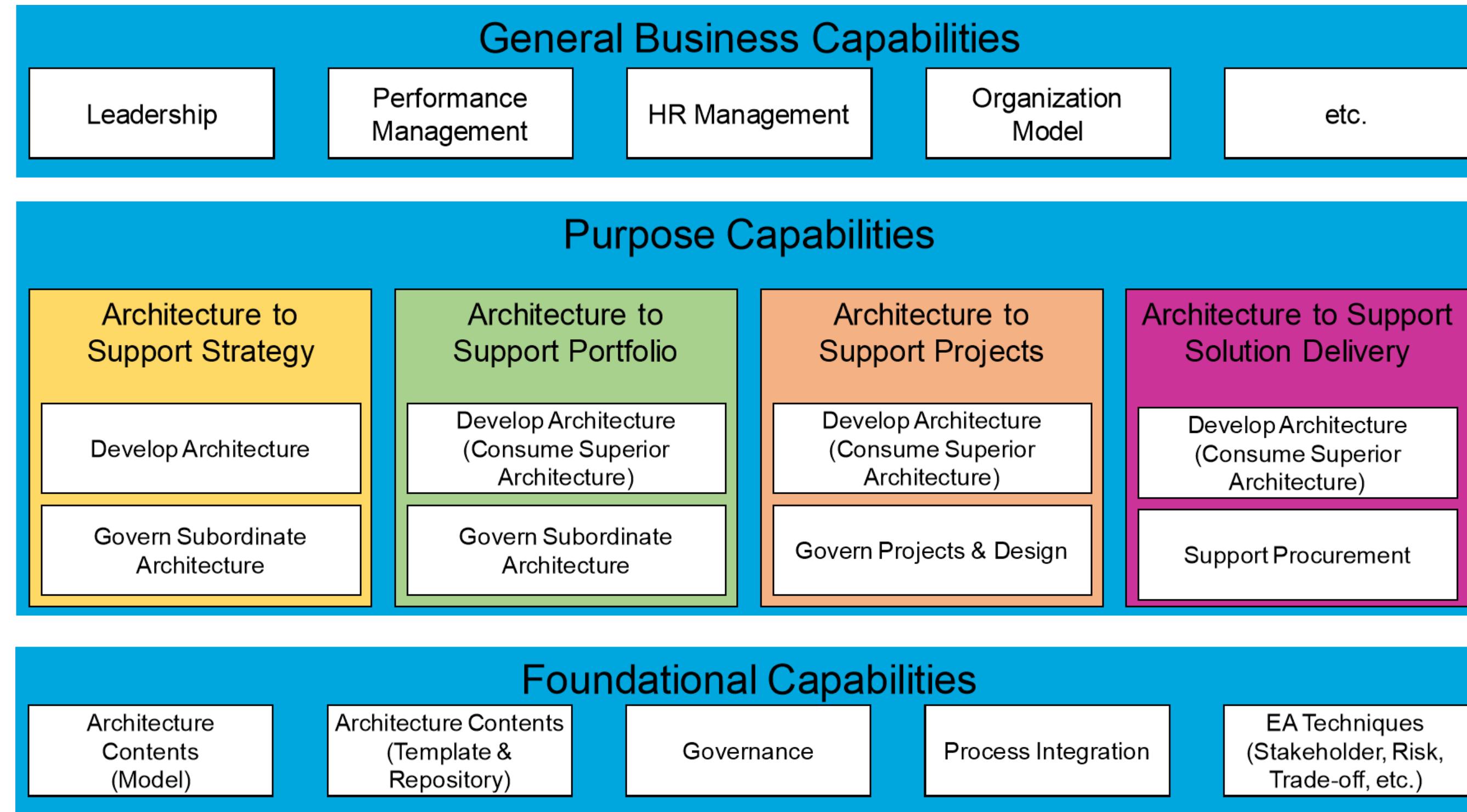


1.10 Architecture Capability

Architecture Capability (aka EA Capability)

- An Enterprise Architecture Capability is the ability to develop, use, and sustain the architecture of a particular enterprise, and use the architecture to govern change.
- In order to carry out architectural activity effectively within an enterprise, it is necessary to put in place an appropriate business capability for architecture, through organization structures, roles, responsibilities, skills, and processes.

Example: Enterprise Architecture Capability Model



What is expected of an Enterprise Architecture Capability Team?

- Enterprise Architecture is used to describe the future state of an enterprise to guide the change to reach the future state. The description of the future state enables key people to understand what must be in their enterprise to meet the enterprise's goals, objective, mission, and vision in the context within which the enterprise operates.
- The gap between the enterprise's current state and future state highlights what must change within the enterprise. This gap is a function of the enterprise context and the scope of changes the enterprise sees.

1.11 Risk Management

Risk Management

- The ISO 31000 definition of “risk” is the “effect of uncertainty on objectives”.
- The ISO 31000 definition of risk management is “coordinated activities to direct and control an organization with regard to risk”.
- Risk management is about striking a balance between positive and negative outcomes resulting from the realization of either opportunities or threats.

Risk Management and Mitigation

- There will always be risk with any architecture/business transformation effort.
- It is important to manage risks by identifying, classifying, and mitigating these risks before starting so that they can be tracked throughout the transformation effort.
- Mitigation is an ongoing effort and often the risk triggers may be outside the scope of the transformation planners (e.g., merger, acquisition) so planners must monitor the transformation context constantly.

1.12 Gap Analysis

Gap Analysis

- The purpose of gap analysis is to document the difference between the baseline and the target architectures
- It identifies components (building blocks) of the architecture that are added, deleted, and/or changed

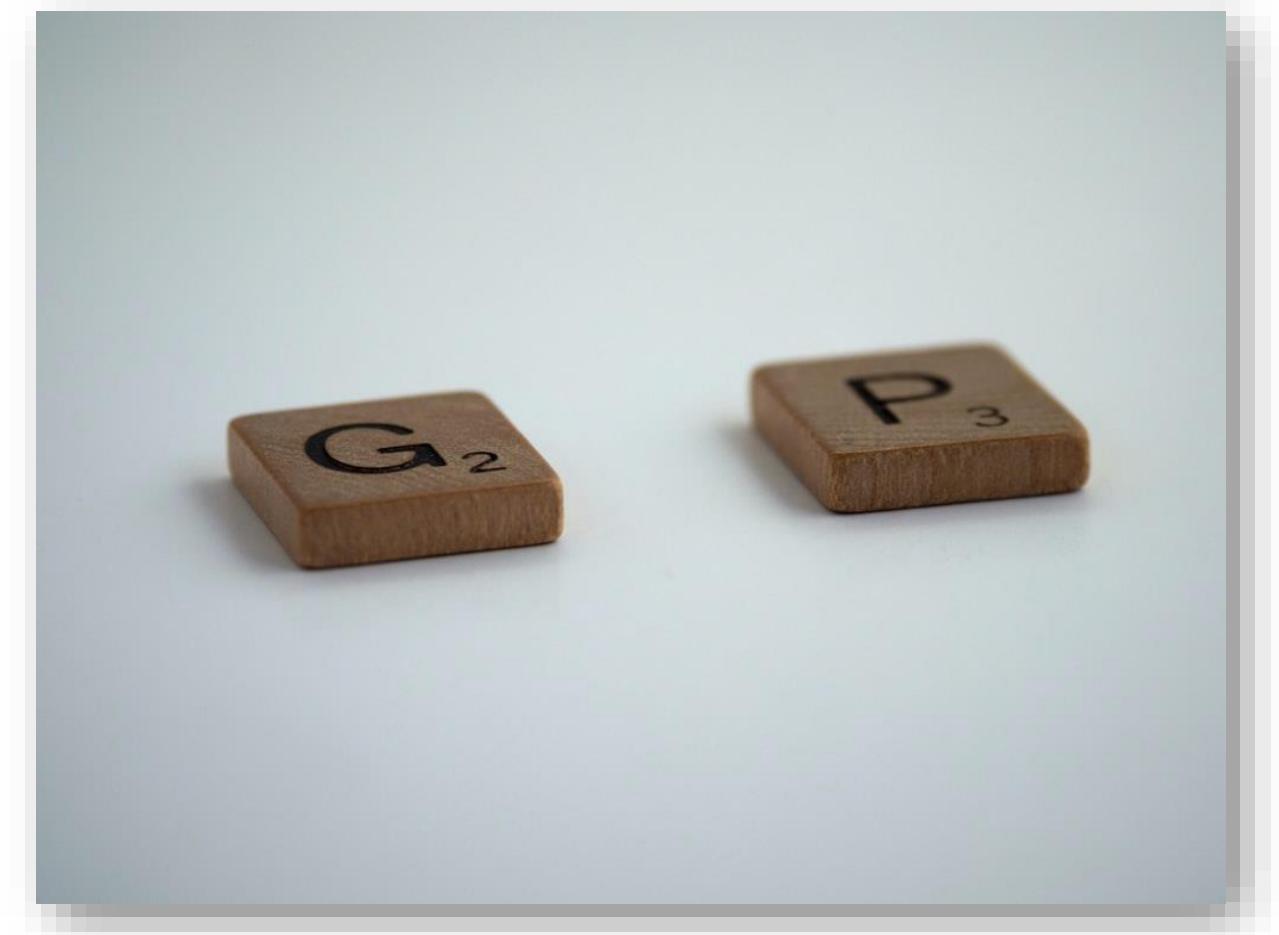
Gap Analysis

- A key step in developing an architecture is to identify changes between the baseline and target architectures using Gap Analysis.
- The Gap Analysis technique is used to consider what may have been forgotten or missed, as well as what is needed.
- It identifies components (building blocks) of the architecture that are added, deleted, and/or changed
- A gap is simply anything that changes.

Potential Sources of Gaps

□ Business domain gaps:

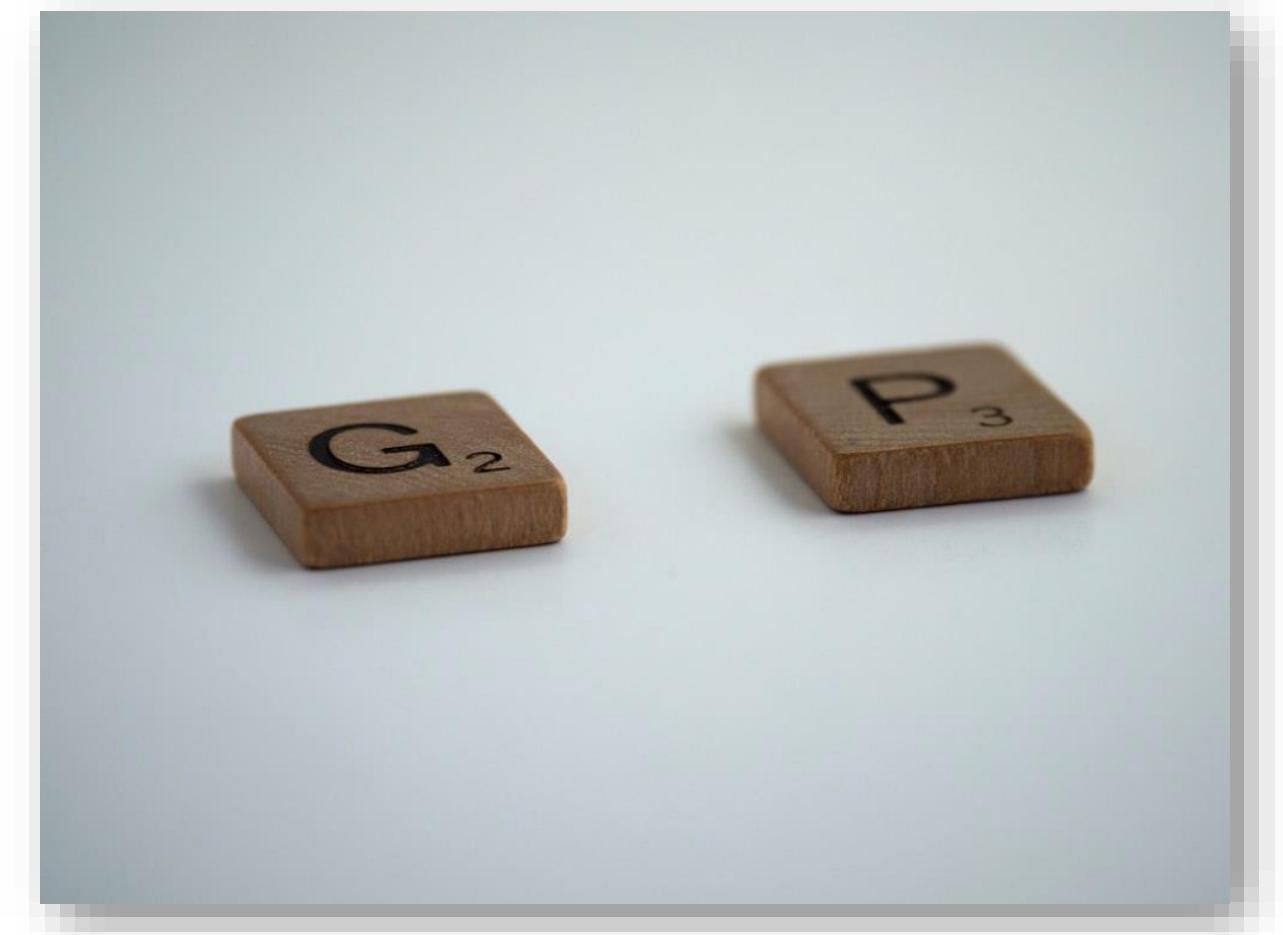
- ✓ People gaps (e.g., cross-training requirements)
- ✓ Process gaps (e.g., process inefficiencies)
- ✓ Tools gaps (e.g., duplicate or missing tool functionality)
- ✓ Information gaps
- ✓ Measurement gaps
- ✓ Financial gaps
- ✓ Facilities gaps (buildings, office space, etc.)



Potential Sources of Gaps

□ Data domain gaps:

- ✓ Data not of sufficient currency
- ✓ Data not located where it is needed
- ✓ Not the data that is needed
- ✓ Data not available when needed
- ✓ Data not created
- ✓ Data not consumed
- ✓ Data relationship gaps
- ✓ Applications impacted, eliminated, or created
- ✓ Technologies impacted, eliminated, or created



Simple Example Gap Analysis

Target Architecture → Baseline Architecture ↓	Video Conferencing Services	Enhanced Telephony Services	Mailing List Services	Eliminated Services ↓
Broadcast Services				<i>Intentionally Eliminated</i>
Video Conferencing Services	<i>Included</i>			
Enhanced Telephony Services		<i>Potential Match</i>		
Shared Screen Services				<i>Unintentionally excluded – a gap in Target Architecture</i>
New →		<i>Gap: Enhanced services to be developed or produced</i>	<i>Gap: Enhanced services to be developed or produced</i>	

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TOGAF® Enterprise Architecture Foundation Unit 2- Definitions

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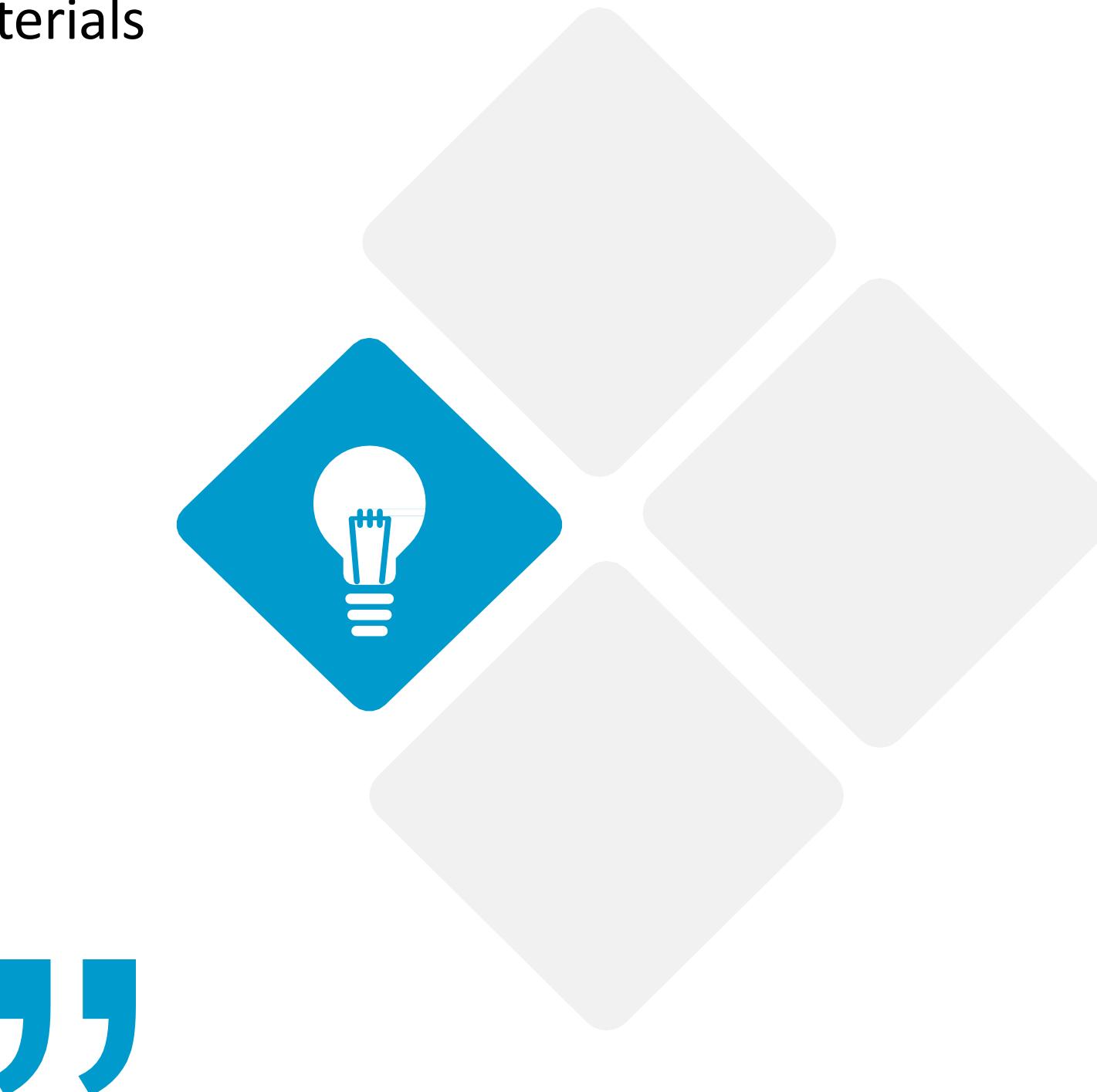
Unit Objectives

- The purpose of this unit is to help understand relevant terminology.



Definitions

- Definitions are included in the course materials handouts.



‘’

Definitions

Application Architecture

- A description of the structure and interaction of the applications that provide key business capabilities and manage the data assets

Architecture Landscape

- The architectural representation of assets in use, or planned, by the enterprise at particular points in time

Architecture Model

- A representation of a subject of interest

Definitions

Artifact

- An architectural work product that describes an aspect of the architecture

Business Architecture

- A representation of holistic, multi-dimensional business views of: capabilities, end-to-end value delivery, information, and organizational structure; and the relationships among these business views and strategies, products, policies, processes, initiatives, and stakeholders

Business Model

- A model describing the rationale for how an enterprise creates, delivers, and captures value.

Capability

- An ability that an organization, person, or system possesses.

Definitions

Capability Architecture

- An architecture that describes the abilities that an enterprise possesses

Data Architecture

- A description of the structure of the enterprise's major types and sources of data, logical data assets, physical data assets, and data management resources

Deliverable

- An architectural work product that is contractually specified and in turn formally reviewed, agreed, and signed off by the stakeholders

Gap

- A statement of difference between two states. Used in the context of gap analysis, where the difference between the Baseline and Target Architecture is identified

Definitions

Metamodel

- ❑ A model that describes the entities used in building an Architecture Description, their characteristics, and the key relationships between those entities.

Modeling

- ❑ A technique through construction of models which enables a subject to be represented in a form that enables reasoning, insight, and clarity concerning the essence of the subject matter.

Requirement

- ❑ A statement of need, which is unambiguous, testable or measurable, and necessary for acceptability.

Definitions

Role

- The usual or expected behavior of an actor, or the part somebody or something plays in a particular process or event. An actor may have a number of roles.
- The part an individual plays in an organization and the contribution they make through the application of their skills, knowledge, experience, and abilities.

Segment Architecture

- A detailed, formal description of areas within an enterprise, used at the program or portfolio level to organize and align change activity.

Stakeholder

- An individual, team, organization, or class thereof, having an interest in a system.

Definitions

Strategic Architecture

- A summary formal description of the enterprise, providing an organizing framework for operational and change activity, and an executive-level, long-term view for direction setting.

Technology Architecture

- A description of the structure and interaction of the technology services and technology components.

Transition Architecture

- A formal description of one state of the architecture at an architecturally significant point in time.

Work Package

- A set of actions identified to achieve one or more objectives for the business. A work package can be a part of a project, a complete project, or a program.

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TOGAF® Enterprise Architecture Foundation

Unit 3- Introduction to the ADM

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Unit 3

Introduction to the ADM

3.1

3.1 The TOGAF® ADM and its Phases

3.2

“Draft” and “Approved” Deliverables

3.3

Iteration and the ADM

3.4

Governing the Creation, Development, and Maintenance of Enterprise Architecture

3.5

How to Scope an Architecture

3.6

Architecture Alternatives, Concerns, and Trade-Off

Unit 3

Introduction to the ADM

3.7

Purpose: Preliminary Phase

3.8

Objectives: Preliminary Phase

3.9

Purpose: Phase A

3.10

Objectives: Phase A

3.11

Purpose: Phases B, C, and D

3.12

Objectives: Phase B

Unit 3

Introduction to the ADM

3.13

Objectives: Phase C: Data Architecture and Application Architecture

3.14

Objectives: Phase D

3.15

Purpose: Phase E

3.16

Objectives: Phase E

3.17

Purpose: Phase F

3.18

Objectives: Phase F

Unit 3

Introduction to the ADM

3.19 Purpose: Phase G

3.20 Objectives: Phase G

3.21 Purpose: Phase H

3.22 Objectives: Phase H

3.23 Purpose: Requirements Management

3.24 Objectives: Requirements Management

Unit 3

Introduction to the ADM

3.25

Information Flow Between ADM Phases

3.26

How Developing Architecture can be Applied to
Support Agile Software Development

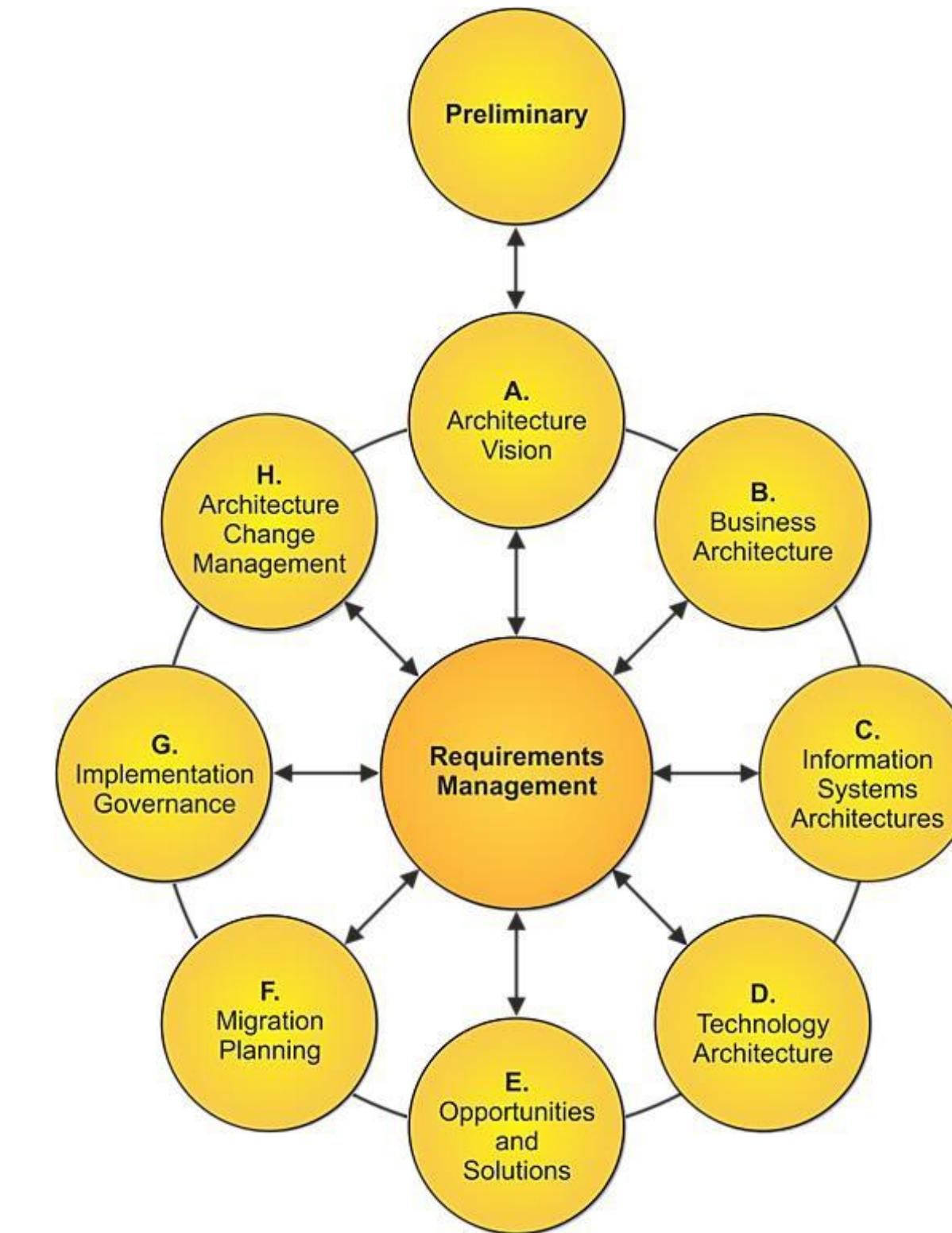
Unit Objectives

- Understanding the Architecture Development Method (ADM), the purpose and objectives of each phase, including how to adapt and scope the ADM for use. Topics include:
 - The ADM and its phases
 - Draft and Approved status for deliverables
 - The iterative approach of the ADM
 - The need to govern Enterprise Architecture
 - How to scope an architecture
 - Architecture alternatives and trade-offs
 - The purpose and objectives of each of the ADM phases
 - How architecture can be applied to support Agile software development

3.1 The TOGAF® ADM and its Phases

The TOGAF® ADM

- The ADM is a tested and repeatable process for developing architectures.
- All of these activities are carried out within an iterative cycle of continuous architecture definition and realization that allows organizations to transform their enterprises in a controlled manner in response to Business Goals and opportunities.



ADM Phases Summary

- The Preliminary Phase: The preparation and initiation activities required to create an Architecture Capability including customization of the TOGAF framework and definition of Architecture Principles
- Phase A: Architecture Vision: The initial phase of an architecture development cycle It includes information about defining the scope of the architecture development initiative, identifying the stakeholders, creating the Architecture Vision, and obtaining approval to proceed with the architecture development.
- Phase B: Business Architecture: Development of a Business Architecture to support the agreed Architecture Vision
- Phase C: Information Systems Architectures: Development of Information Systems Architectures to support the agreed Architecture Vision

ADM Phases Summary

- Phase D: Technology Architecture: Development of the Technology Architecture to support the agreed Architecture Vision
- Phase E: Opportunities & Solutions: Initial implementation planning and the identification of delivery vehicles for the architecture defined in the previous phases
- Phase F: Migration Planning: How to move from the Baseline to the Target Architectures by finalizing a detailed Implementation and Migration Plan
- Phase G: Implementation Governance: Architectural oversight of the implementation
- Phase H: Architecture Change Management: Procedures for managing change to the new architecture
- Requirements Management: Operates the process of managing architecture requirements throughout the ADM

ADM Phases

- The phases of the ADM cycle are further divided into steps, which are defined in the detailed description of each phase.
- The Requirements Management phase is a continuous phase which ensures that any changes to requirements are handled through appropriate governance processes and reflected in all other phases.

3.2 “Draft” and “Approved” Deliverables

“Draft” versus “Approved” Status

- In the ADM, documents which are under development and have not undergone any formal review and approval process are designated “draft”.
- In the ADM, documents which have been reviewed and approved are designated “approved” in accordance with the organization’s governance practices. Approved does not necessarily mean finalized.

3.3 Iteration and the ADM

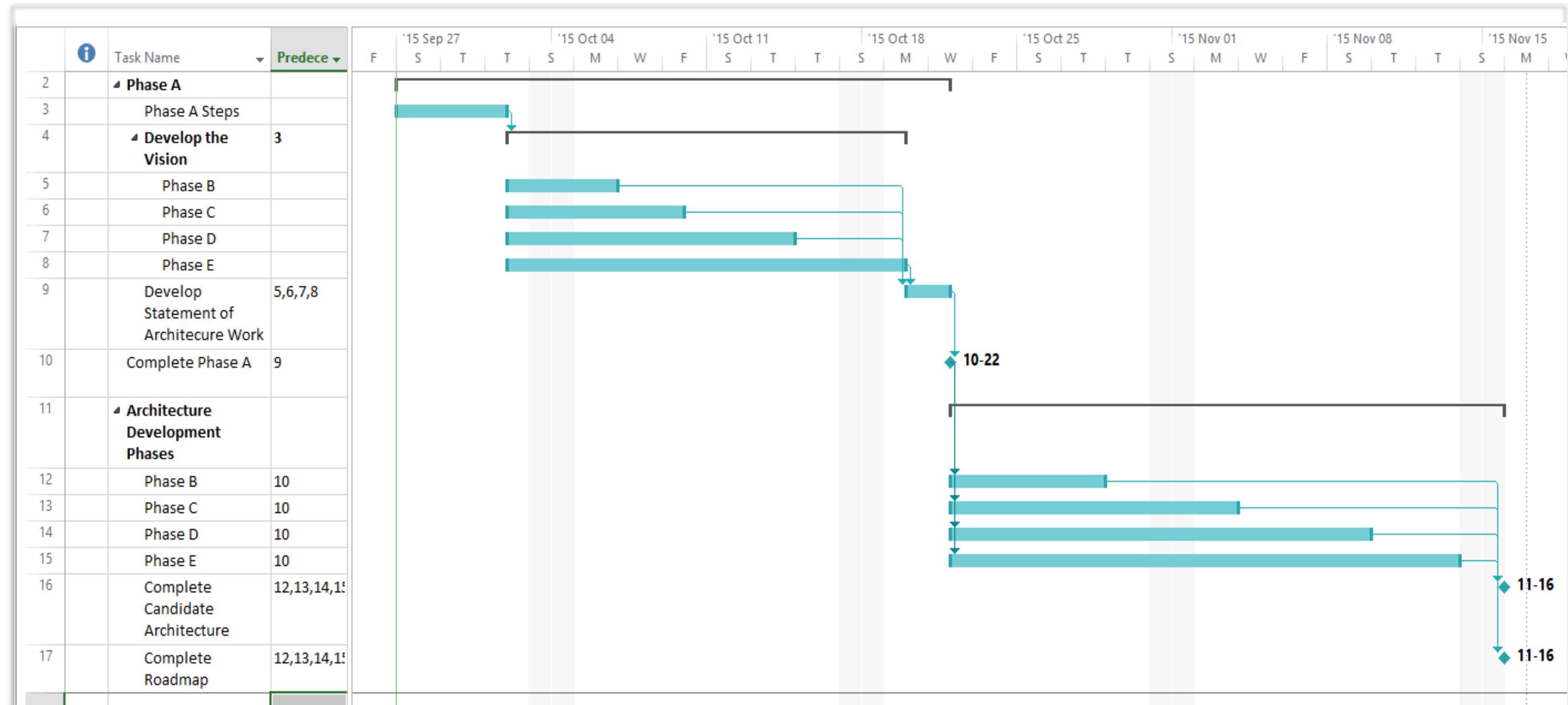
Iteration and the ADM

- The ADM is iterative, over the whole process, between phases, and within phases.
- For each iteration of the ADM, a fresh decision must be taken as to:
 - The breadth of coverage of the enterprise to be defined
 - The level of detail to be defined
 - The extent of the time period aimed at, including the number and extent of any intermediate time periods
 - The architectural assets to be leveraged

Essential Information Flows

- Information flows also result in iteration.
- Every time the Enterprise Architecture team is undertaking any activity within the scope of the ADM it is executing a phase and developing the contents of the Enterprise Architecture Landscape.
- The inter-dependent nature of developing a Target Architecture requires considering the entire architecture, resulting gaps, and resulting work to clear the gap simultaneously.

Iteration via Information Flow



3.4 Governing the Creation, Development, and Maintenance of Enterprise Architecture

Governing the ADM

- The ADM is a key process to be managed in the same manner as other architecture artifacts.
- The Architecture Board should be satisfied that the method is being applied correctly across all phases of an architecture development iteration.
- Compliance with the ADM is fundamental to the governance of the architecture, to ensure that all considerations are made and all required deliverables are produced.

Governing the Architecture

- The practitioner is directed to develop an architecture within a controlled scope.
- Within that controlled scope, the practitioner is directed to the stakeholder's preferences.
- The governance test will ask whether the practitioner is addressing the stakeholder's concerns.

Governing Change

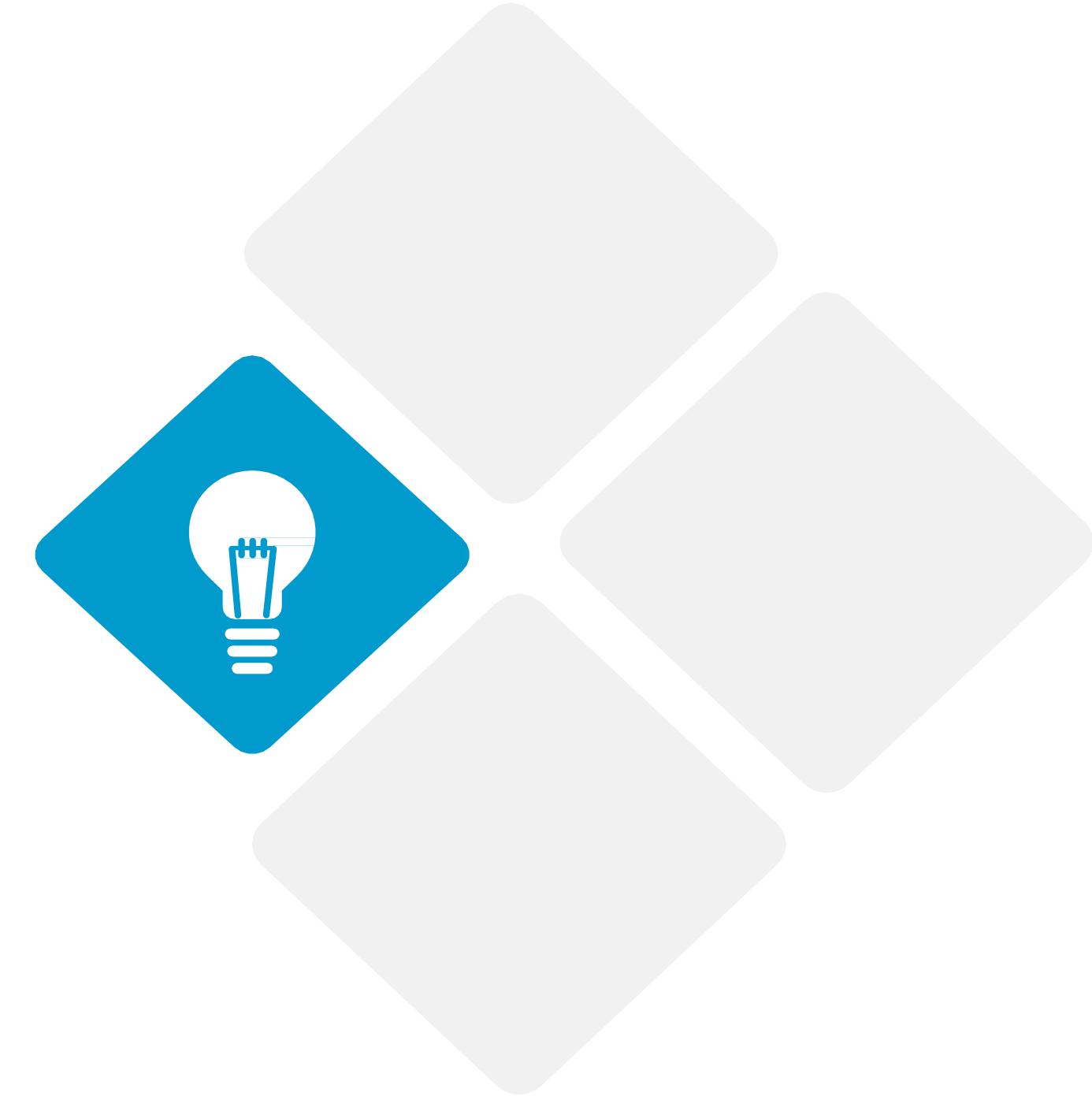
- ❑ Every Architecture Requirements Specification enables control of the implementation team.
- ❑ Design, implementation, and other change choices can be tested against the Architecture Requirements Specification.
- ❑ The implementation team is directed to create changes with intentional value-based outcomes.
- ❑ Best practice governance enables the organisation to control value realization.

Example

“

An example of a target checklist to execute Architecture Governance is included in the handouts.

”



3.5 How to Scope an Architecture

Why Constrain the Scope of Architectural Activity?

- There are many reasons to constrain (or restrict) the scope of the architectural activity to be undertaken, most of which relate to limits in:
 - ❖ The organizational authority of the team producing the architecture
 - ❖ The objectives and stakeholder concerns to be addressed within the architecture
 - ❖ The availability of people, finance, and other resources

Scoping Dimensions

- Typically, the scope of an architecture is first expressed in terms of breadth, depth, and time.
- Once these dimensions are understood, a suitable combination of architecture domains can be selected that are appropriate to the problem being addressed.

Dimensions: Breadth & Depth

- Breadth: what is the full extent of the enterprise, and what part of that extent will this architecting effort deal with?
- Depth: to what level of detail should the architecting effort go?

Dimensions – Time Period and Architecture Domains

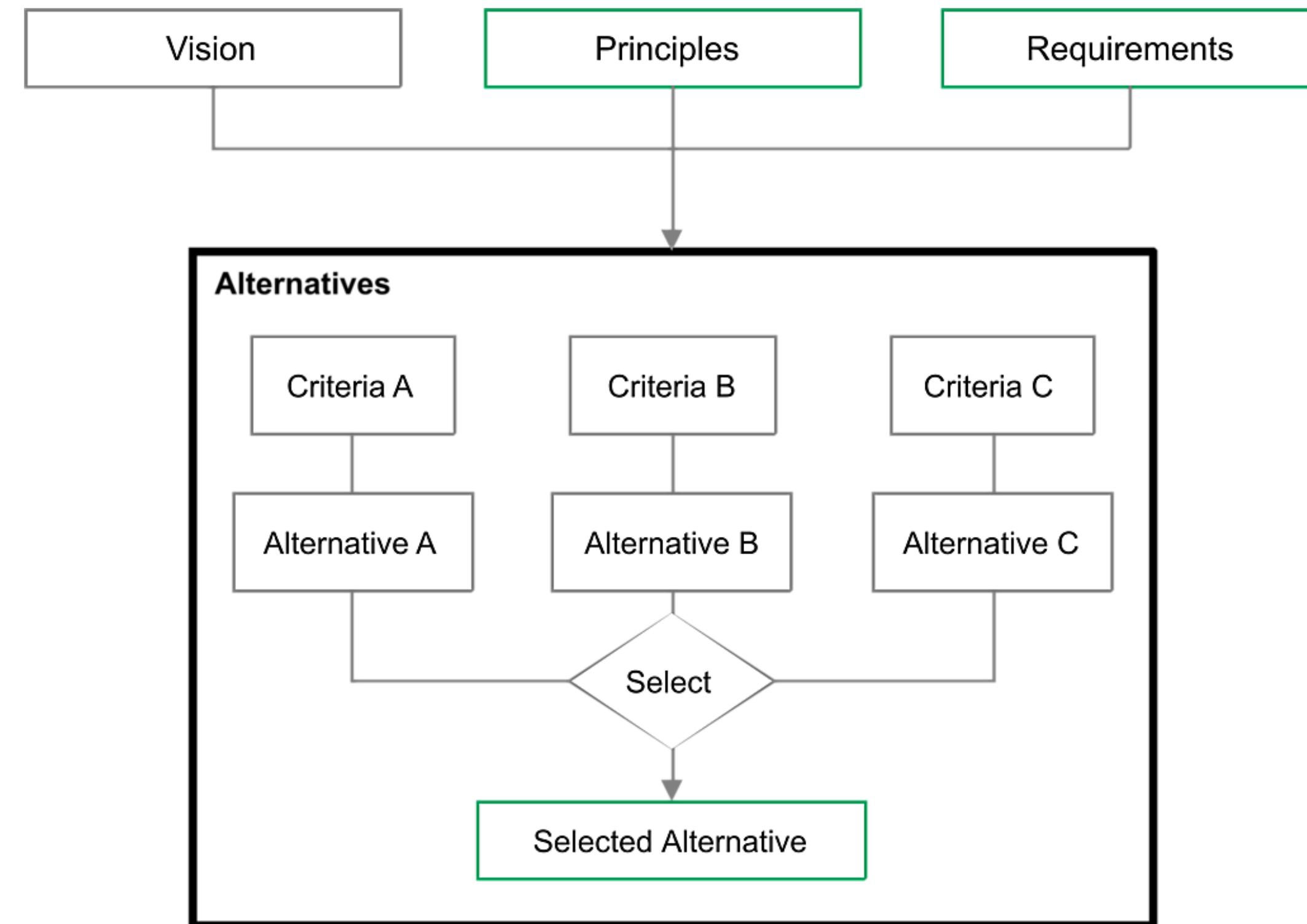
- Time Period: what is the time period that needs to be articulated for the Architecture Vision, and does it make sense for the same period to be covered in the detailed Architecture Description?
- Architecture Domains: a complete Enterprise Architecture Description should contain all four architecture domains (Business, Data, Application, Technology).

3.6 Architecture Alternatives, Concerns, and Trade-Off

Why Consider Architecture Alternatives?

- There is often more than one possible Target Architecture that would conform to the Architecture Vision, Architecture Principles, and Requirements.
- By identifying and considering alternative Target Architectures an understanding can be built of the different possibilities and trade-offs identified between the alternatives.
- Presenting different alternatives and trade-offs to stakeholders helps architects to extract hidden agendas, principles, and requirements that could impact the final Target Architecture.

Architecture Alternatives Method



3.7 Purpose: Preliminary Phase

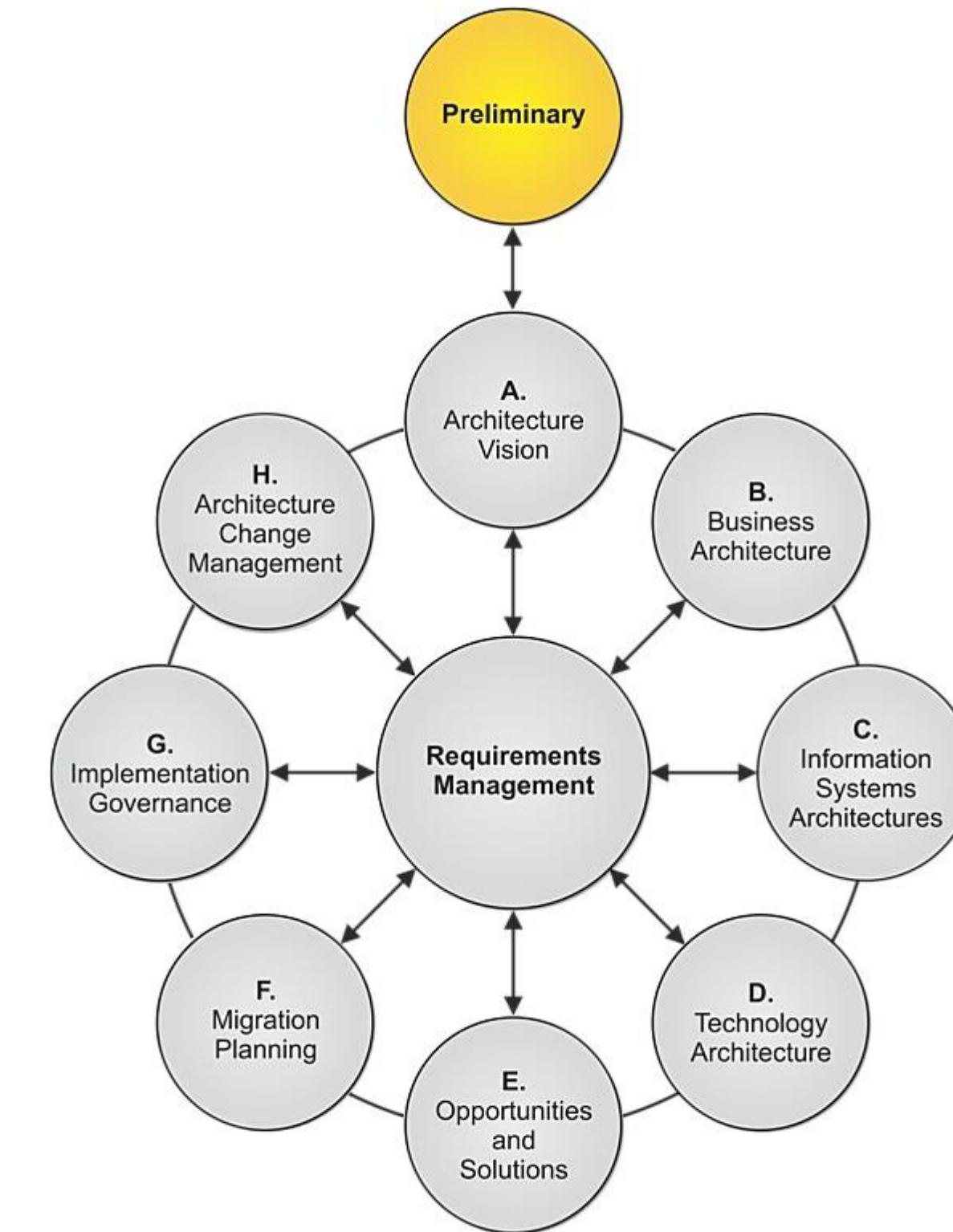
Preliminary Phase – Purpose

- The purpose of the Preliminary Phase is to develop the Enterprise Architecture Capability.
- It is designed as a customized journey of the TOGAF ADM.

3.8 Objectives: Preliminary Phase

The Objectives of the Preliminary Phase

- Determine the Architecture Capability desired by the organization
- Establish the Architecture Capability



Determine the Architecture Capability Desired by the Organization

- Review the organizational context for conducting Enterprise Architecture
- Identify and scope the elements of the enterprise organizations affected by the Architecture Capability
- Identify the established frameworks, methods, and processes that intersect with the Architecture Capability
- Establish Capability Maturity target

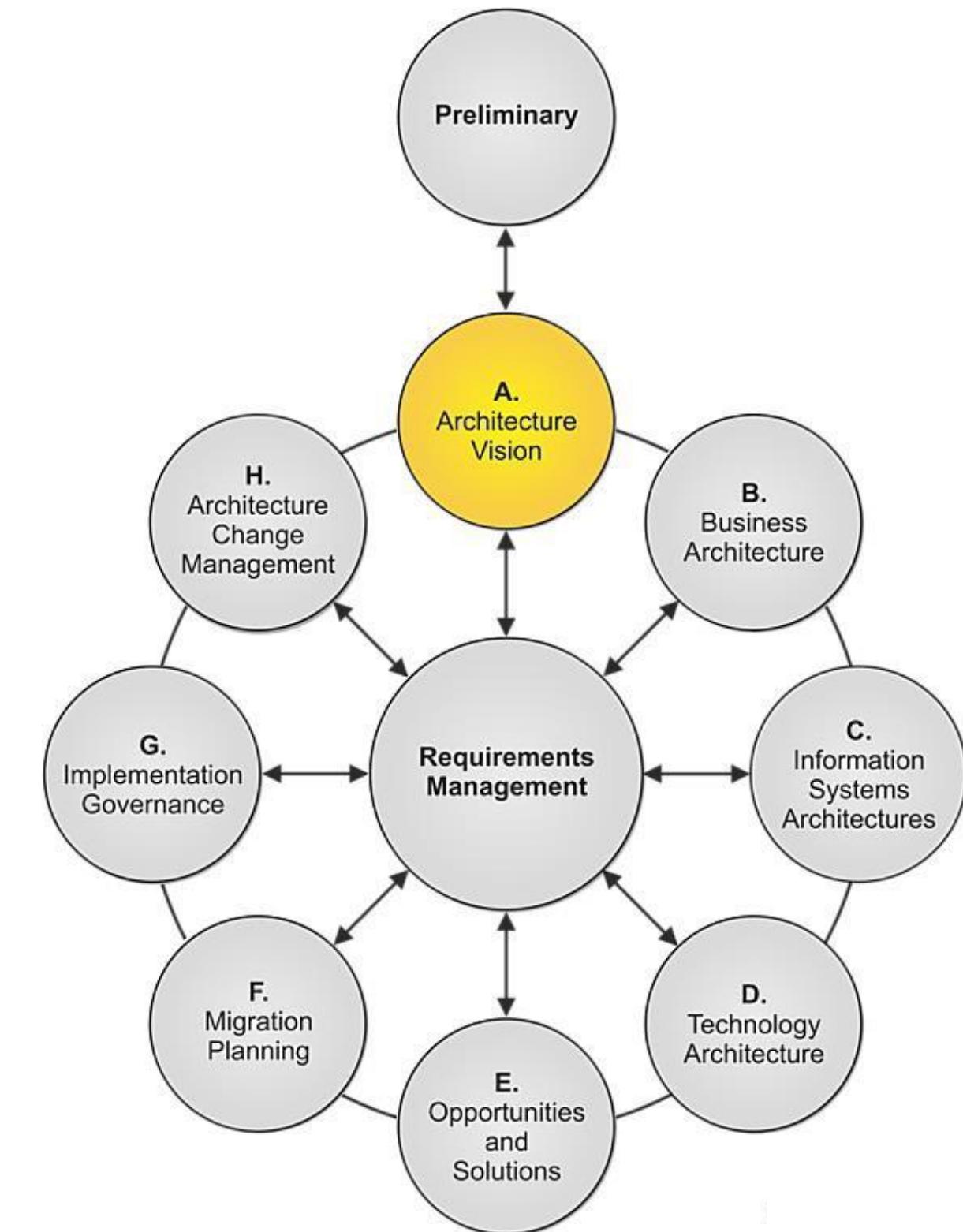
Establish the Architecture Capability

- Define and establish the Organizational Model for Enterprise Architecture
- Define and establish the detailed process and resources for Architecture Governance
- Select and implement tools that support the Architecture Capability
- Define the Architecture Principles

3.9 Purpose: Phase A

Phase A – Purpose

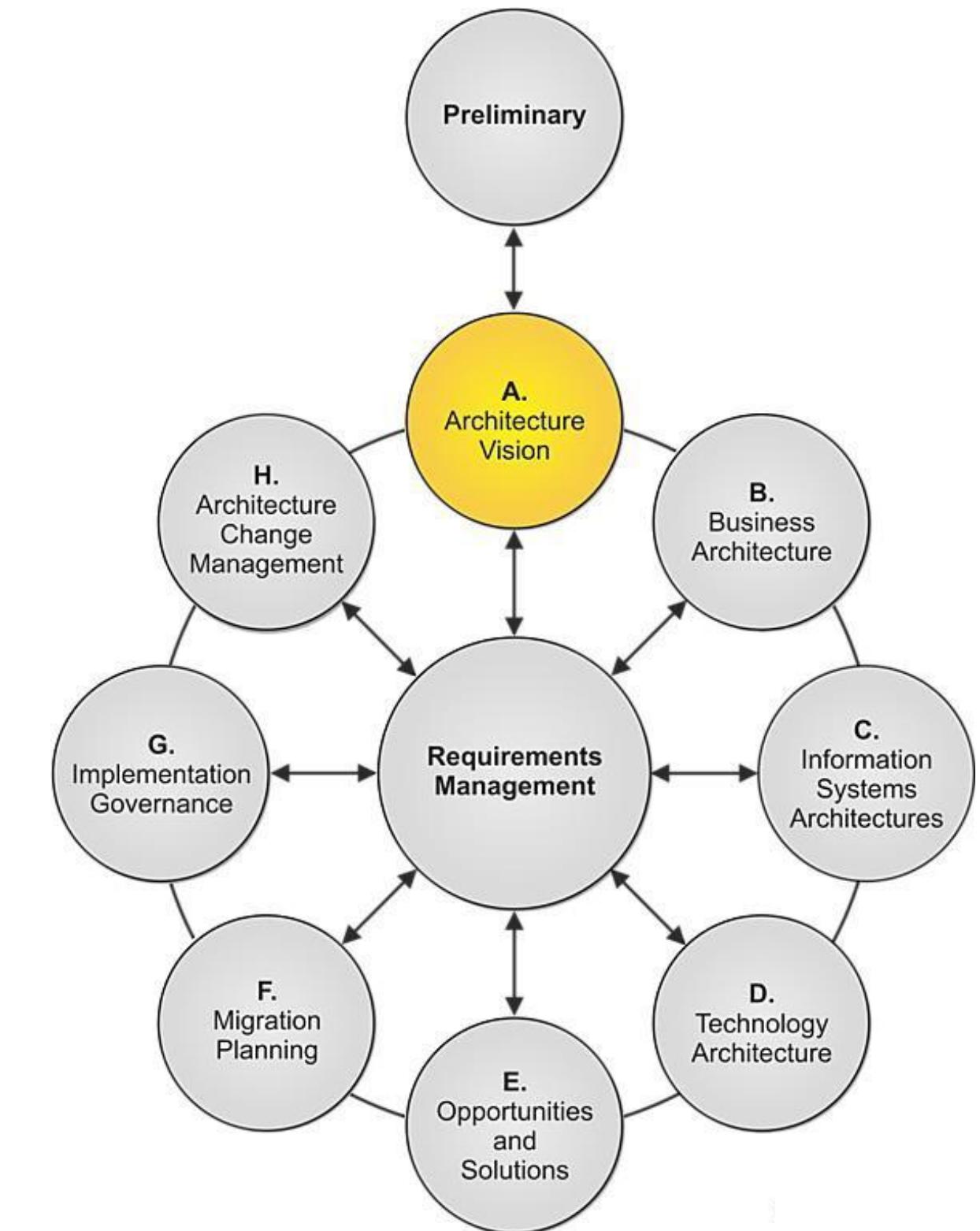
- To identify key stakeholders, and reach agreement in the Architecture Vision document on a summary of the target and the work to reach the target



Phase A – The Starting Point

- ❑ The set-up essentials are:
 - Define the scope of the Architecture Project
 - Identify stakeholders, concerns, and associated requirements
 - Assess the capability of the Enterprise Architecture team

- ❑ The completion essentials are:
 - Key stakeholder agreement on a summary of the target and the work to reach the target



Essential ADM Output and Knowledge

Phase	Output & Outcome	Essential Knowledge
Phase A: Architecture Vision	Sufficient documentation to get permission to proceed. Permission to proceed to develop a Target Architecture to prove out a summary target.	The scope of the problem being addressed. Those who have interests that are fundamental to the problem being addressed. (Stakeholders & Concerns) What summary answer to the problem is acceptable to the stakeholders? (Architecture Vision) Stakeholder priority and preference. What value does the summary answer provide?

3.10 Objectives: Phase A

The Objectives of Phase A

- Develop a high-level aspirational vision of the capabilities and business value to be delivered as a result of the proposed Enterprise Architecture.
- Obtain approval for a Statement of Architecture Work that defines a program of works to develop and deploy the architecture outlined in the Architecture Vision.

3.11 Purpose: Phases B, C, and D

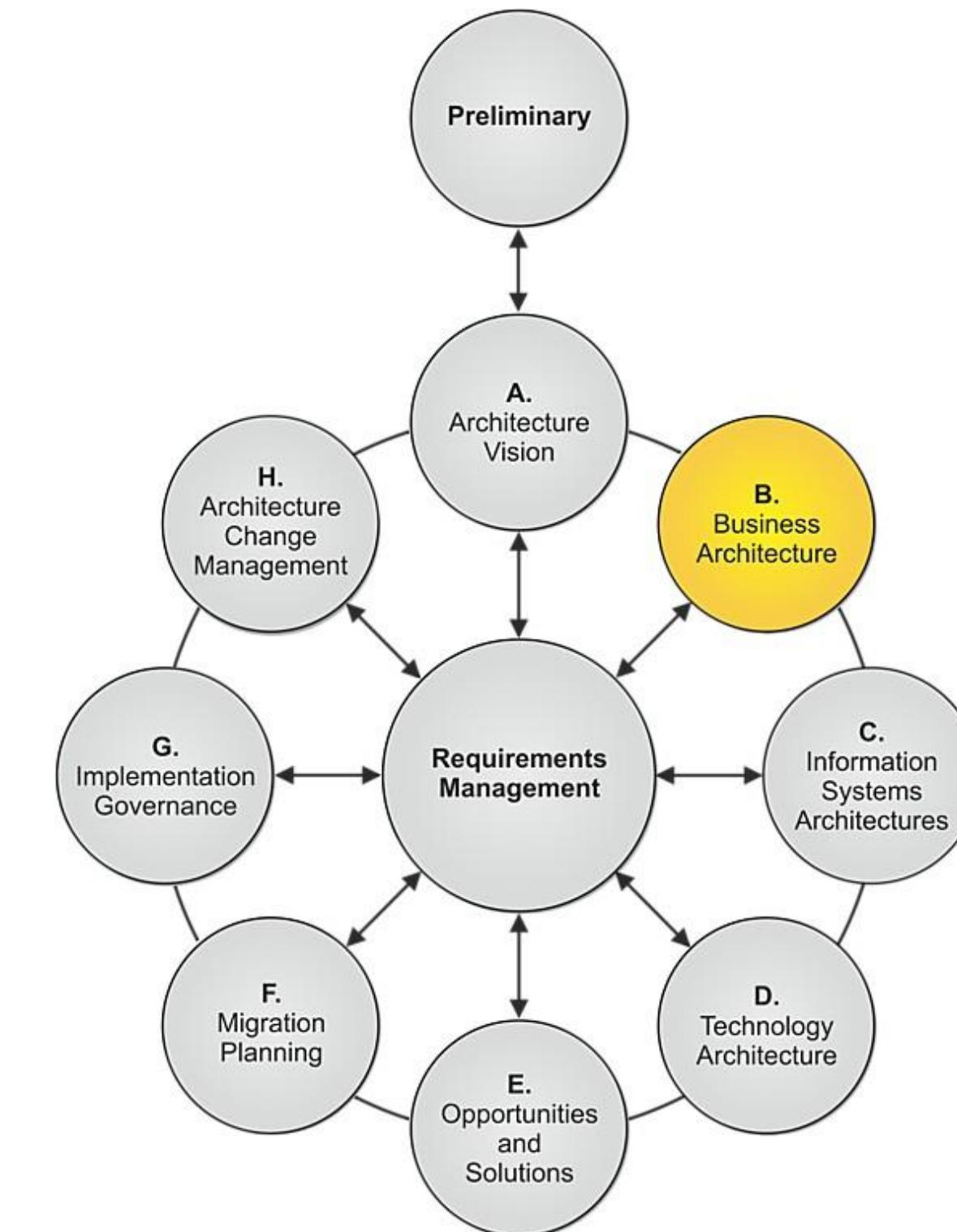
Essential ADM Output and Knowledge

Phase	Output & Outcome	Essential Knowledge
Phase B, Phase C, & Phase D	A set of domain architectures approved by the stakeholders for the problem being addressed, with a set of gaps, and work to clear the gaps understood by the stakeholders.	How does the current enterprise fail to meet the preferences of the stakeholders? What must change to enable the enterprise to meet the preferences of the stakeholders? (Gaps) What work is necessary to realize the changes, that is consistent with the additional value being created? (Work Package) How do stakeholder priority and preference adjust in response to value, effort, and risk of change? (Stakeholder Requirements)

3.12 Objectives: Phase B

The Objectives of Phase B

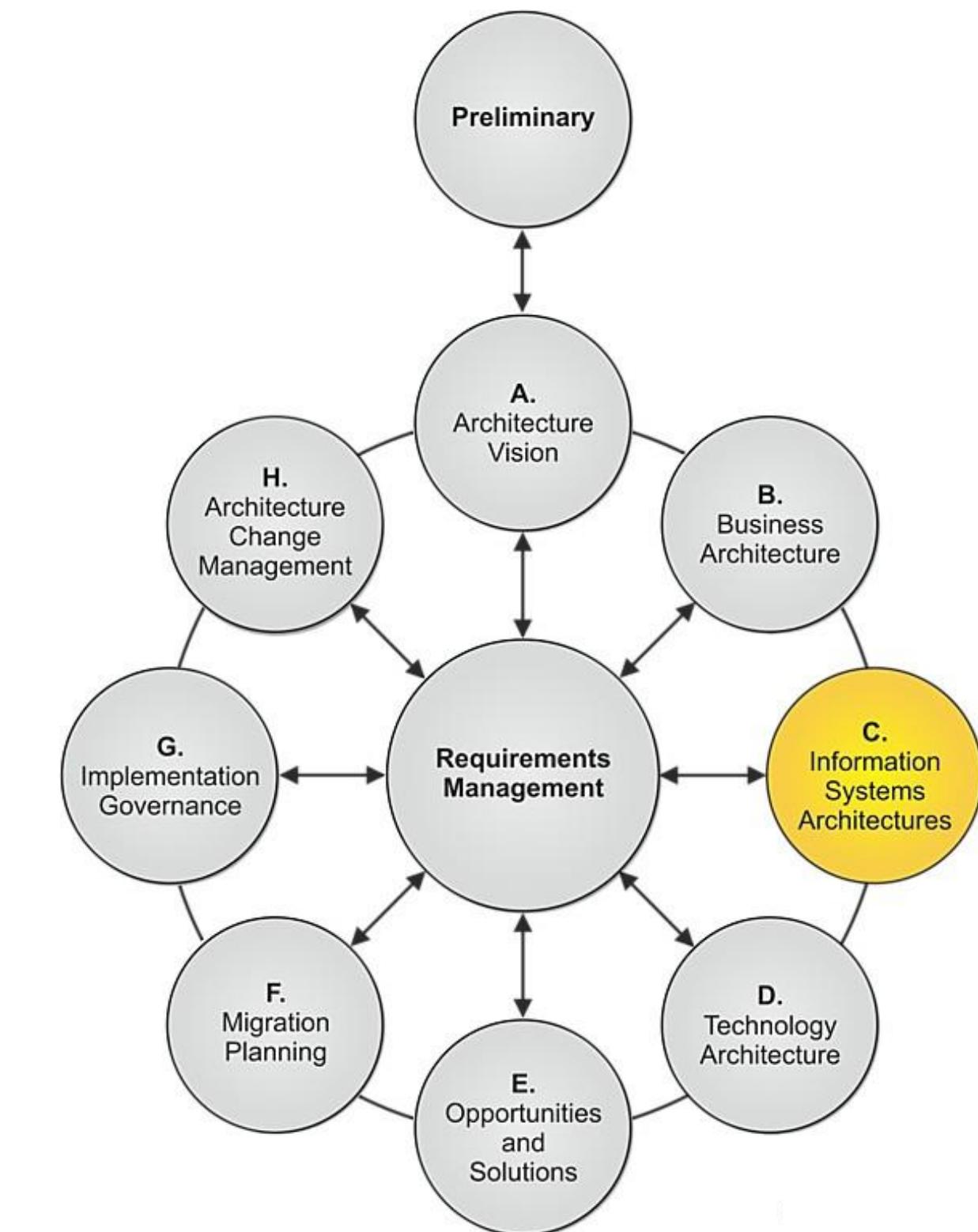
- Develop the Target Business Architecture that describes how the enterprise needs to operate to achieve the Business Goals, and respond to the strategic drivers set out in the Architecture Vision, in a way that addresses the Statement of Architecture Work and stakeholder concerns.
- Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Business Architectures.



3.13 Objectives: Phase C: Data Architecture and Application Architecture

The Objectives of Phase C

- Develop the Target Information Systems Architectures, describing how the enterprise's Information Systems Architectures will enable the Business Architecture and the Architecture Vision, in a way that addresses the Statement of Architecture Work and stakeholder concerns.
- Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Information Systems (Data and Application) Architectures.



The Objectives of Phase C – Data Architecture

- Develop the Target Data Architecture that enables the Business Architecture and the Architecture Vision, in a way that addresses the Statement of Architecture Work and stakeholder concerns.
- Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Data Architectures.

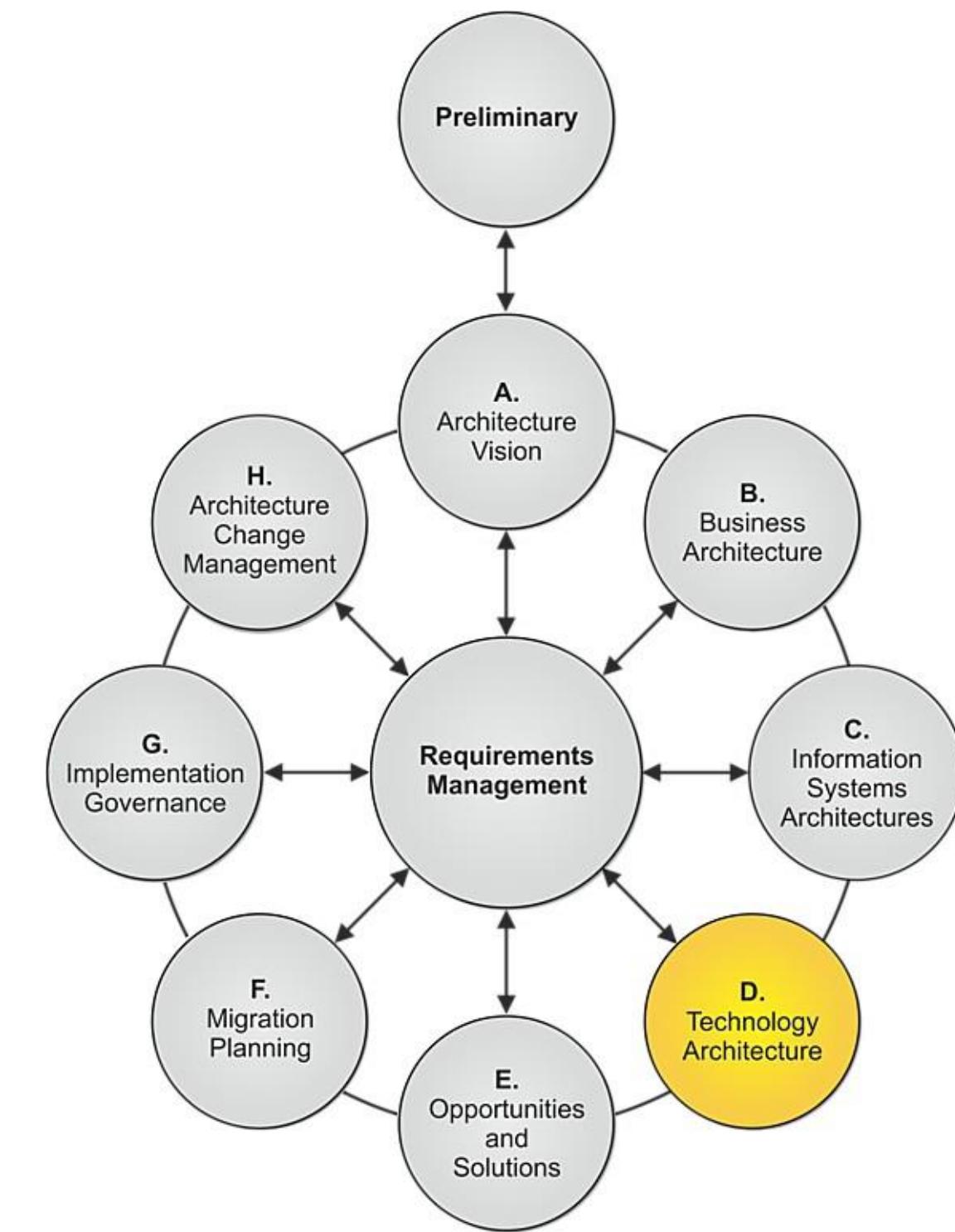
The Objectives of Phase C – Application Architecture

- Develop the Target Application Architecture that enables the Business Architecture and the Architecture Vision, in a way that addresses the Statement of Architecture Work and stakeholder concerns.
- Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Application Architectures.

3.14 Objectives: Phase D

The Objectives of Phase D

- Develop the Target Technology Architecture that enables the Architecture Vision, target business, data, and application building blocks to be delivered through technology components and technology services, in a way that addresses the Statement of Architecture Work and stakeholder concerns.
- Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Technology Architectures.



3.15 Purpose: Phase E

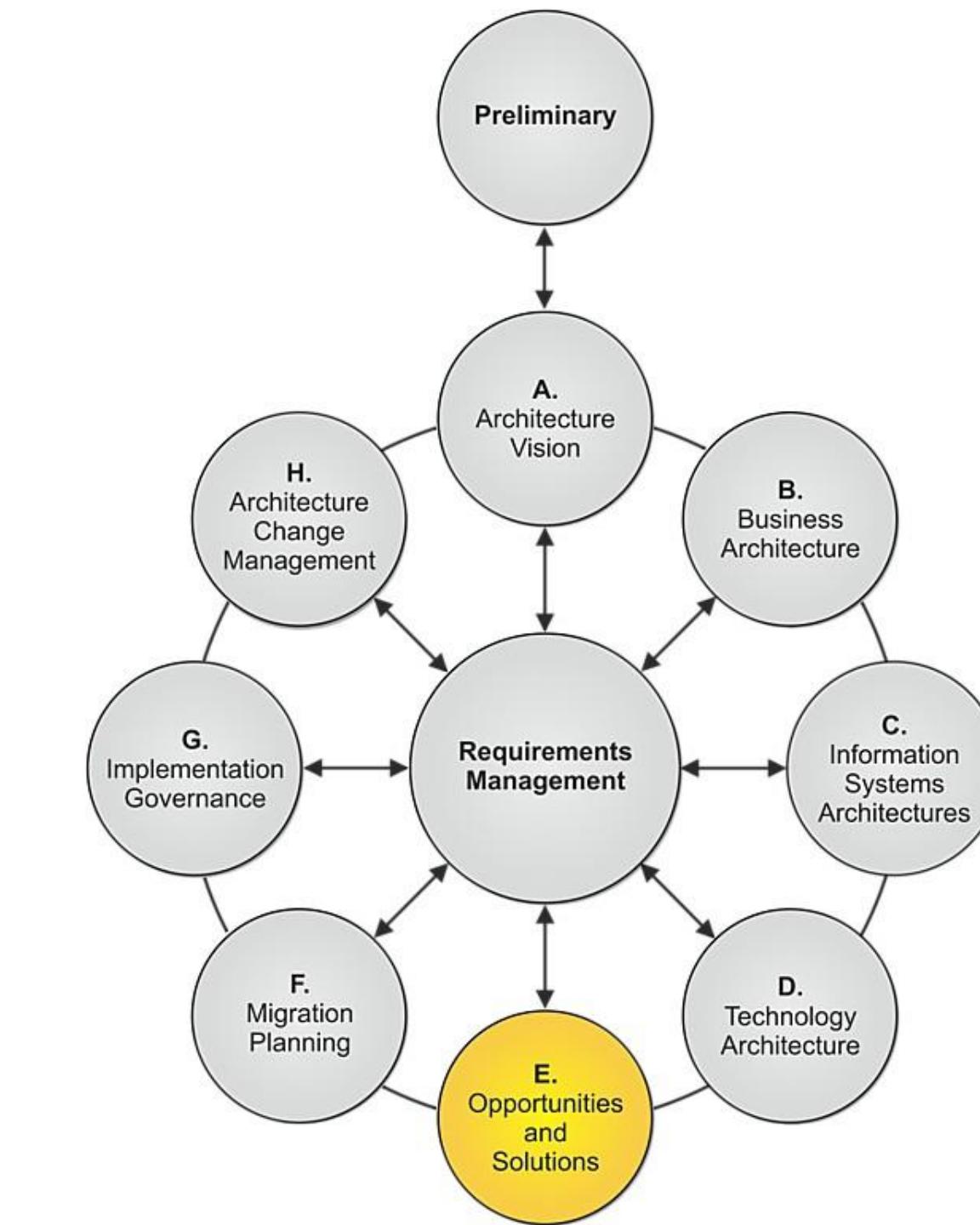
Essential ADM Output and Knowledge

Phase	Output & Outcome	Essential Knowledge
Phase E: Opportunities & Solutions	A set of work packages that address the set of gaps, with an indication of value produced and effort required, and dependencies between the work packages to reach the adjusted target.	Dependency between the set of changes. (Work Package & Gap dependency) Value, effort, and risk associated with each change and work package. How stakeholder priority and preference adjust in response to value, effort, and risk of change.

3.16 Objectives: Phase E

The Objectives of Phase E

- Generate the initial complete version of the Architecture Roadmap, based upon the gap analysis and candidate Architecture Roadmap components from Phases B, C, and D.
- Determine whether an incremental approach is required, and if so identify Transition Architectures that will deliver continuous business value.
- Define the overall Solution Building Blocks (SBBs) to finalize the Target Architecture based on the ABBs.



3.17 Purpose: Phase F

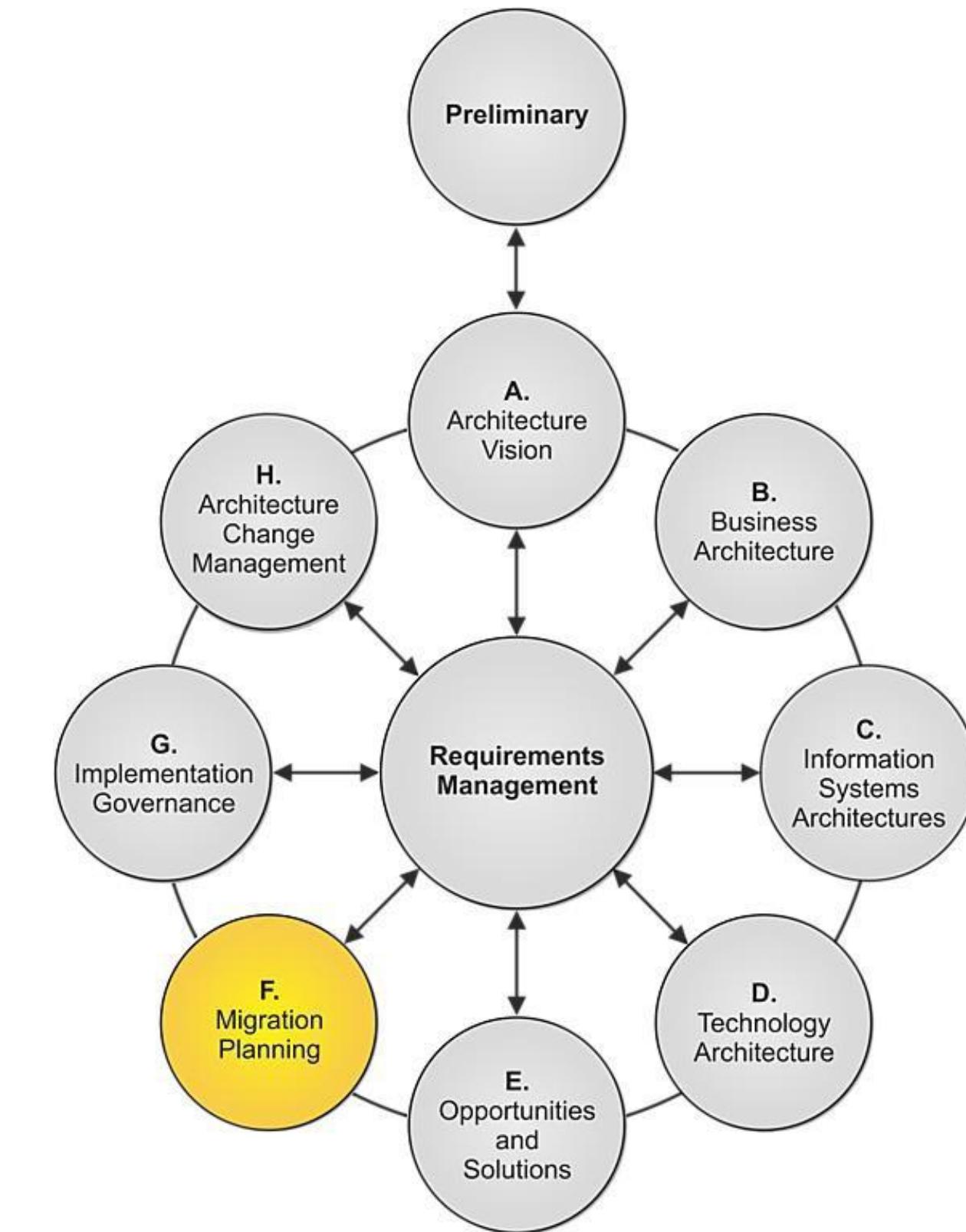
Essential ADM Output and Knowledge

Phase	Output & Outcome	Essential Knowledge
Phase F: Implementation and Migration Plan	An approved set of projects, containing the objective and any necessary constraints, resources required, and start and finish dates.	Resources available to undertake the change. How stakeholder priority and preference adjust in response to value, effort, and risk of change. (Stakeholder Requirements)

3.18 Objectives: Phase F

The Objectives of Phase F

- Finalize the Architecture Roadmap and the supporting Implementation and Migration Plan.
- Ensure that the Implementation and Migration Plan is co-ordinated with the enterprise's approach to managing and implementing change in the enterprise's overall change portfolio.
- Ensure that the business value and cost of work packages and Transition Architectures is understood by key stakeholders.



3.19 Purpose: Phase G

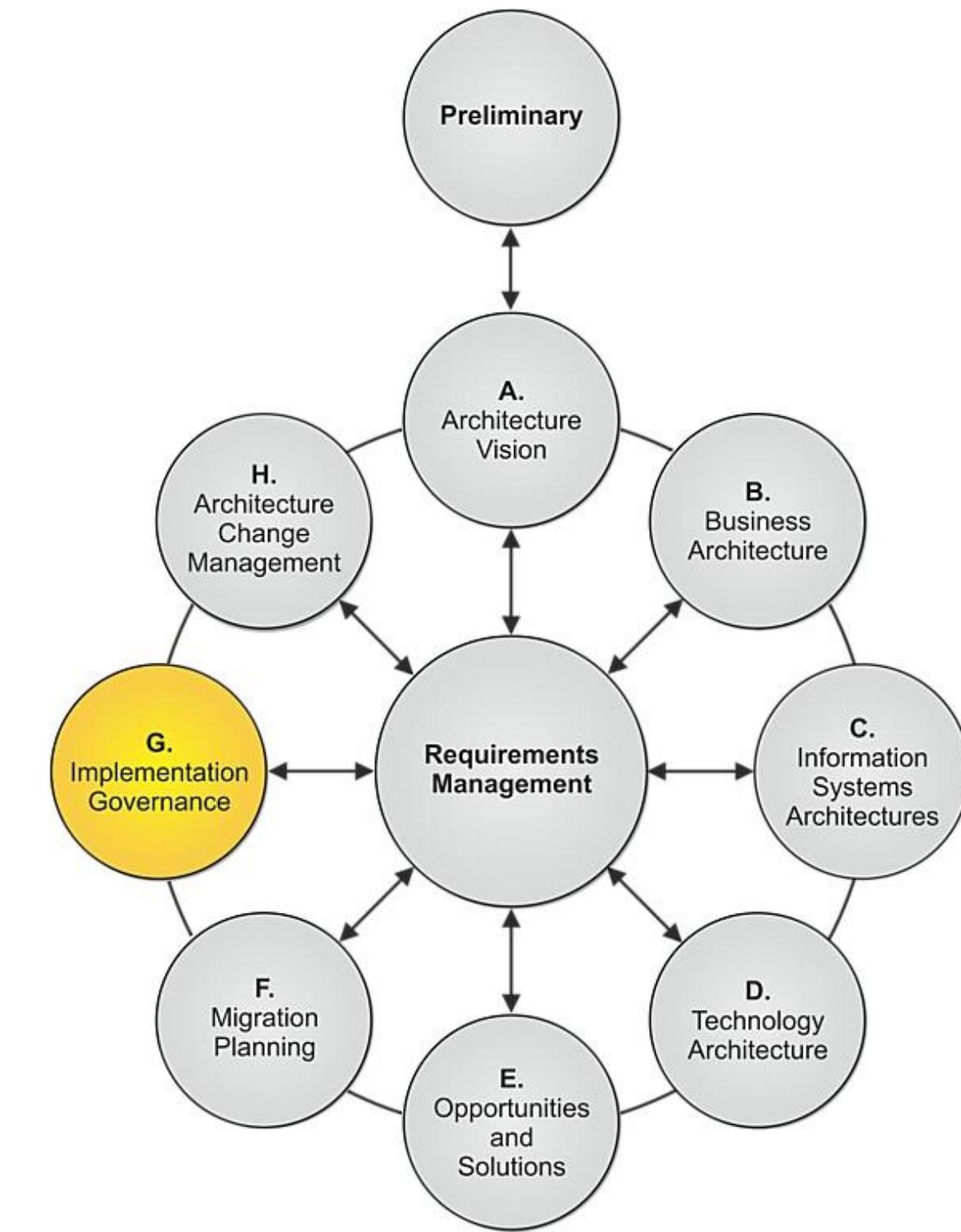
Essential ADM Output and Knowledge

Phase	Output & Outcome	Essential Knowledge
Phase G: Implementation Governance	Completion of the projects to implement the changes necessary to reach the adjusted target state.	Purpose and constraints on the implementation team. (Gap, Architecture Requirement Specification, Control) How stakeholder priority and preference adjust in response to success, value, effort, and risk of change. (Stakeholder Requirements)

3.20 Objectives: Phase G

The Objectives of Phase G

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



3.21 Purpose: Phase H

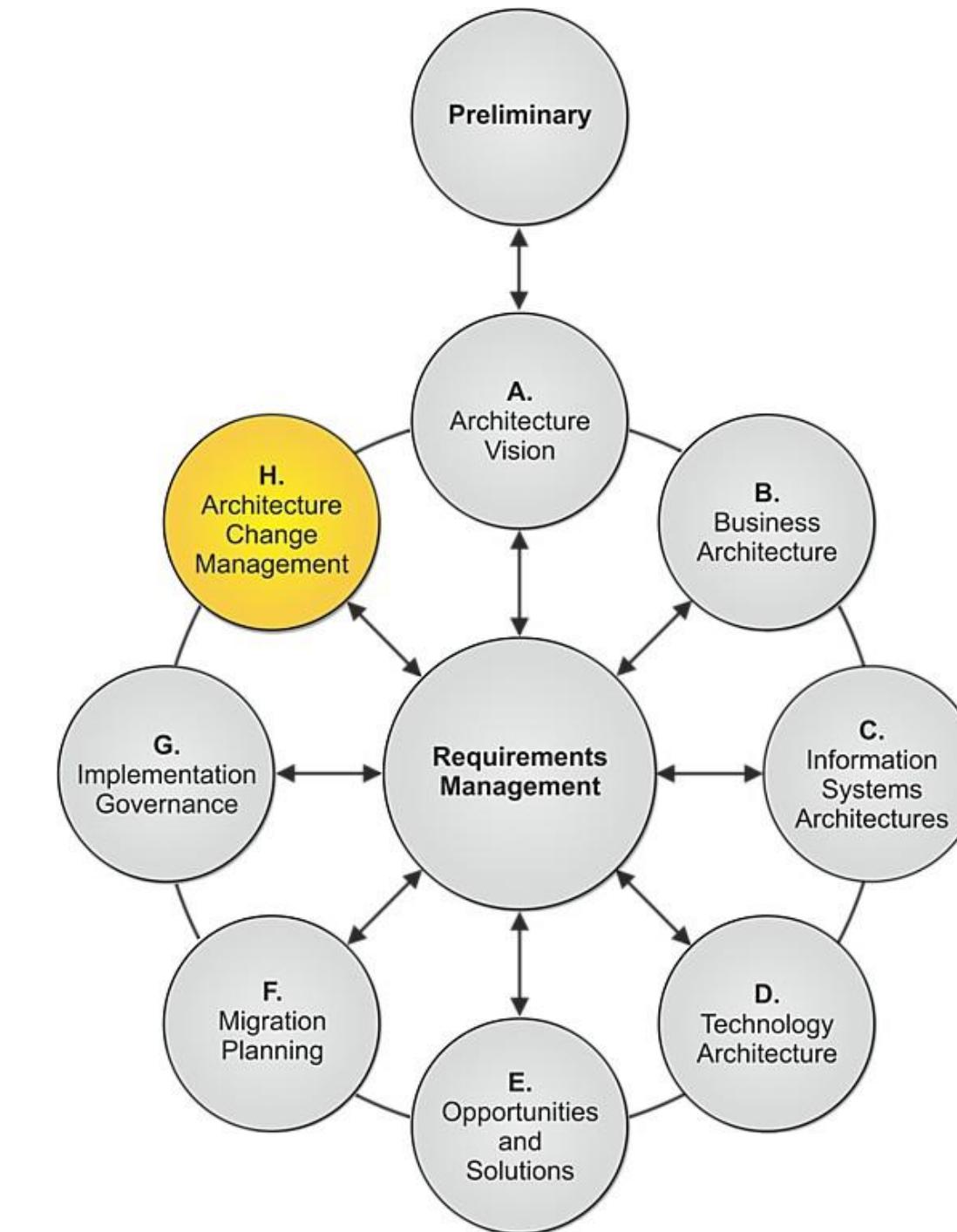
Essential ADM Output and Knowledge

Phase	Output & Outcome	Essential Knowledge
Phase H: Architecture Change Management	Direction to proceed and start developing a Target Architecture that addresses perceived, real, or anticipated shortfalls in the enterprise relative to stakeholder preferences.	Gaps between approved target, or preference, and realization from prior work. (Value Realization) Changes in preference or priority. (Stakeholder Requirements)

3.22 Objectives: Phase H

The Objectives of Phase H

- Ensure that the architecture development cycle is maintained.
- Ensure that the Architecture Governance framework is executed.
- Ensure that the Enterprise Architecture Capability meets current requirements.



3.23 Purpose: Requirements Management

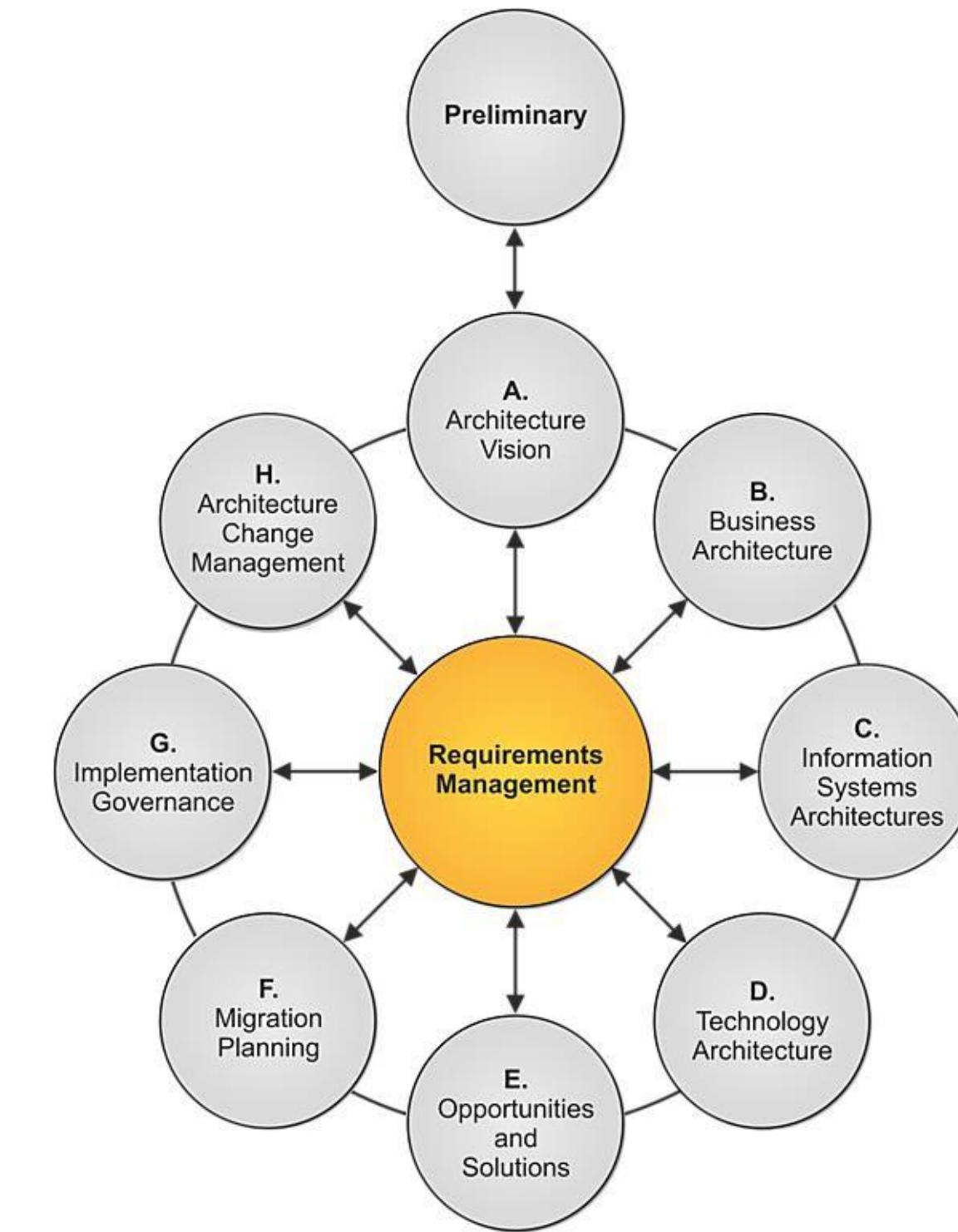
Requirements Management – the Center of Architecture Development

- The TOGAF framework places requirements management and stakeholder engagement at the center of architecture development.
- Stakeholders own the architecture and the value preference and priority the architecture is expected to enable.
- Effective requirements management is dependent upon clear traceability from the organization's vision, mission, business model, and strategies through the most detailed statement of requirement.

3.24 Objectives: Requirements Management

The Objectives of the Requirements Management Process

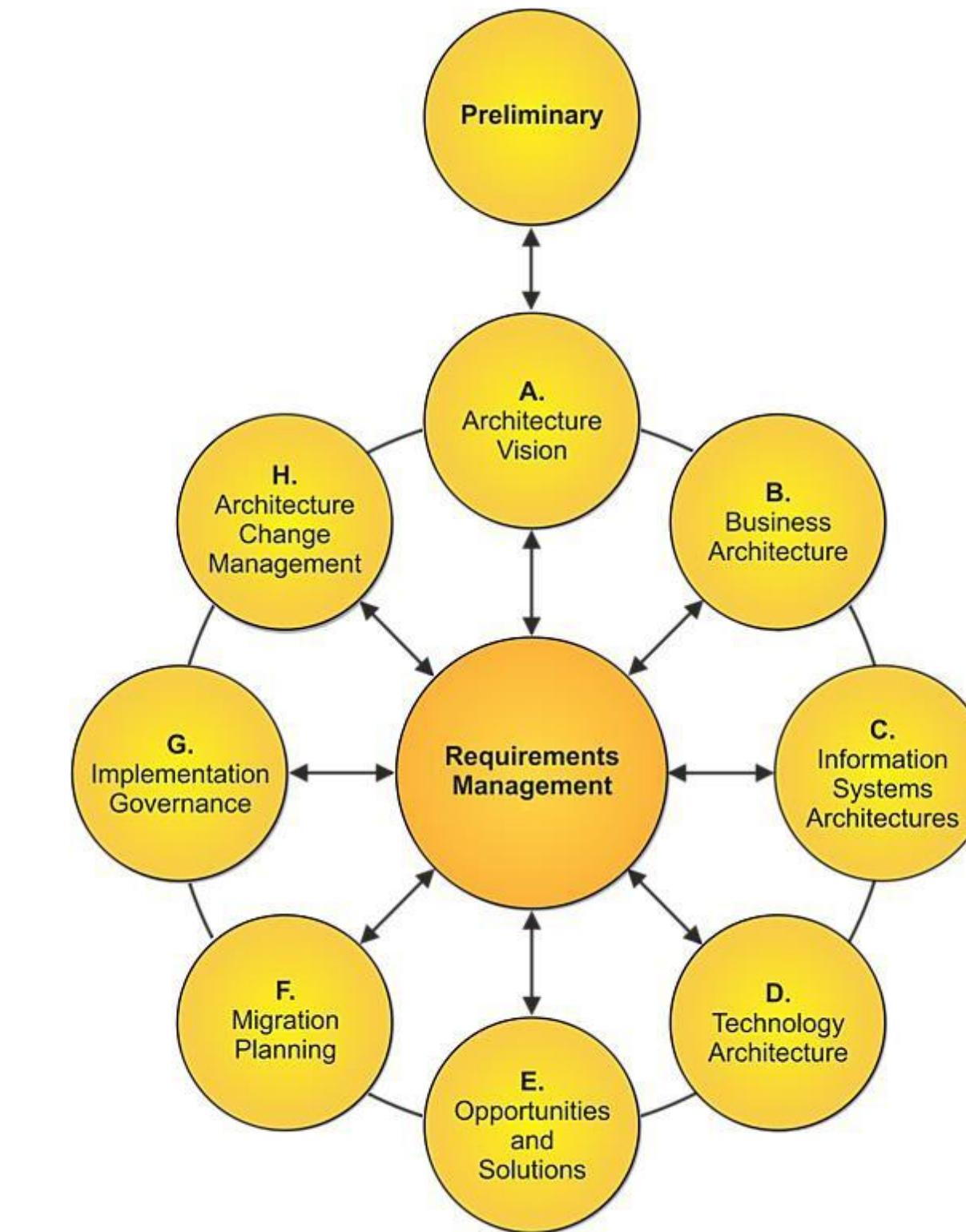
- Ensure that the Requirements Management process is sustained and operates for all relevant ADM phases
- Manage architecture requirements identified during any execution of the ADM cycle or a phase
- Ensure that relevant architecture requirements are available for use by each phase the phase is executed



3.25 Information Flow Between ADM Phases

Information Flow Between ADM Phases

- The TOGAF ADM is a logical method that places key activity steps together for the purpose of understanding relationship of activity and clarifying information flow.
- The graphic is a stylized path that demonstrates essential information flow.



3.26 How Developing Architecture can be Applied to Support Agile Software Development

The TOGAF® Standard Aligns to Agile Software Development in Phase G

- Architecture can be used to identify what products the enterprise needs, the boundary of the products, and what constraints a product owner has.
- Architecture can also be used to set of constraints that limit the choices of the Agile team.
- In Phase G (Implementation Governance) the practitioner serves the stakeholders guarding the mission, vision, goals, and investment roadmap.

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TOGAF® Enterprise Architecture Foundation

Unit 4- Introduction to ADM Techniques

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Unit 4

Introduction to ADM Techniques

4.1

How the ADM and Supporting Guidelines and Techniques Relate to Each Other

4.2

Purpose: Architecture Principles

4.3

Template for Architecture Principles

4.4

What Makes a Good Architecture Principle

4.5

Business Scenarios

4.6

The Purpose of Gap Analysis

Unit 4

Introduction to ADM Techniques

4.7

Interoperability

4.8

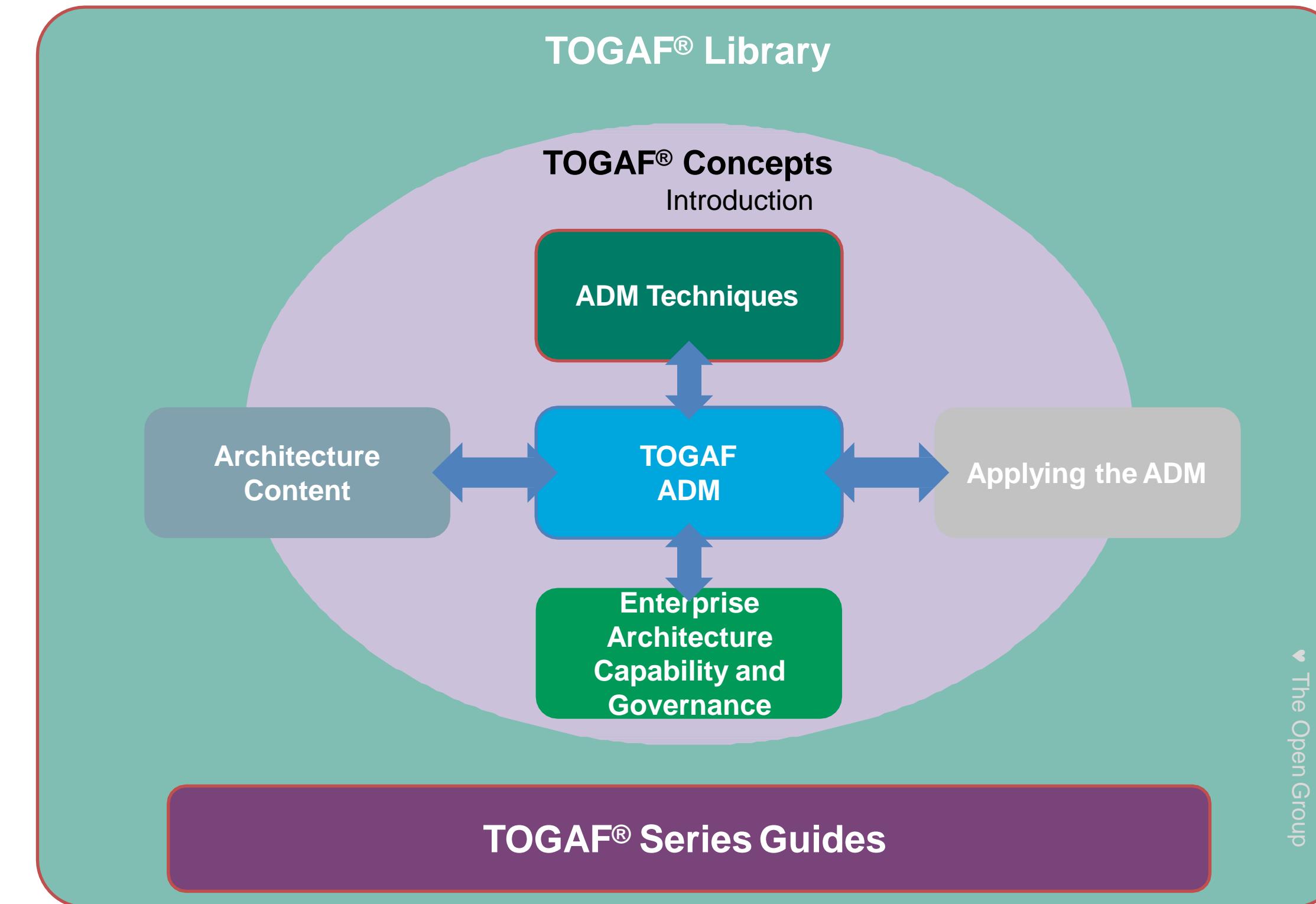
Business Transformation Readiness Assessment

4.9

Risk Management and the TOGAF® ADM

4.1 How the ADM and Supporting Guidelines and Techniques Relate to Each Other

Supporting Guidelines and Techniques



4.2 Purpose: Architecture Principles

The Purpose of Architecture Principles

- Architecture Principles should address the following purposes:
 - ✓ Enabling decision-making
 - ✓ Aligning the enterprise
 - ✓ Ensuring Governance
 - ✓ Understanding Values and culture

The Purpose of Architecture Principles

- **Enabling decision-making** – it is important to set precedence during trade-off discussions and authority of “tie-breaking” if it must occur.
- **Aligning the enterprise** – principles take subjectivity and bias out of the equation and drive critical conversations that are objective and aligned to the enterprise’s values.

The Purpose of Architecture Principles

- **Ensuring Governance** – how will the enterprise ensure that the right decisions are surfaced at the right time and with the right decision-makers, and, moreover, how to monitor the decisions and approach taken to arrive at the decision?
- **Understanding Values and culture** – provide a better understanding about the enterprise's culture and values; provide an approach and insight into how well the enterprise reacts to change.

Existing Architecture Principles

- If Architecture Principles exist from a prior EA Capability effort, they can be used to provide a context of the previous efforts to establish an Enterprise Architecture Capability
 - they inform how the Enterprise Architecture Capability was viewed, viewed itself, and what purpose it was explicitly, or implicitly, supporting.

Developing Architecture Principles

- ❑ They are typically developed by Enterprise Architects
- ❑ In conjunction with key stakeholders:
 - The Enterprise CIO
 - Architecture Board
 - Business Stakeholders
- ❑ Approved by the Architecture Board

Developing Architecture Principles

- Architecture Principles will be informed by principles at the enterprise level, if they exist.
- Architecture Principles must be clearly traceable and clearly articulated to guide decision-making.

4.3 Template for Architecture Principles

Architecture Principles Template

Name	
Statement	
Rationale	
Implications	

Architecture Principles Template

Name

- ✓ Should represent the essence of the rule, and be memorable
- ✓ Should not mention specific technology platforms
- ✓ Should avoid ambiguous words

Statement

- ✓ Should succinctly and unambiguously communicate the fundamental rule



Architecture Principles Template

Rationale

- ✓ Should highlight the business benefits of adhering to the principle, using business terminology
- ✓ Should describe the relationship to other principles

Implications

- ✓ Should highlight the requirements for the business and for IT for carrying out the principle
- ✓ Should state the business impact and consequences of adopting the principle



Example: Primacy of Principles

Statement	Principles apply throughout the enterprise and override all other considerations when decisions are made.
Rationale	The only way we can provide a recognized, consistent, and measurable level of operations is if all parts of the enterprise abide by the principles when making decisions.
Implications	<p>Without this principle, short-term consideration, supposedly convenient exceptions, and inconsistencies would rapidly undermine the management of information.</p> <p>Information management initiatives will not be permitted to begin until they are examined for compliance with the principles.</p> <p>A conflict with a principle will be resolved by changing the conflicting initiative, which could delay or prevent the initiative.</p>

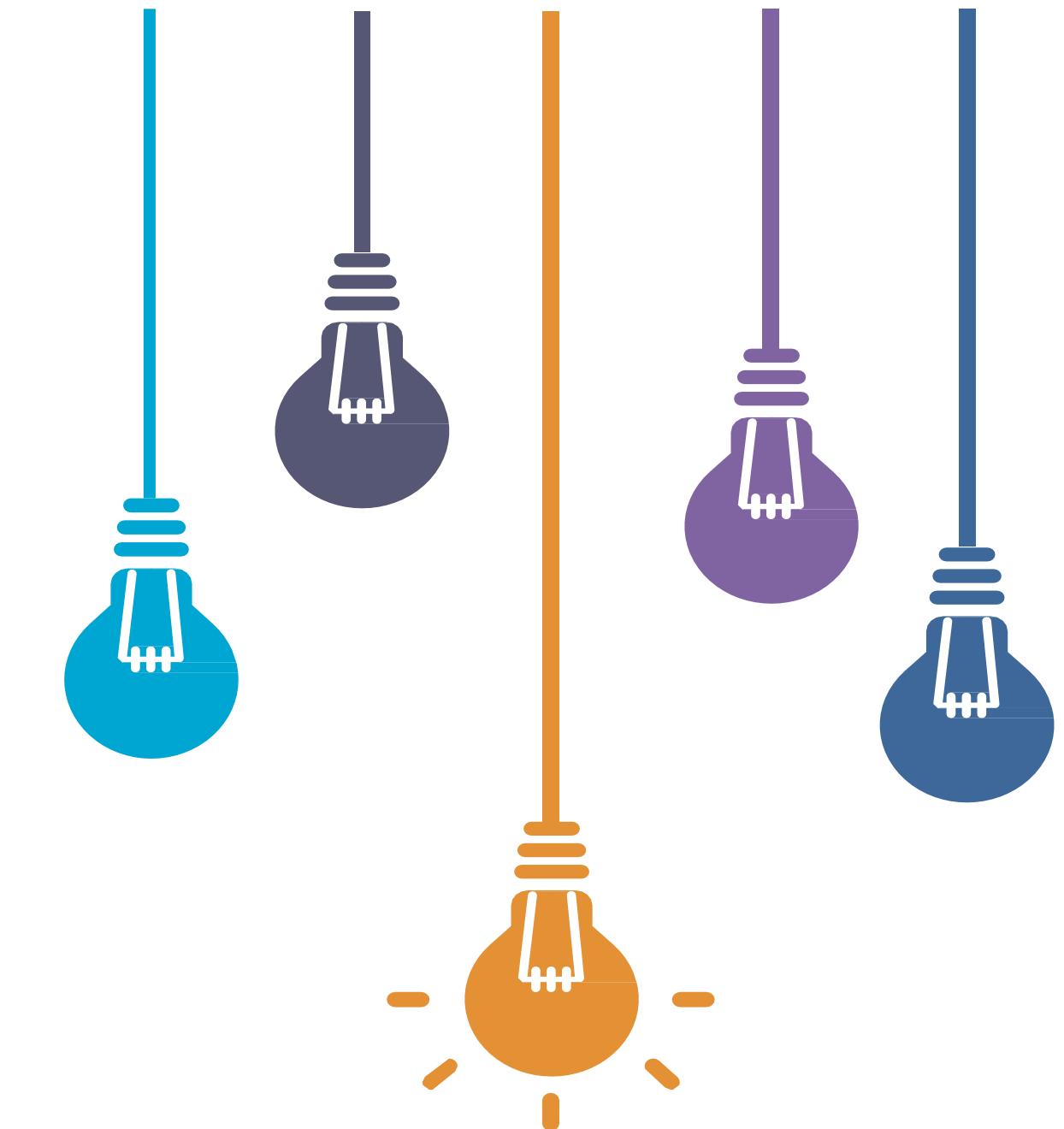
Example: Self-Serve

Statement	Customers should be able to serve themselves.
Rationale	Applying this principle will improve customer satisfaction, reduce administrative overhead, and potentially improve revenue.
Implications	There is an implication to improve ease-of-use and minimize training needs; for example, members should be able to update their contact details, etc. and be able to buy additional membership products online.

4.4 What Makes a Good Architecture Principle

Qualities of Architecture Principles

1. Understandable
2. Robust
3. Complete
4. Consistent
5. Stable



Five Qualities of Architecture Principles

1. **Understandable:** the underlying tenets can be quickly grasped and understood by individuals throughout the organization. The intention of the principle is clear and unambiguous, so that violations, whether intentional or not, are minimized.
2. **Robust:** enable good quality decisions about architectures and plans to be made, and enforceable policies and standards to be created. Each principle should be sufficiently definitive and precise to support consistent decision-making in complex, potentially controversial situations.

Five Qualities of Architecture Principles

3. **Complete:** every potentially important principle governing the management of information and technology for the organization is defined — the principles cover every situation perceived.
4. **Consistent:** strict adherence to one principle may require a loose interpretation of another principle. The set of principles must be expressed in a way that allows a balance of interpretations. Principles should not be contradictory to the point where adhering to one principle would violate the spirit of another. Every word in a principle statement should be carefully chosen to allow consistent yet flexible interpretation.
5. **Stable:** principles should be enduring, yet able to accommodate changes. An amendment process should be established for adding, removing, or altering principles after they are ratified initially.

4.5 Business Scenarios

What is a Business Scenario?

- A method used to help identify and understand the business requirements that an architecture must address.
- A representation of a significant business need or problem and enables vendors to understand the value of a solution to the customer.

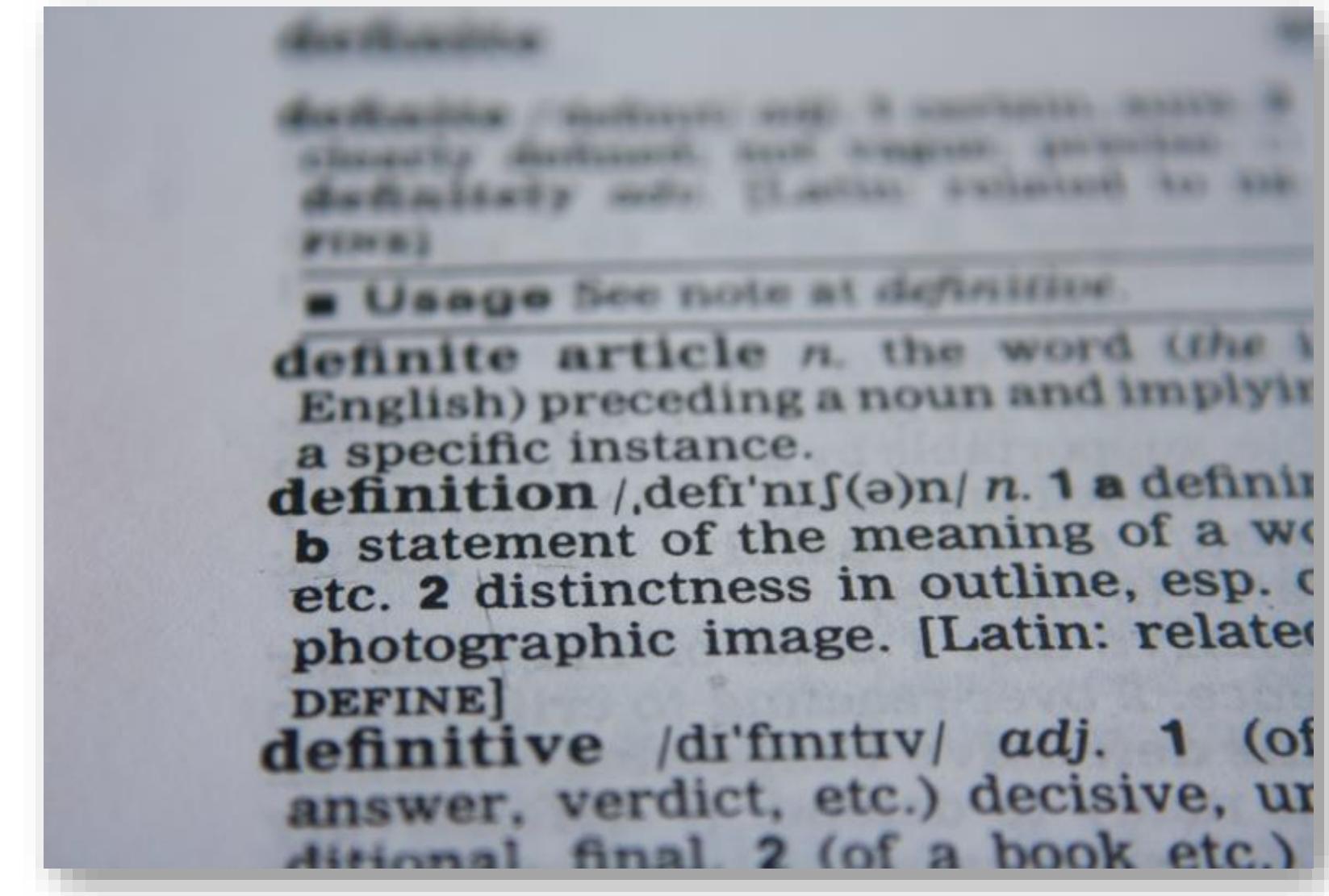
What does a Business Scenario describe?

- A business scenario describes:
 - Real business problems
 - The business and technology environment in which those problems occur
 - Value streams enabled by capabilities
 - The desired outcome(s) of proper execution
 - The human and computing components (the “actors”) who provide the capabilities

4.6 Interoperability

Interoperability

- Definition: “the ability to share information and services”.



Interoperability Categories

- Operational or Business Interoperability defines how business processes are to be shared
- Information Interoperability defines how information is to be shared
- Technical Interoperability defines how technical services are to be shared or at least connect to one another

How Interoperability is Used in ADM Phases A and B

- Architecture Vision: the nature and security considerations of the information and service exchanges are found using business scenarios.
- Business Architecture: the information and service exchanges are further defined in business terms.

How Interoperability is Used in ADM PhaseC

- Data Architecture: the content of the information exchanges is detailed using the corporate data and/or information exchange model.
- Application Architecture: the way that the various applications are to share the information and services is specified.

How Interoperability is Used in ADM Phases D, E, and F

- Technology Architecture: the appropriate technical mechanisms to permit the information and service exchanges are specified.
- Opportunities & Solutions: actual solutions are selected; e.g., Commercial Off-The-Shelf (COTS) packages.
- Migration Planning: interoperability is logically implemented.

4.7 Business Transformation Readiness Assessment

Business Transformation Readiness Assessment

- ❑ Enterprise Architecture often involves considerable change.
- ❑ There are many dimensions to change, but by far the most important is the human element.
- ❑ Understanding the readiness of the organization to accept change, identifying the issues, and then dealing with them in the Implementation and Migration Plan is key to successful architecture transformation in Phases E and F.
- ❑ This is a joint effort between corporate (especially human resources) staff, lines of business, and IT planners.

Recommended Activities

- Determine the readiness factors that will impact the organization
- Present the readiness factors using maturity models
- Assess the readiness factors, including determination of readiness factor ratings
- Assess the risks for each readiness factor and identify improvement actions to mitigate the risk
- Work these actions into Phase E and F Implementation and Migration Plan

4.8 Risk Management and the TOGAF® ADM

Risk Management

- The ISO 31000 definition of risk management is “coordinated activities to direct and control an organization with regard to risk”
- ADM Techniques, Risk Management describes it as a technique to mitigate risk when implementing an architecture project

Risk Management in the ADM

- Risks are identified in Phase A as part of the initial Business Transformation Readiness Assessment.
- The risk identification and mitigation assessment worksheets are maintained as governance artifacts and are kept up-to-date in Phase G (Implementation Governance) where risk monitoring is conducted.
- Implementation governance can identify critical risks that are not being mitigated and might require another full or partial ADM cycle.

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Unit 5- Introduction to Applying the ADM

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Unit 5

Introduction to Applying the ADM

5.1

How to Apply the TOGAF® Standard

5.2

Iteration and the ADM

5.3

The Three Levels of the Architecture Landscape

5.4

Partitioning to Simplify the Development of an Enterprise Architecture

5.5

Purpose-Based Architecture Projects

5.6

Applying the TOGAF® Standard to Support the Digital Enterprise

Unit Objectives

- Introducing the guidance available to support application of the ADM, including use of iteration, partitioning, Agile delivery, and application in a digital enterprise. Topics include:
 - Where guidance is available
 - How iteration within the ADM enables concurrent operation
 - The Architecture Landscape
 - Purposes to frame Architecture Projects
 - How the TOGAF Standard can be applied to support the digital enterprise

5.1 How to Apply the TOGAF® Standard

Guidance on How to Apply the Standard

The TOGAF® Standard

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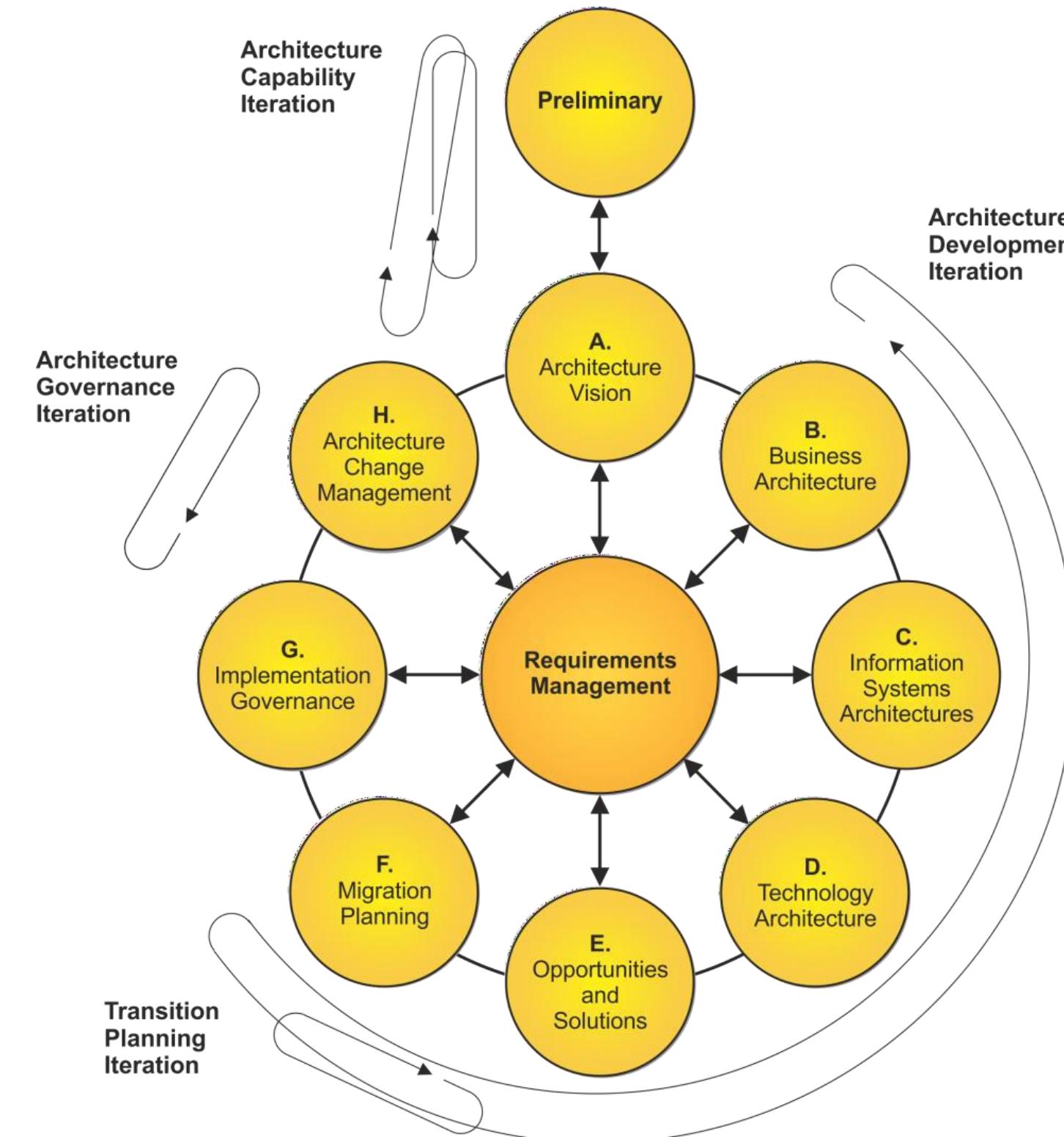
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TOGAF® Series Guides

- Business Architecture
- Information Architecture
- Security Architecture
- Enterprise Architecture/Agile Architecture
- Enterprise Architecture/Digital Enterprise
- Technology Architecture
- MSA/SOAArchitectures
- Adapting the ADM
- ...

5.2 Iteration and the ADM

Applying Iteration To The ADM

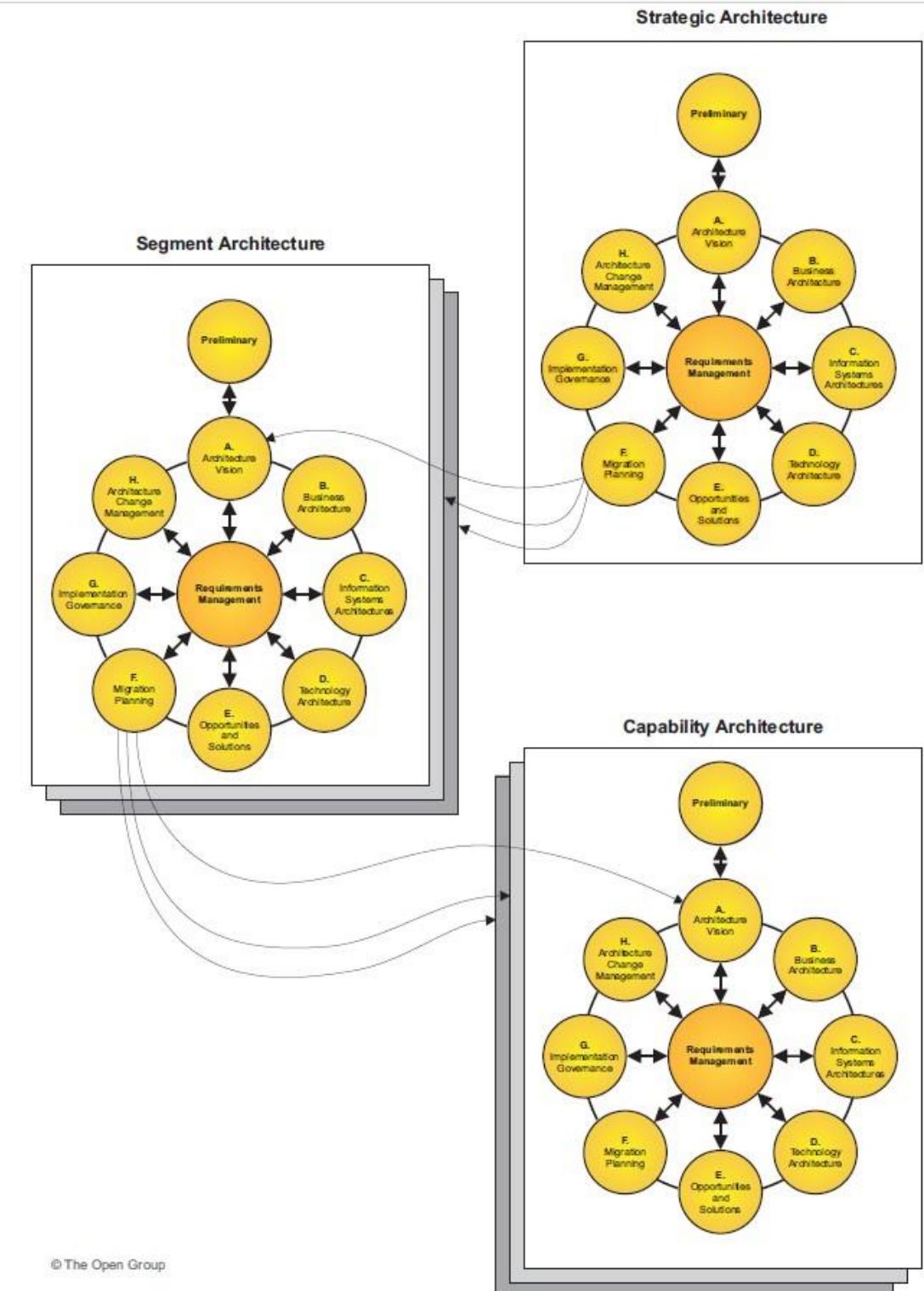


Iteration Within an ADM Cycle (Architecture Development Iteration)

- Projects may operate multiple ADM phases concurrently.
- Projects may cycle between ADM phases, in planned cycles covering multiple phases.
- Projects may update work products with new information.

Iteration to Develop a Comprehensive Architecture Landscape

- Projects will exercise through the entire ADM cycle, commencing with Phase A. Each cycle of the ADM will be bound by a Request for Architecture Work.
- The architecture output will populate the Architecture Landscape, either extending the landscape described, or changing the landscape where required.
- Separate projects may operate their own ADM cycles concurrently, with relationships between the different projects.
- One project may trigger the initiation of another project.



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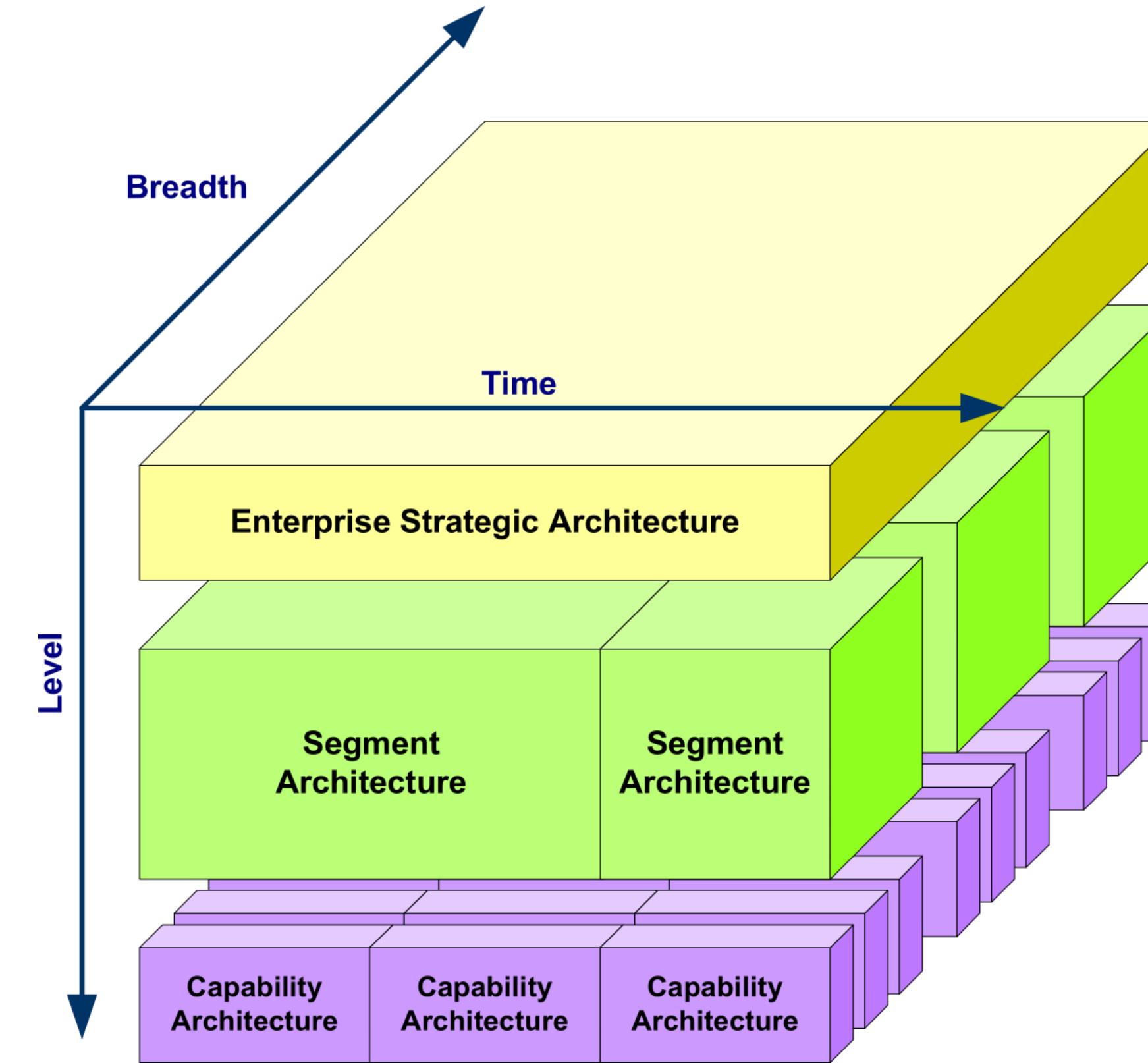
5.3 The Three Levels of the Architecture Landscape

Architecture Landscape

- Definition: “The architectural representation of assets in use, or planned, by the enterprise at particular points in time.”



Architecture Landscape



Architecture Levels

- Strategic Architecture provides an organizing framework for operational and change activity and allows for direction setting at an executive level.
- Segment Architecture provides an organizing framework for operational and change activity and allows for direction setting and the development of effective Architecture Roadmaps at a program or portfolio level.
- Capability Architecture provides an organizing framework for change activity and the development of effective Architecture Roadmaps realizing capability increments.

5.4 Partitioning to Simplify the Development of an Enterprise Architecture

Architecture Partition

- Definition: “A subset of architecture resulting from dividing that architecture to facilitate its development and management.”



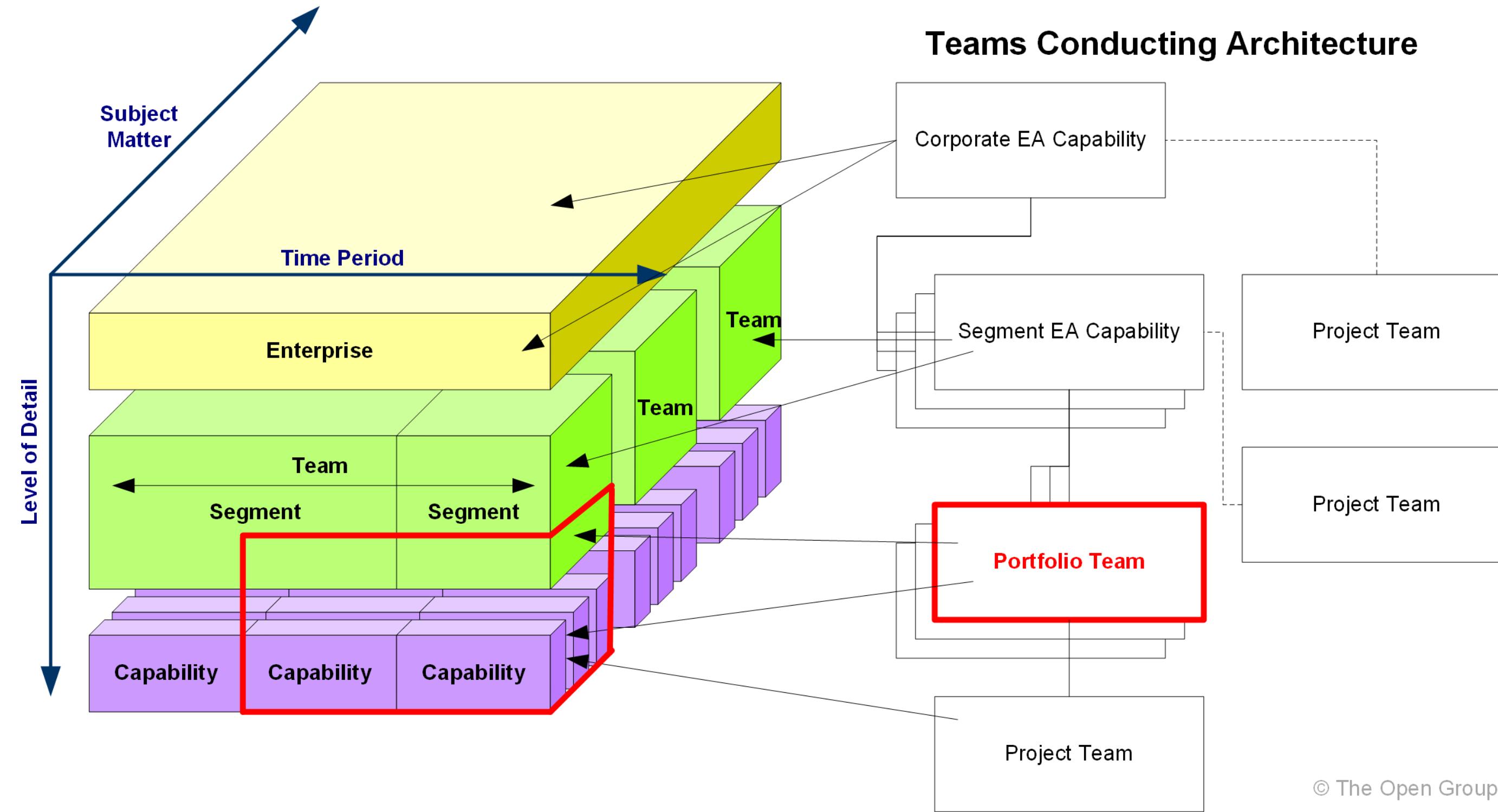
Partitions

- Partitions are used to simplify the development and management of the Enterprise Architecture.
- Partitions lie at the foundation of Architecture Governance.
- Partitions are distinct from levels and the organizing concepts of the Architecture Continuum.

Reasons for Partitioning the Architecture

- ❑ Manage complexity
- ❑ Organizational unit architectures conflict with one another.
- ❑ Different teams need to work on different elements of architecture at the same time; partitions allow for specific groups of architects to own and develop specific elements of the architecture.
- ❑ Effective architecture re-use requires modular architecture segments that can be taken and incorporated into broader architectures and solutions.

Example



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5.5 Purpose-Based Architecture Projects

Purposes of Enterprise Architecture

Architecture to
Support Strategy

Architecture to
Support Portfolio

Architecture to
Support Project

Architecture to
Support Solution
Delivery

Four Purposes to Frame Architecture Projects

- Enterprise Architecture to Support Strategy:** Deliver Enterprise Architecture to provide an end-to-end Target Architecture, and develop roadmaps of change over a three to ten-year period.
- Enterprise Architecture to Support Portfolio:** Deliver Enterprise Architecture to support cross-functional, multi-phase, and multi-project change initiatives.
- Enterprise Architecture to Support Project:** Deliver Enterprise Architecture to support the enterprise's project delivery method.
- Enterprise Architecture to Support Solution Delivery:** Deliver Enterprise Architecture that is used to support the solution deployment.

Four Purposes to Frame Architecture Projects

Enterprise Architecture to Support Strategy

- An architecture for this purpose will typically span many change programs or portfolios. In this context, architecture is used to identify change initiatives and supporting portfolio and programs. Set terms of reference, identify synergies, and govern the execution of strategy via portfolio and programs.

Enterprise Architecture to Support Portfolio

- An architecture for this purpose will typically span a single portfolio. In this context, architecture is used to identify projects, and set their terms of reference, align their approaches, identify synergies, and govern their execution of projects.

Four Purposes to Frame Architecture Projects

Enterprise Architecture to Support Project

- An architecture for this purpose will typically span a single project. In this context, the architecture is used to clarify the purpose and value of the project, identify requirements to address synergy and future dependency, assure compliance with architectural governance, and to support integration and alignment between projects.

Enterprise Architecture to Support Solution Delivery

- An architecture for this purpose will typically be a single project or a significant part of it. In this context, the architecture is used to define how the change will be designed and delivered, identify constraints, controls, and Architecture Requirements to the design, and, finally, act as a governance framework for change.

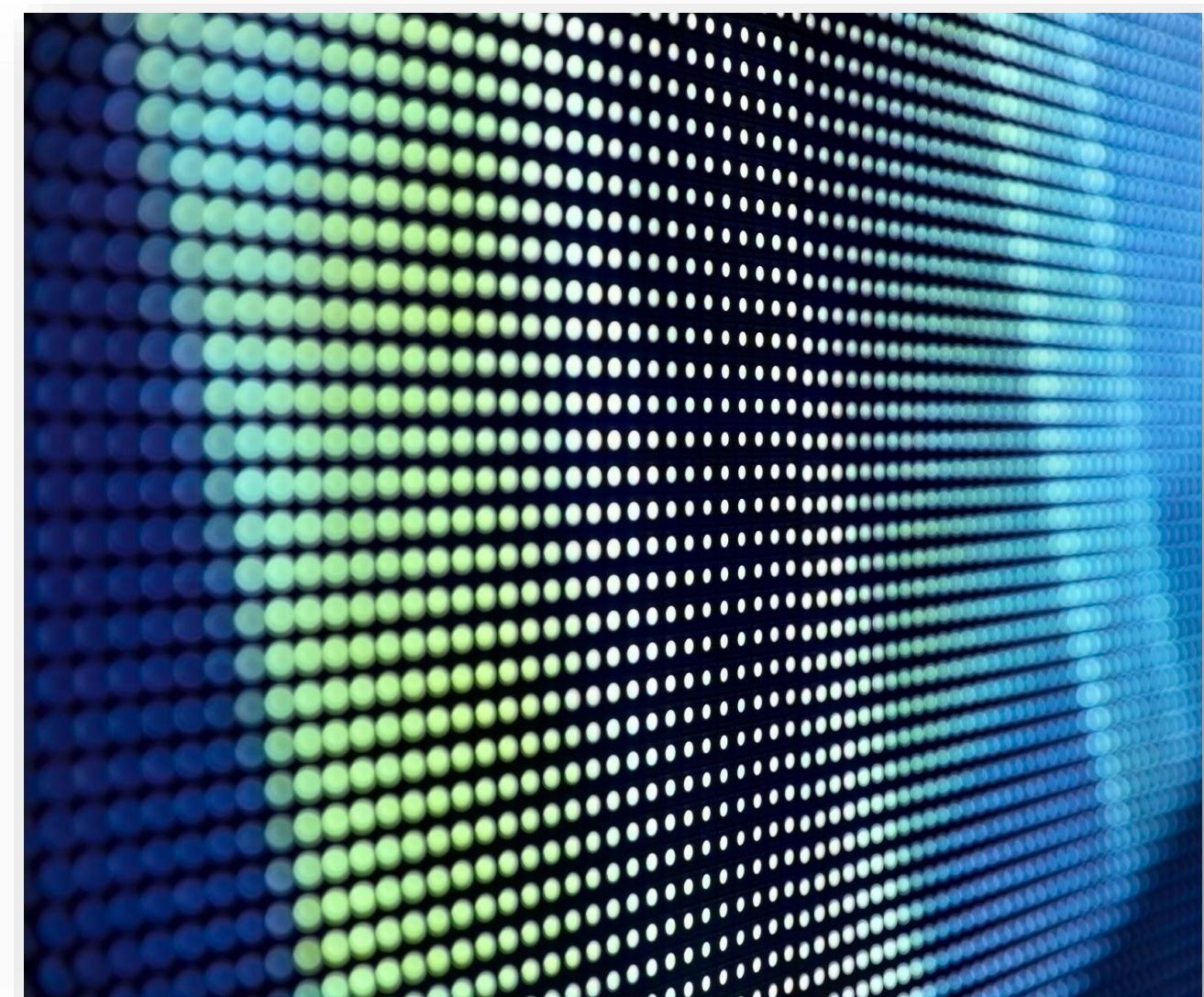
5.6 Applying the TOGAF® Standard to Support the Digital Enterprise

The Digital Enterprise and Enterprise Architecture

- The need for companies to evolve into digital enterprises can be linked to a variety of drivers, not least the rapid change in technologies driving new ways of working, socializing, and entertaining.
- Enterprise Architecture supports and enables the Agile environment in delivering and enhancing digital products and services quicker and easier by providing insight into various areas.

Enterprise Architecture Supporting and Enabling the Agile Environment

- Reactively managing technical debt as the result of sprints in a cohesive and connected fashion
- Proactively managing technical debt and anticipating Agile development needs by:
 - Identifying standards and re-usable standard components that support shortened Agile development cycles
 - Appropriate governance or guardrails to oversee the re-use of components



Enterprise Architecture Supporting and Enabling the Agile Environment

- Managing matured digital products and delivering operational excellence by:
 - Simplifying complexity in the digital ecosystem using the TOGAF ADM
 - Establishing an Enterprise Architecture Capability that drives operational excellence in the management of digital products and services



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Unit 6- Introduction to Architecture Governance

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Unit 6

Introduction to Architecture Governance

6.1

Architecture Governance

6.2

Why Architecture Governance is Beneficial

6.3

The Role of an Architecture Board and its Responsibilities

6.4

Architecture Contracts

6.5

Architecture Compliance

Unit Objectives

□ Understanding how Architecture Governance contributes to the architecture development.

Topics include:

- The concept of Architecture Governance
- Why Architecture Governance is beneficial
- The role and responsibilities of an Architecture Board
- Architecture Contracts
- Architecture Compliance

6.1 Architecture Governance

Governance

- ISO/IEC 38500:2015 defines governance as: “a system that directs and controls the current and future state”.
- Governance is a decision-making process with a defined structure of relationships to direct and control the enterprise to achieve stated goals.

What do we Mean by Governance?

- The way in which decisions are made:
 - Who is responsible?
 - Who is involved?
 - Who is accountable?

Introduction to Architecture Governance

- The practice by which Enterprise Architectures are managed and controlled.
This includes:
 - Controls on the creation and monitoring of components and activities – ensuring introduction, implementation, and evolution of architectures
 - Ensuring compliance with internal and external standards and regulatory obligations
 - Supporting management of the above
 - Ensuring accountability to external and internal stakeholders

Architecture Governance

- Architecture Governance typically operates within a hierarchy of governance structures which can include all of the following as distinct domains with their own disciplines and processes:
 - Corporate Governance
 - Technology Governance
 - IT Governance
 - Architecture Governance
- Each of these domains of governance may exist at multiple geographic levels – global, regional, and local – within the overall enterprise.

Example: Potential Governance Tiers



Note: EA Governance is a synonym for Architecture Governance

6.2 Why Architecture Governance is Beneficial

Benefits of Architecture Governance

- Discipline – All involved parties will have a commitment to adhere to procedures, processes, and authority structures established by the organization.
- Transparency – All actions implemented and their decision support will be available for inspection by authorized organization and provider parties.
- Independence – All processes, decision-making, and mechanisms used will be established so as to minimize or avoid potential conflicts of interest.

Benefits of Architecture Governance

- Accountability – Identifiable groups within the organization – e.g., governance boards who take actions or make decisions – are authorized and accountable for their actions.
- Responsibility – Each contracted party is required to act responsibly to the organization and its stakeholders.
- Fairness – All decisions taken, processes used, and their implementation will not be allowed to create unfair advantage to any one particular party.

6.3 The Role of an Architecture Board and its Responsibilities

Architecture Board Role

- The Architecture Board oversees implementation of the governance strategy.
- It should be representative of all the key stakeholders in the architecture.

Common Failure Pattern

- ❑ A common failure pattern is to establish an Architecture board that believes it maintains decision rights about the target architecture, change to the architecture, relief, and enforcement.
- ❑ Decision rights about the target architecture, relief, and enforcement are always vested in the architecture's stakeholders.
- ❑ An Architecture Board owns process, and a recommendation regarding completeness and confidence in the work that led to the Target Architecture.

Architecture Board Responsibilities

- Providing the basis for all decision-making with regard to the architectures
- Consistency between sub-architectures
- Establishing targets for re-use of components
- Enforcement of Architecture Compliance
- Supporting a visible escalation capability for out-of-bounds decisions

Responsibilities from an Operational Perspective

- All aspects of monitoring and control of the Architecture Contract
- Meeting on a regular basis
- Ensuring the effective and consistent management and implementation of the architectures
- Resolving ambiguities, issues, or conflicts that have been escalated
- Providing advice, guidance, and information
- Ensuring compliance with the architectures, and granting dispensations that are in keeping with the technology strategy and objectives

Responsibilities from a Governance Perspective

- The production of usable governance material and activities
- Providing a mechanism for the formal acceptance and approval of architecture through consensus and authorized publication
- Providing a fundamental control mechanism for ensuring the effective implementation of the architecture
- Identifying divergence from the architecture and planning activities for realignment through dispensations or policy updates

6.4 Architecture Contracts

Architecture Contracts

- Architecture Contracts are the joint agreements between development partners and sponsors on the deliverables, quality, and fitness-for-purpose of an architecture

A Governed Approach to Architecture Contracts Ensures...

- A system of continuous monitoring to check integrity, changes, decision-making, and audit of all architecture-related activities
- Adherence to the principles, standards, and requirements of the existing or developing architectures
- Identification of risks in all aspects of the architecture(s)
- A set of processes and practices that ensure accountability, responsibility, and discipline with regard to the development and usage of all architectural artifacts

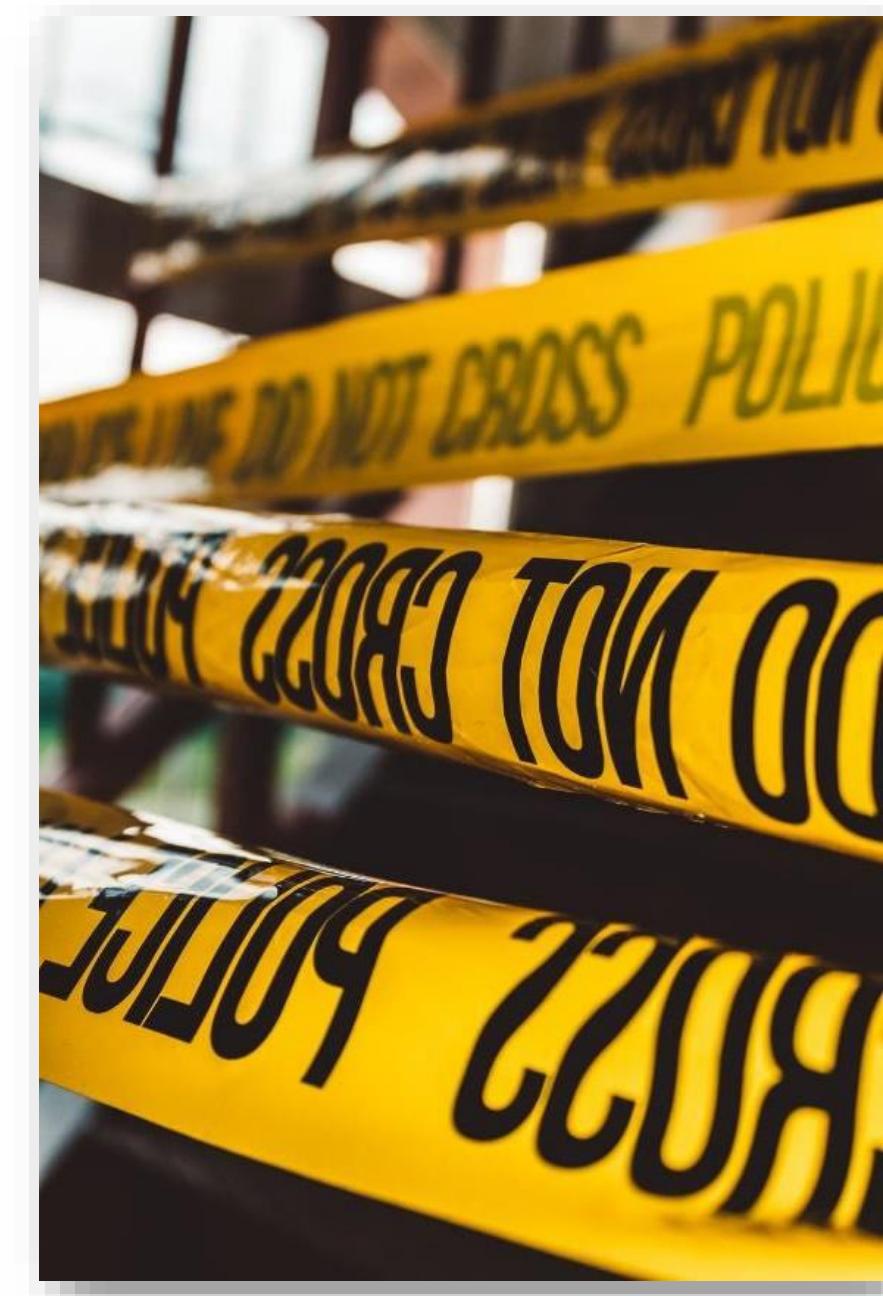
Architecture Contracts and the ADM

- The Statement of Architecture Work in Phase A is effectively an Architecture Contract.
- Architecture Domains may be contracted out.
- The implementation of the EA may be contracted out at the end of Phase F/beginning of Phase G.

6.5 Architecture Compliance

Architecture Compliance

- Ensuring the compliance of individual projects with the Enterprise Architecture is an essential aspect of Architecture Governance.



Architecture Compliance

- There are usually two complementary processes:
 - The Architecture function will be required to prepare a series of Project Architectures; i.e., project-specific views of the Enterprise Architecture that illustrate how the Enterprise Architecture impacts on the major projects within the organization (see ADM Phases A to F)
 - The Enterprise and IT Governance functions will define a formal Architecture Compliance review for reviewing the compliance of all projects to the Enterprise Architecture

The Need for Architecture Compliance Reviews

- ❑ Catch errors in the project architecture early
- ❑ Ensure the application of best practices to architecture work
- ❑ Provide an overview of the compliance to mandated standards
- ❑ Identify where the standards themselves may require modification

The Need for Architecture Compliance Reviews

- Identify services that are currently application-specific but might be provided as part of the enterprise infrastructure
- Communicate to management the status of readiness of the project
- Identify and communicate significant architectural gaps to product and service providers

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Unit 7

Architecture
Content

7.1

Key Concepts: Stakeholders, Concerns, Architecture Views, Architecture Viewpoints, and their Relationships

7.2

Building Blocks and the ADM

7.3

The TOGAF® Standard Deliverables Created and Consumed in the TOGAF ADM Phases

Unit Objectives

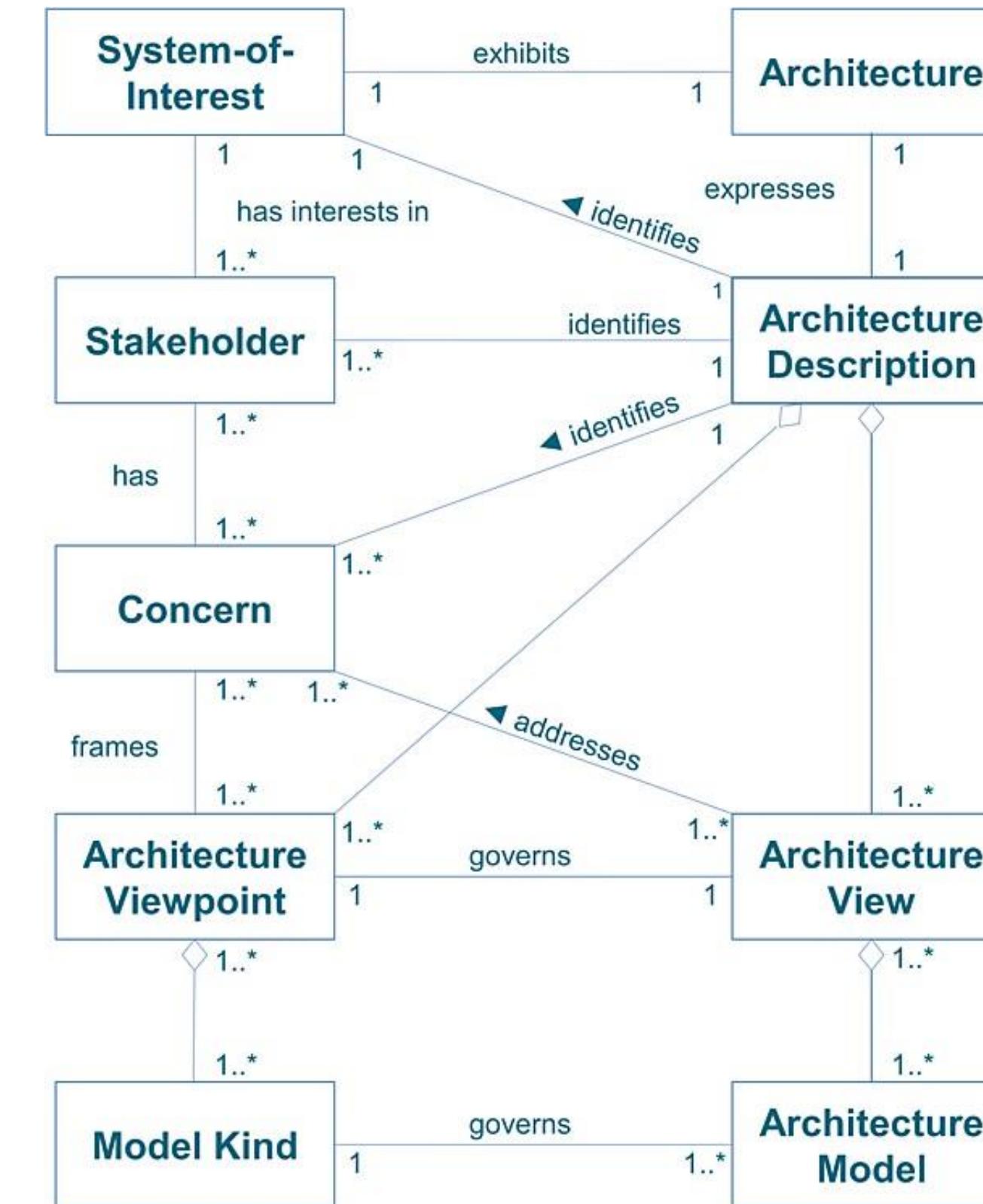
- Understand which outputs can be produced while executing the ADM. Topics include:
 - The concepts of stakeholders, concerns, architecture views and architecture viewpoints
 - Architecture Building Blocks (ABBs)
 - Architecture deliverables

7.1 Key Concepts: Stakeholders, Concerns, Architecture Views, Architecture Viewpoints, and their Relationships

Concepts and Definitions

- ❑ Stakeholder
- ❑ Concern
- ❑ Architecture Viewpoint
- ❑ Architecture View

Basic Architectural Concepts



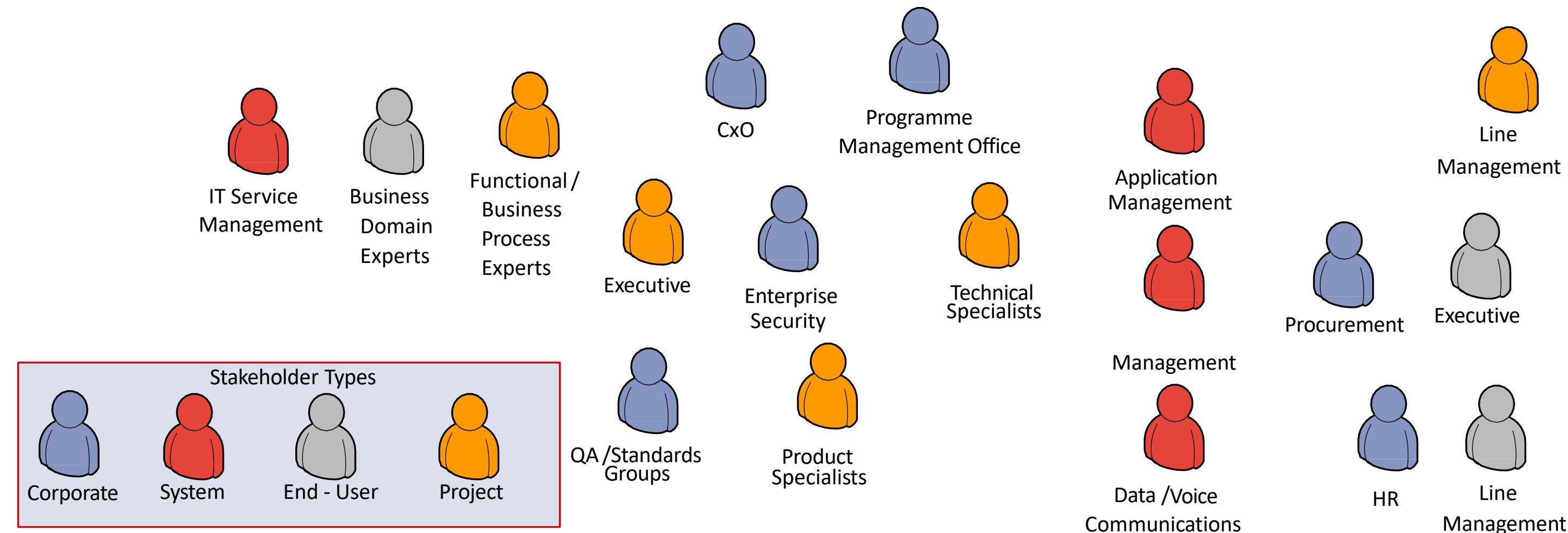
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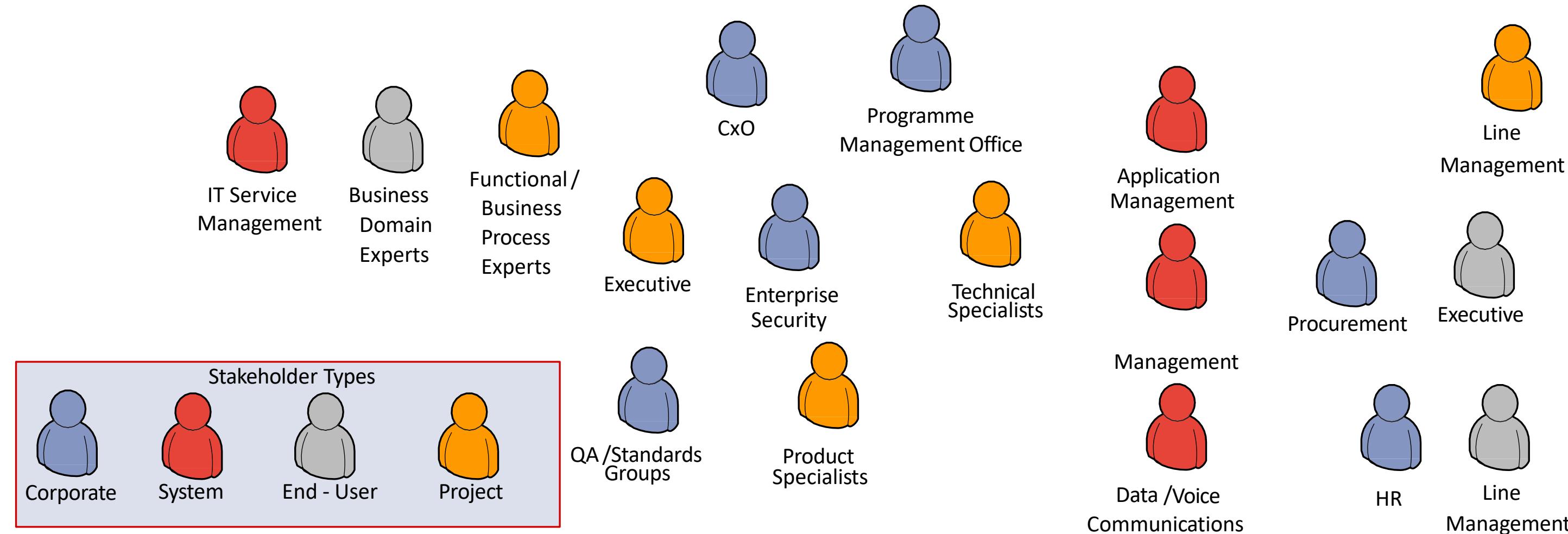
Stakeholders

- Stakeholders are individuals, teams, organizations, or classes thereof, having an interest in a system. They are people who have key roles in, or concerns about, the system; for example, users, developers, etc.



Concerns

- Concerns are interests in a system relevant to one or more of its stakeholders. They may pertain to any aspect of the system's functioning, development, or operation, including performance, reliability, security, distribution, and evolvability, and may determine acceptability of the system



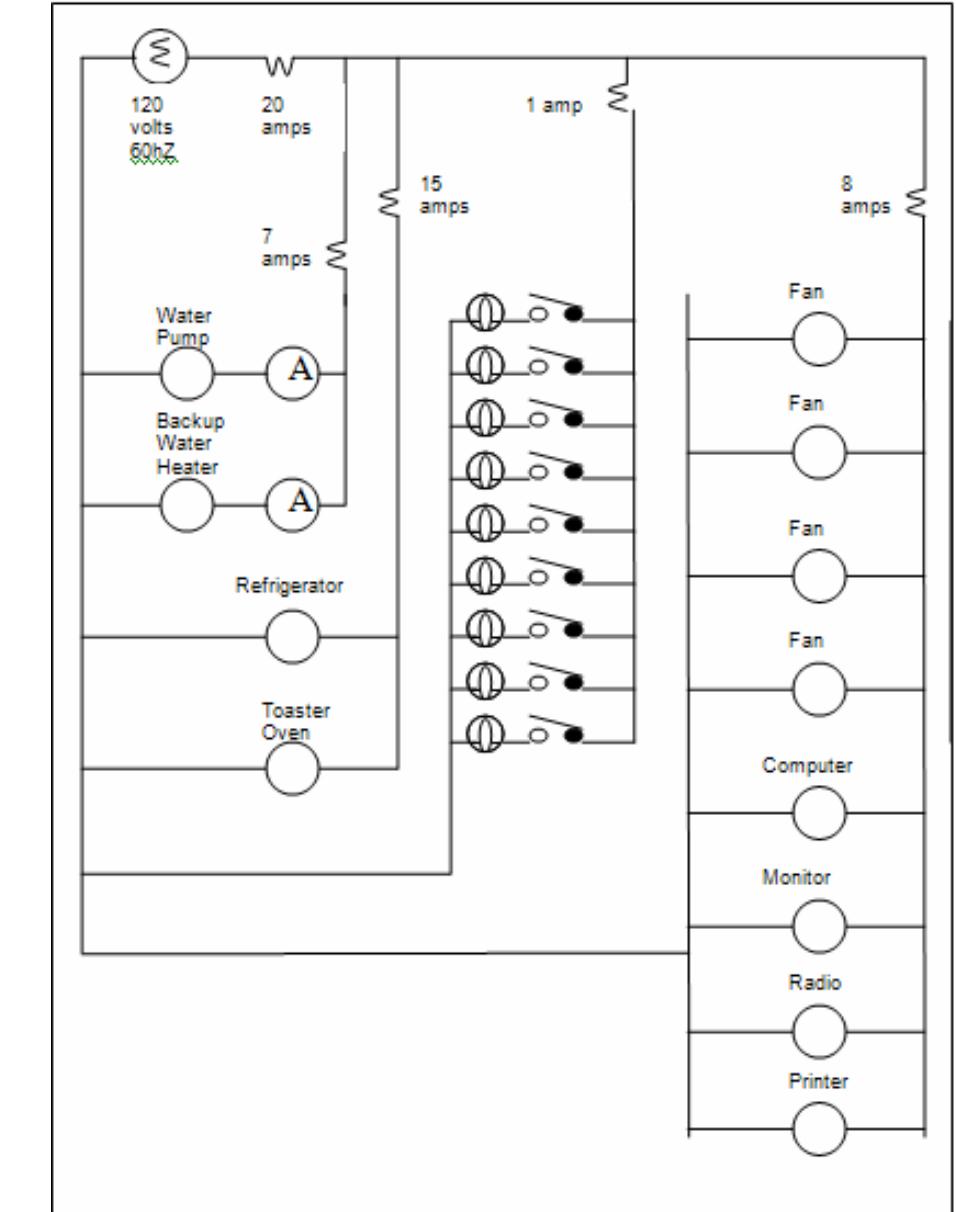
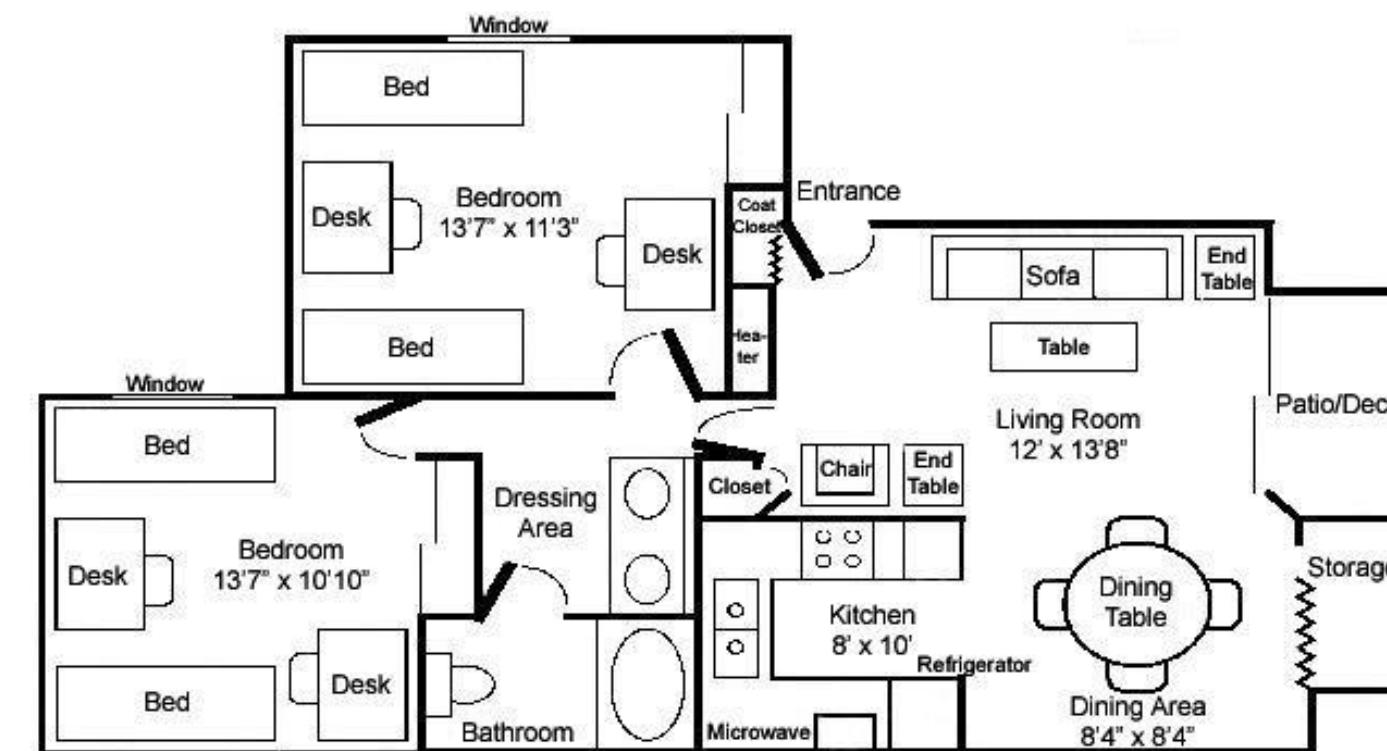
Architecture Viewpoint

- An Architecture Viewpoint defines the perspective from which an architecture view is taken.
- It defines how to construct and use an architecture view, the information needed, the modeling techniques for expressing and analyzing it, and a rationale for these choices (e.g., by describing the purpose and intended audience of the view).



Architecture View

- An Architecture View is a representation of a system from the perspective of a related set of concerns.
 - An architect creates architecture models. An architecture view consists of parts of these, chosen to show stakeholders that their concerns are being met.



7.2 Building Blocks and the ADM

Building Block Characteristics

- A package of functionality defined to meet the business needs across an organization.
- Normally has a type that corresponds to the metamodel (such as actor, business service, application, or data entity).
- Has a defined boundary and is generally recognizable as “a thing” by domain experts.
- May interoperate with other, inter-dependent building blocks.

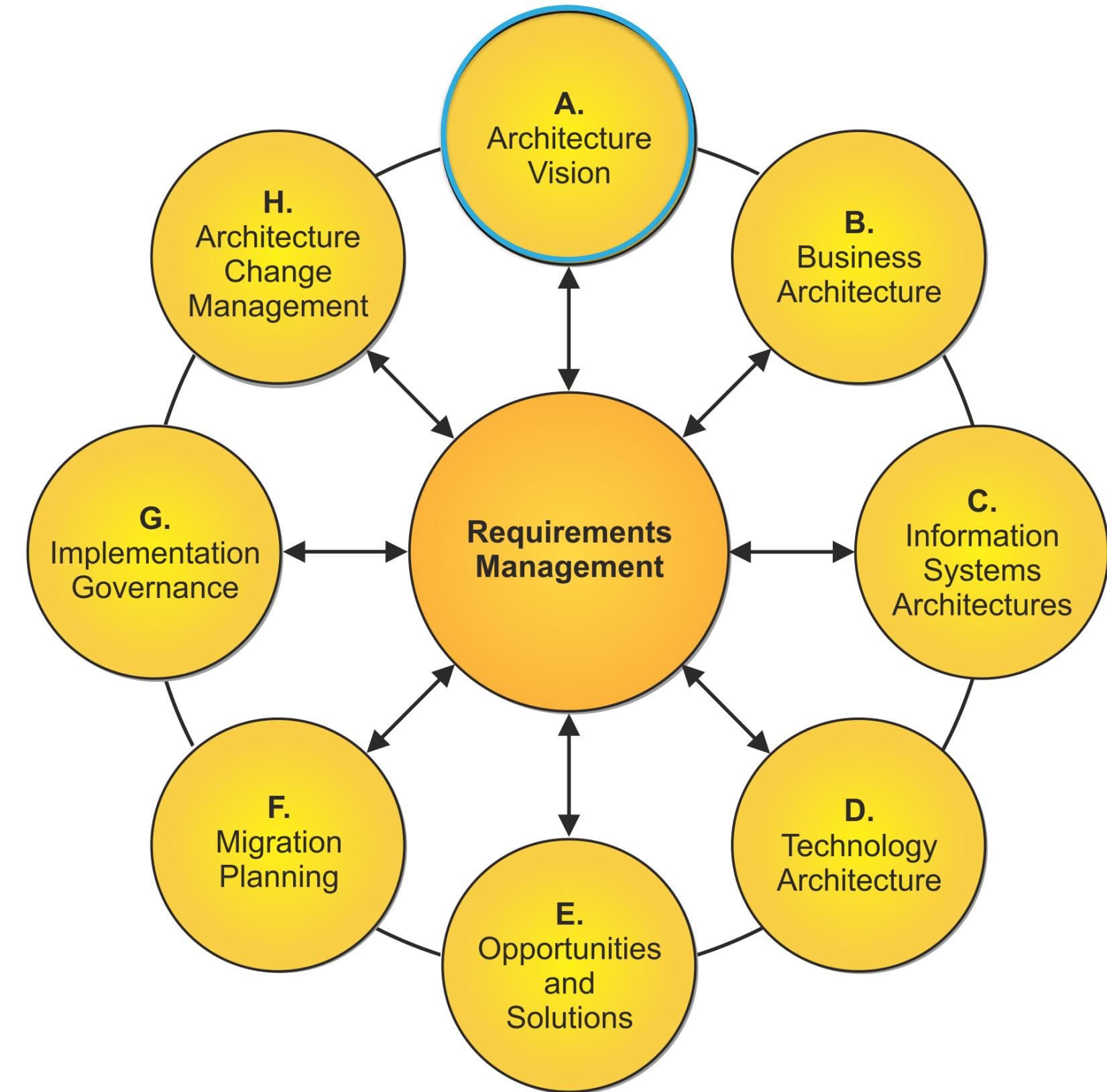
Building Blocks

- Systems are built from collections of building blocks.
- They can be defined at many levels of detail:
 - Groupings at the fundamental functional level capturing architecture requirements are known as Architecture Building Blocks (ABBs)
 - Real products that can be procured or specific custom developments are known as Solution Building Blocks (SBBs)



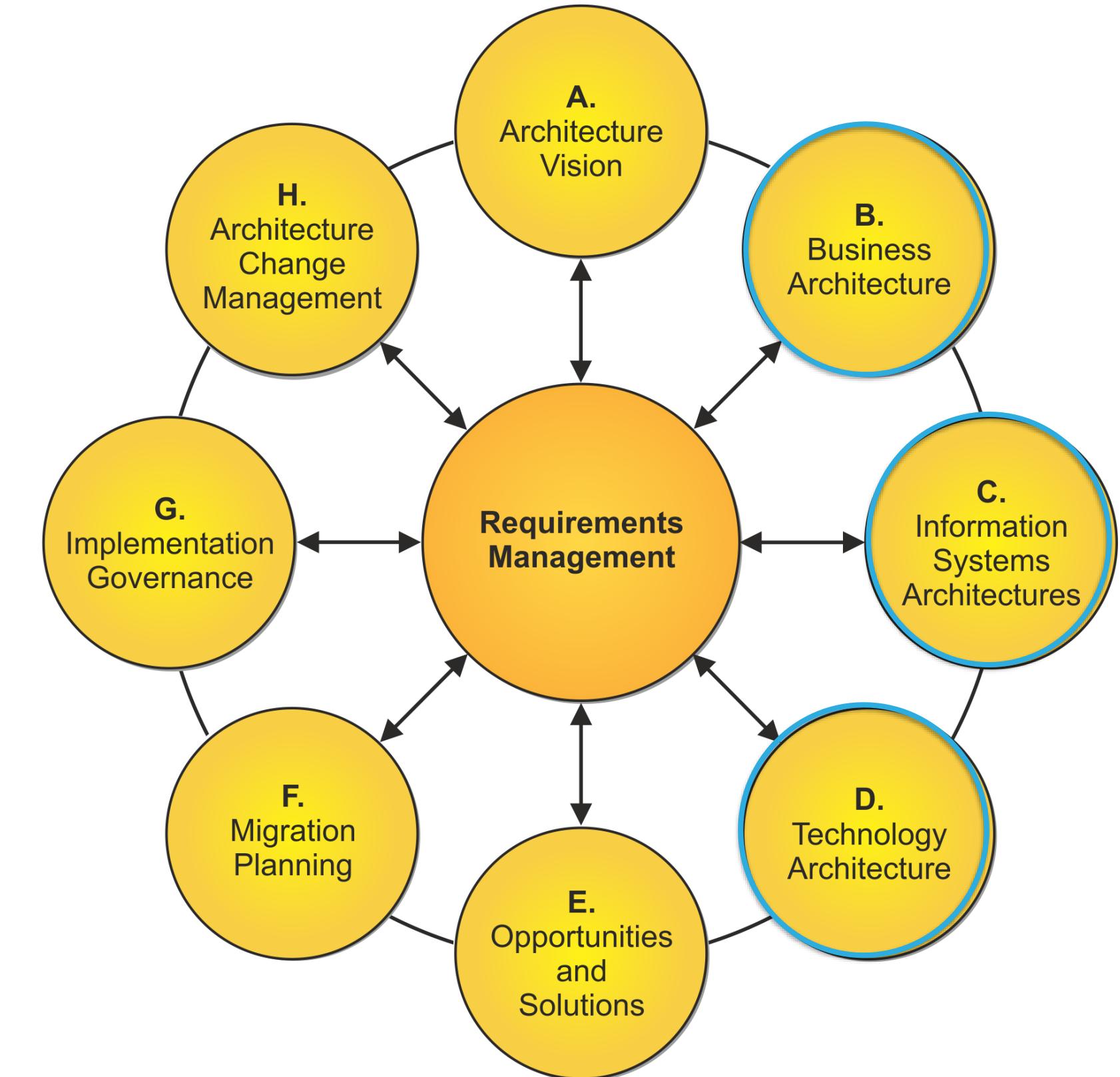
Building Blocks and the ADM: Phase A

- The specification of building blocks using the ADM is an evolutionary and iterative process.
- In Phase A we start with abstract entities



Building Blocks and the ADM: Phases B, C, D

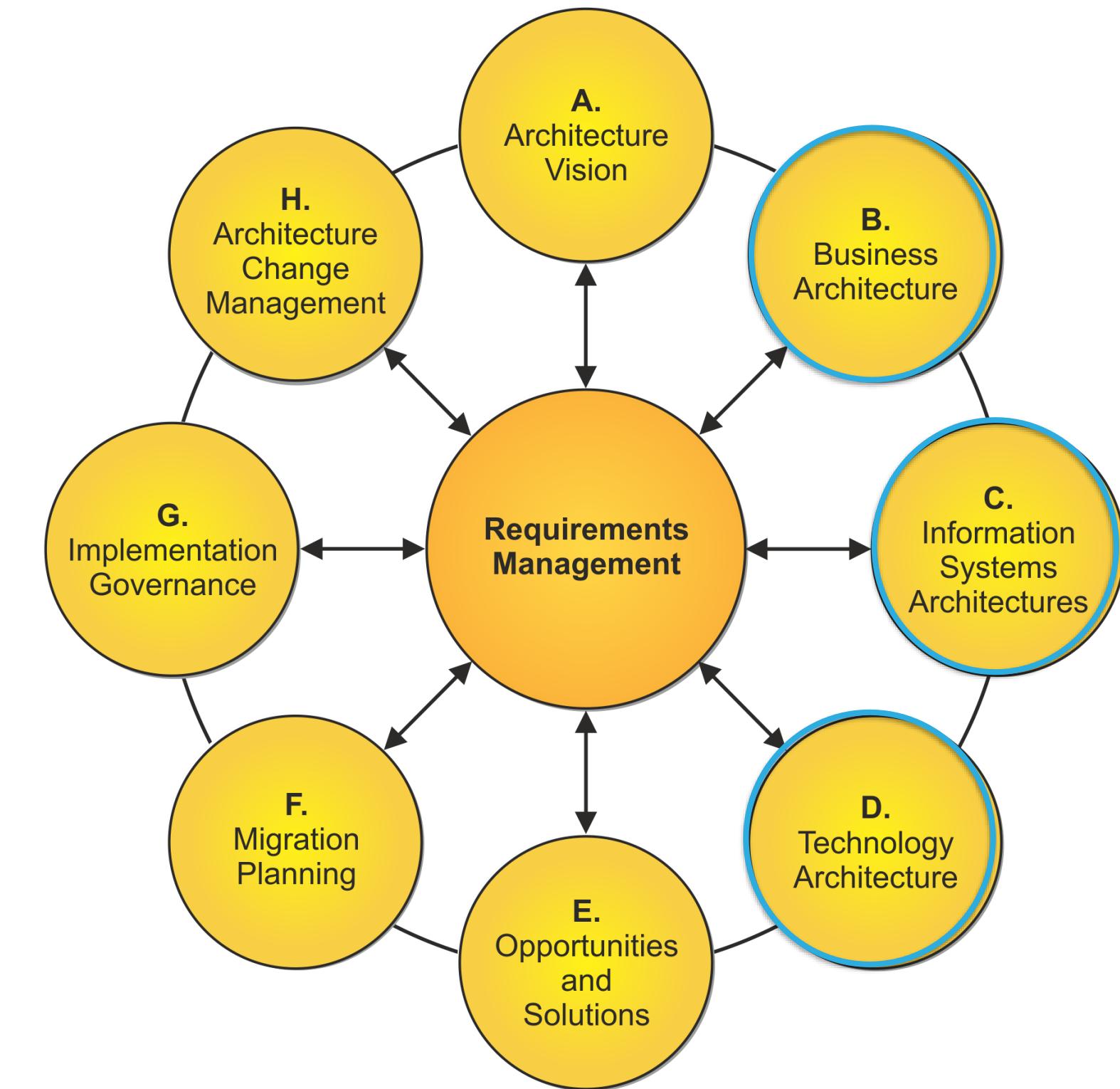
- Building blocks within the Business, Data, Applications and Technology
- Architectures are evolved to a common pattern of steps



Phases B, C, D – Step 3: Develop Target Architecture

Description

- Develop view of required building blocks through the creation of catalogs, matrices, and diagrams of the architecture
- Fully document each building block
- Document rationale for building block decisions in architecture document
- Identify the impacted building blocks, checking against a library of building blocks within the Architecture Repository and reusing where appropriate
- Where necessary, define new building blocks

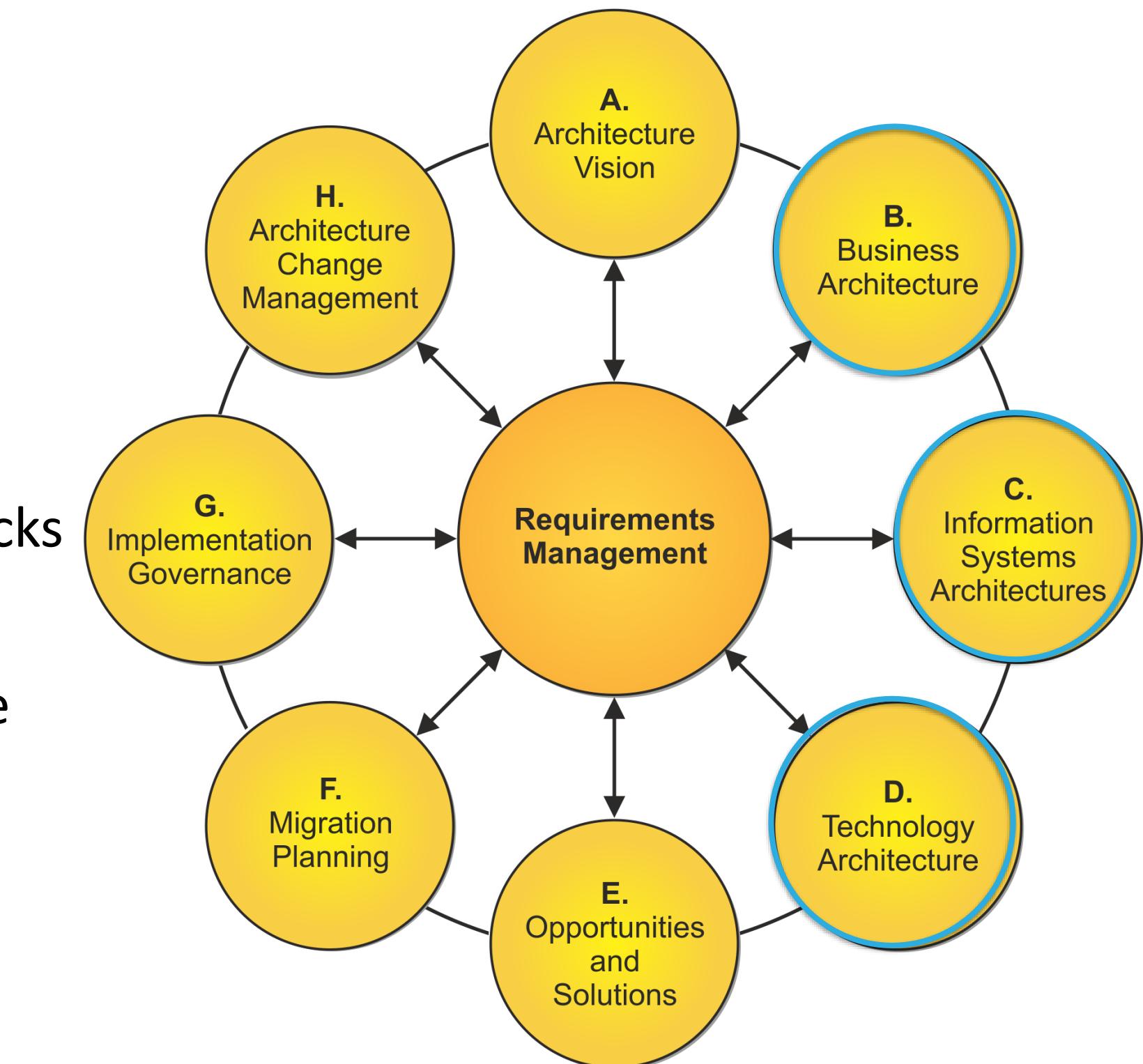


Phases B, C, D — Step 3: Develop Target Architecture

Description

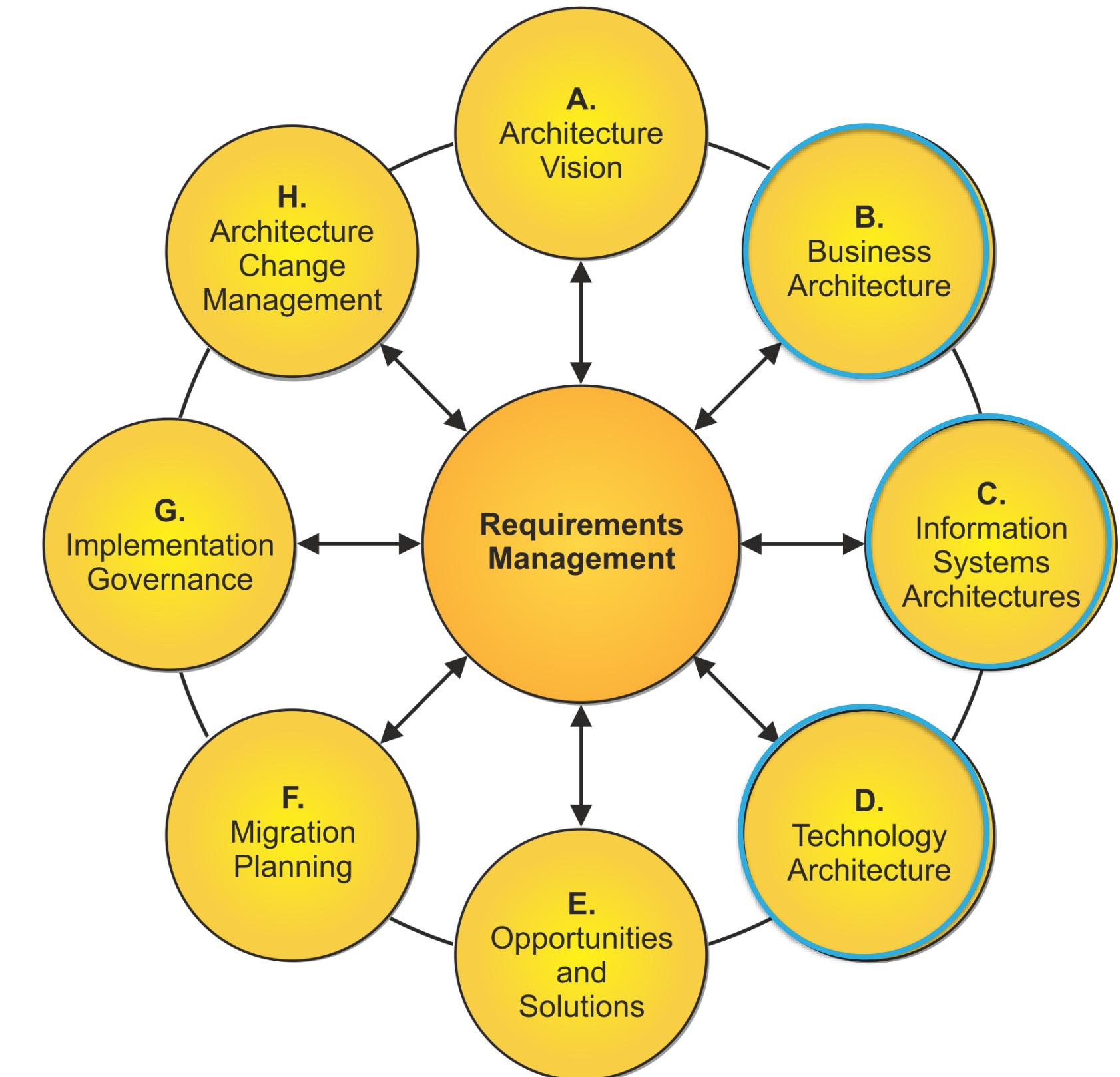
(Continued)

- Select standards for each building block, re-using as much as possible from reference models selected from the Architecture Continuum
- Document final mapping of the building blocks to the Architecture Landscape
- From selected building blocks, identify those that might be re-used, and publish as standards or reference models via the Architecture Repository



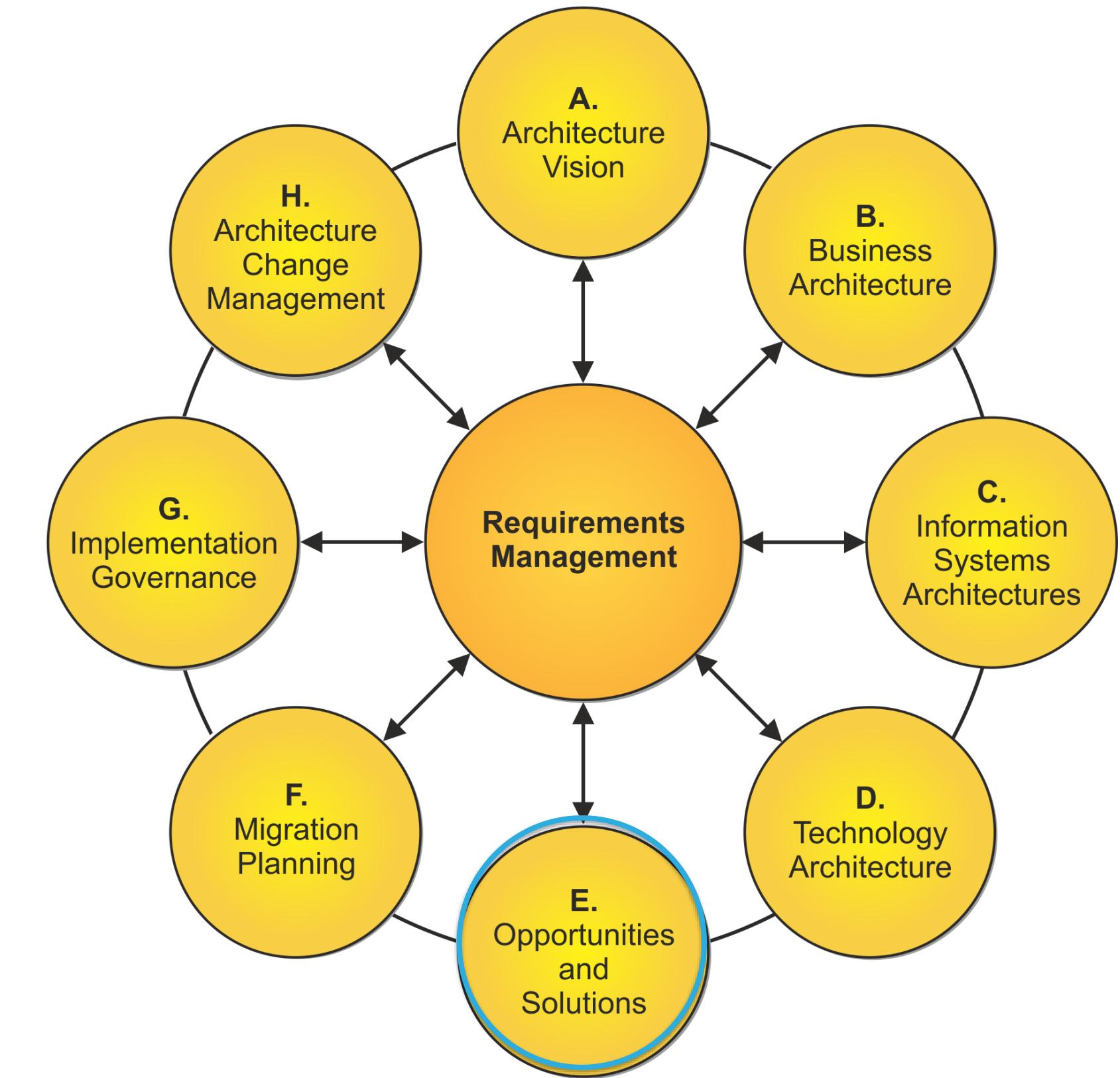
Phases B, C, D – Step 4: Perform Gap Analysis

- Identify building blocks carried over
- Identify eliminated building blocks
- Identify new building blocks
- Identify gaps and determine realization approach (e.g., to be developed or to be procured)



Building Blocks and the ADM: Phase E

- Associate building blocks with work packages that will address the gaps



7.3 The TOGAF® Standard Deliverables Created and Consumed in the TOGAF ADM Phases

The Role of Architecture Deliverables

- Architectural deliverables are the contractual or formal work products of an Architecture Project.
- The definition of deliverable provided by the TOGAF Standard is a baseline.
- It is thus a starting point for tailoring.

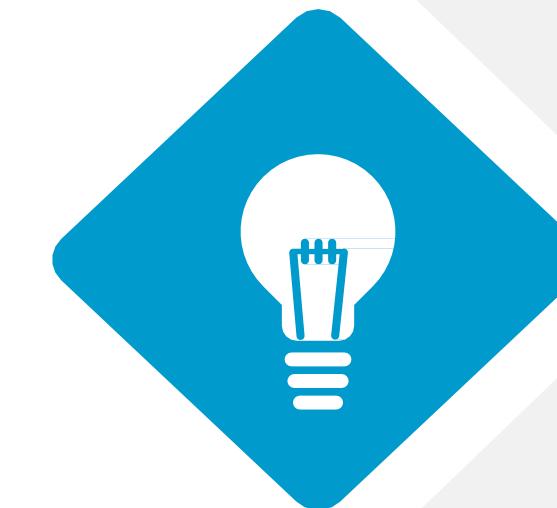
Architecture Deliverables

- Architecture Building Blocks
- Architecture Contract
- Architecture Definition Document
- Architecture Principles
- Architecture Repository
- Architecture Requirements
- Architecture Roadmap
- Architecture Vision
- Business Principles, Business Goals, and Business Drivers
- Capability Assessment
- Change Request
- Communications Plan
- Compliance Assessment
- Implementation and Migration Plan
- Implementation Governance Model
- Organizational Model for Enterprise Architecture
- Request for Architecture Work
- Requirements Impact Assessment
- Solution Building Blocks
- Statement of Architecture Work
- Tailored Architecture Framework

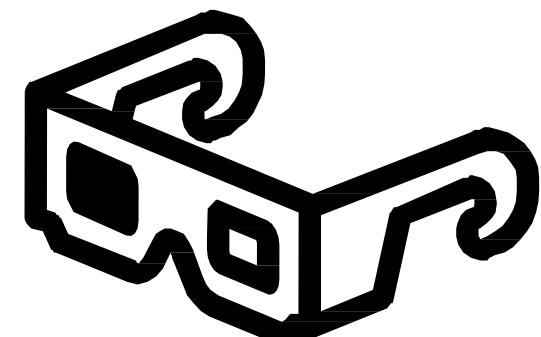
The Role of Architecture Deliverables

“

Deliverables produced by executing the ADM are shown in a table in the handouts.



”



Request for Architecture Work

- Sent from the sponsoring organization to the architecture organization to trigger the start of an architecture development cycle
- Created as an output of the Preliminary Phase, a result of approved architecture Change Requests, or terms of reference for architecture work originating from migration planning

Statement of Architecture Work

- A deliverable output from Phase A
- A response to the Request for Architecture Work
- A plan for the architecture work defining the scope and approach to complete an architecture development cycle

Architecture Vision

- ❑ The Architecture Vision is created early on in the ADM cycle.
- ❑ It provides a summary of the changes to the enterprise that will accrue from successful deployment of the Target Architecture.
- ❑ Providing an Architecture Vision supports stakeholder communication by providing a summary version of the full Architecture Definition.

Communications Plan

- Enterprise Architectures contain large volumes of complex and inter-dependent information.
- Effective communication of targeted information to the right stakeholders at the right time is a Critical Success Factor (CSF) for Enterprise Architecture.
- Development of a Communications Plan for architecture allows for this communication to be carried out within a planned and managed process.

Business Principles, Business Goals, and Business Drivers

- Business Principles, Business Goals, and Business Drivers provide context for architecture work, by describing the needs and ways of working employed by the enterprise.

Capability Assessment

- ❑ Before embarking upon a detailed Architecture Definition, it is valuable to understand the baseline and target capability level of the enterprise.
- ❑ This Capability Assessment can be examined on several levels:
 - ❑ What is the capability level of the enterprise as a whole?
 - ❑ Where does the enterprise wish to increase or optimize capability?
 - ❑ What are the architectural focus areas that will support the desired development of the enterprise?
 - ❑ What is the capability or maturity level of the IT function within the enterprise?
 - ❑ What is the capability and maturity of the architecture function within the enterprise?

Architecture Definition Document

- The deliverable container for the core architectural artifacts created during a project and for important related information
- Spans all architecture domains (Business, Data, Application, and Technology) and also examines all relevant states of the architecture (Baseline, Transition, and Target)

Architecture Requirements Specification

- Provides a set of quantitative statements that outline what an Implementation Project must do in order to comply with the architecture
- Will typically form a major component of an implementation contract or contract for more detailed Architecture Definition

Requirements Impact Assessment

- Throughout the ADM, new information is collected relating to an architecture; new facts may come to light that invalidate existing aspects of the architecture.
- A Requirements Impact Assessment assesses the current Architecture Requirements and specification to identify changes that should be made and the implications of those changes.

Architecture Roadmap

- Lists individual work packages that will realize the Target Architecture and lays them out on a timeline to show progression from the Baseline Architecture to the Target Architecture
- Incrementally developed throughout Phases E and F, and informed by readily identifiable roadmap components from Phase B, C, and D within the ADM

Implementation and Migration Plan

- The Implementation and Migration Plan provides a schedule of the projects that will realize the Target Architecture.
- The Implementation and Migration Plan includes executable projects grouped into managed portfolios and programs.
- The Implementation and Migration Strategy identifying the approach to change is a key element of the Implementation and Migration Plan.

Implementation Governance Model

- The Implementation Governance Model ensures that a project transitioning into implementation also smoothly transitions into appropriate Architecture Governance.

Change Request

- In some circumstances, it is necessary for Implementation Projects to either deviate from the suggested architectural approach or to request scope extensions.
- Additionally, external factors – such as market factors, changes in business strategy, and new technology opportunities – may open up opportunities to extend and refine the architecture.
- In these circumstances, a Change Request may be submitted in order to kick-start a further cycle of architecture work.



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