

Enterprise Architecture Frameworks



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What Are Frameworks?

Consider the Periodic Table for Example

	Group → 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
↓ Period																		
1	1 H																	2 He
2	3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	*	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	**	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Uut	114 Fl	115 Uup	116 Lv	117 Uus	118 Uuo
		*		57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
		**		89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

Frameworks are tools that help us organize concepts, knowledge, thinking and codify collective experience

They enable quicker and easier comprehension domains as well as consistent communication

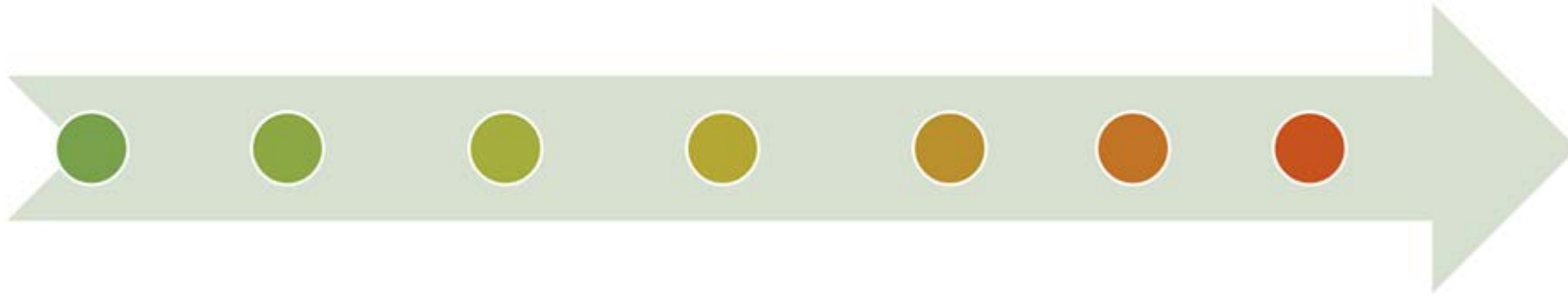
EA can be quite daunting to practice in the absence of the organizing frameworks

EA frameworks help by organizing concepts, principles, artefacts, processes, templates, reference models etc.

EA frameworks enable effective collaboration with a wide spectrum of stakeholders



Enterprise Architecture Timeline



Frameworks tend to have a lot of influence on how EA is practiced in the industry today

This module will provide a quick overview of two of the popular EA frameworks

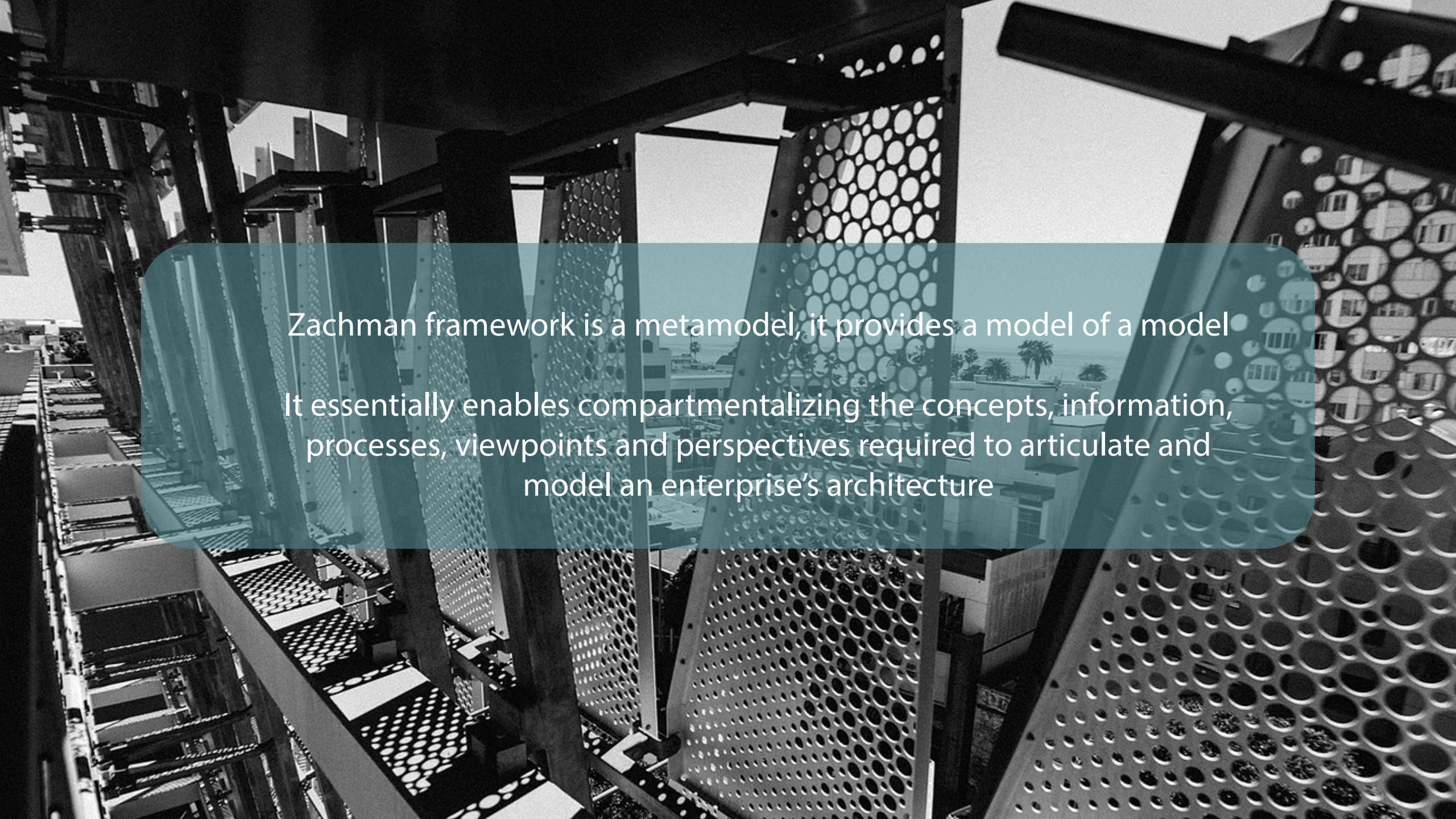
The objective here is to provide overview of key concepts

Focus of This Module

Zachman
Framework



TOGAF
(The Open Group
Architecture Framework)



Zachman framework is a metamodel, it provides a model of a model
It essentially enables compartmentalizing the concepts, information, processes, viewpoints and perspectives required to articulate and model an enterprise's architecture

	Why (Motivation)	How (Process Flows)	What (Inventory Sets)	Who (Responsibility Assignments)	Where (Distribution Networks)	When (Timing Cycles)
Executive Perspective						
Business Mgmt. Perspective						
Architect Perspective						
Engineer Perspective						
Technician Perspective						
Enterprise Perspective						

Why (Motivation)	How (Process Flows)	What (Inventory Sets)	Who (Responsibility Assignments)	Where (Distribution Networks)	When (Timing Cycles)
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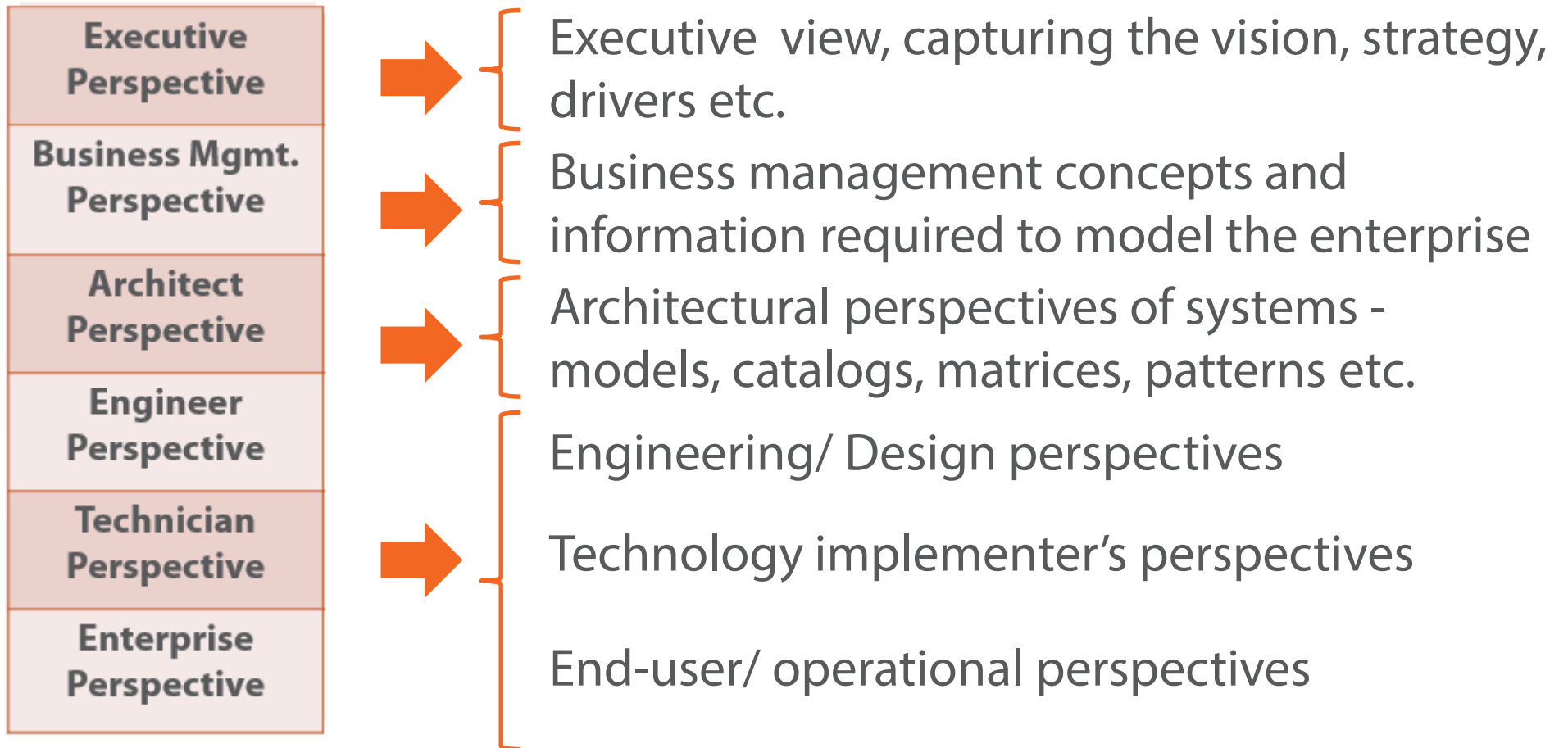


Column ordering can be random

Executive Perspective
Business Mgmt. Perspective
Architect Perspective
Engineer Perspective
Technician Perspective
Enterprise Perspective



Ordering of
rows are fixed



	Why (Motivation)	How (Process Flows)	What (Inventory Sets)	Who (Responsibility Assignments)	Where (Distribution Networks)	When (Timing Cycles)
Executive Perspective	Motivation Identification	Process Identification	Inventory Identification	Responsibility Identification	Distribution Identification	Timing Identification
Business Mgmt. Perspective	Motivation Definition	Process Definition	Inventory Definition	Responsibility Definition	Distribution Definition	Timing Definition
Architect Perspective	Motivation Representation	Process Representation	Inventory Representation	Responsibility Representation	Distribution Representation	Timing Representation
Engineer Perspective	Motivation Specification	Process Specification	Inventory Specification	Responsibility Specification	Distribution Specification	Timing Specification
Technician Perspective	Motivation Configuration	Process Configuration	Inventory Configuration	Responsibility Configuration	Distribution Configuration	Timing Configuration
Enterprise Perspective	Motivation Instantiations	Process Instantiations	Inventory Instantiations	Responsibility Instantiations	Distribution Instantiations	Timing Instantiations

Refer Zachman Framework Official Site: <http://bit.ly/1KBVXDdu>

	Why (Motivation)	How (Process Flows)	What (Inventory Sets)	Who (Responsibility Assignments)	Where (Distribution Networks)	When (Timing Cycles)
Executive Perspective	Motivation Identification	Process Identification	Inventory Identification	Responsibility Identification	Distribution Identification	Timing Identification
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Engineer Perspective	Motivation Specification	Process Specification	Inventory Specification	Responsibility Specification	Distribution Specification	Timing Specification
Technician Perspective	Motivation Configuration	Process Configuration	Inventory Configuration	Responsibility Configuration	Distribution Configuration	Timing Configuration
Enterprise Perspective	Motivation Instantiations	Process Instantiations	Inventory Instantiations	Responsibility Instantiations	Distribution Instantiations	Timing Instantiations

EA practitioners often find it useful to have more detailed definitions, standards and guidance around methodology, skills, governance framework etc.

TOGAF Framework

Is an acronym for “The Open Group Architecture Framework”

The logo for TOGAF, featuring the word "TOGAF" in a blue serif font with a registered trademark symbol. The letter "O" is stylized with a green swoosh that loops around it.

It is developed by “The Open Group” a vendor and technology neutral industry consortium with 400+ member organizations

The framework has been enhanced since its inception in early 90s

The current version is TOGAF 9.1

TOGAF 9.1 Specified in Six Parts

Architecture Content Framework

The Architecture Development Method (ADM)

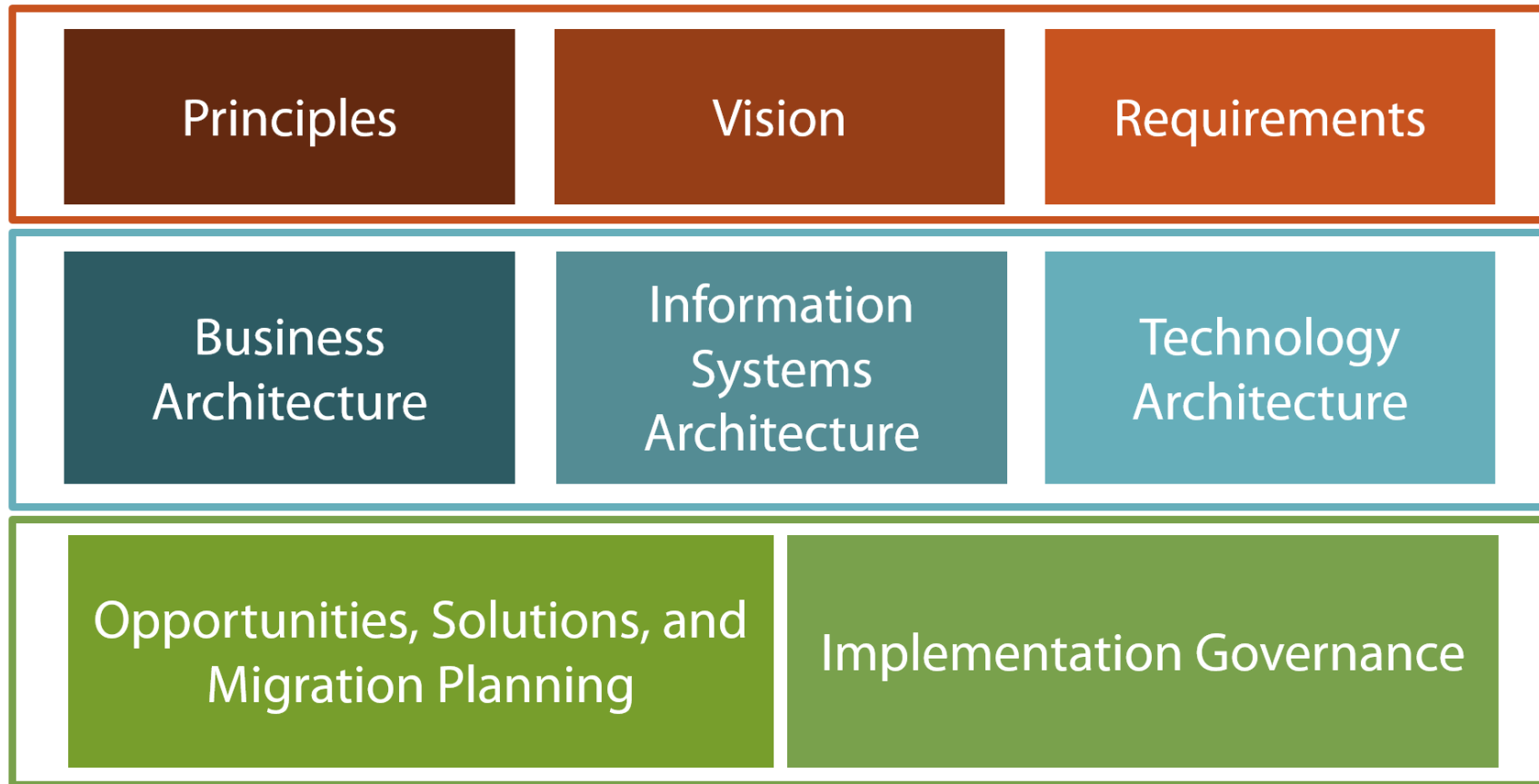
ADM Guidelines and Techniques

The Enterprise Continuum

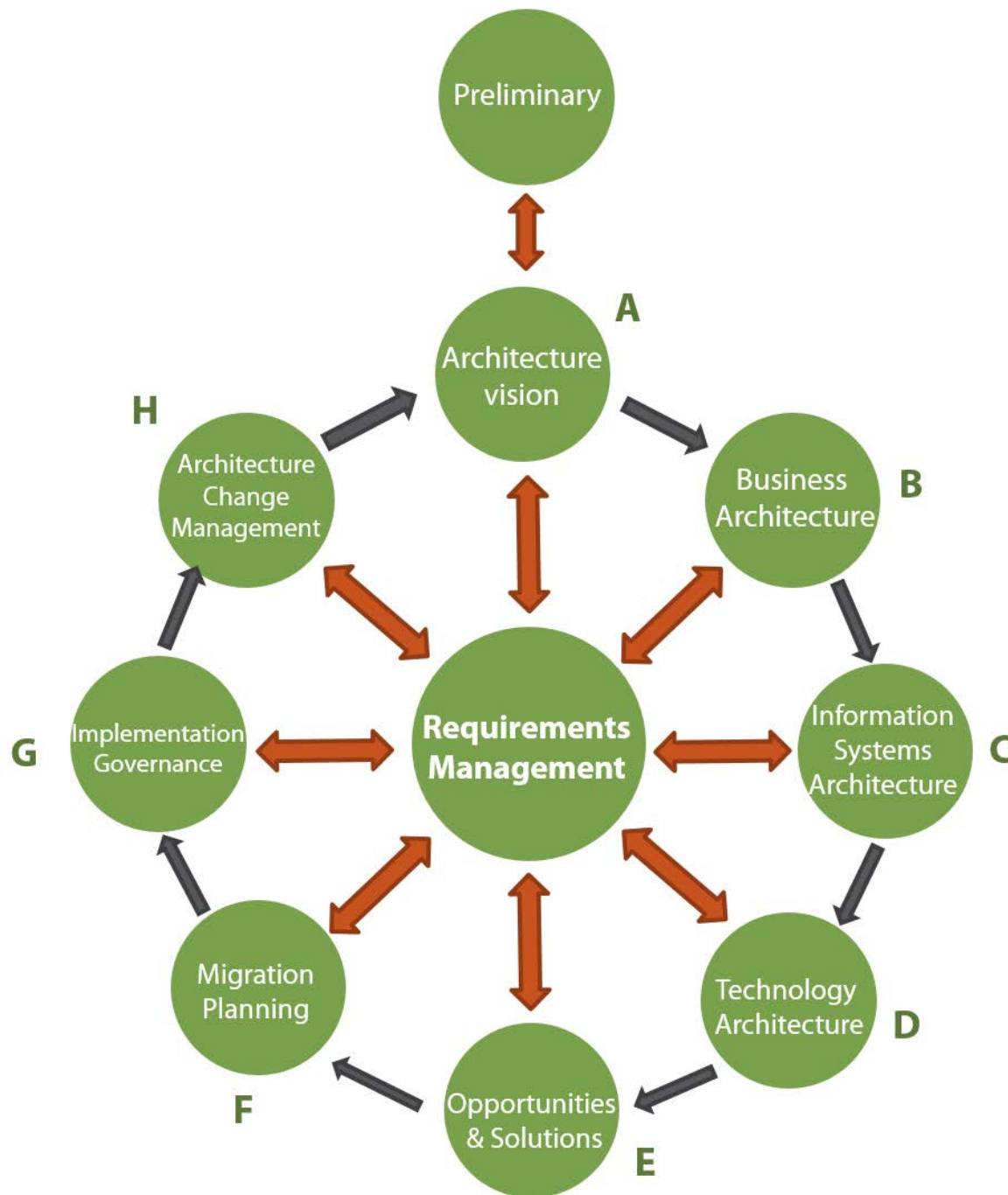
The Architecture Capabilities Framework

The TOGAF Reference Models

Architecture Content Framework



TOGAF content framework provides a more prescriptive metamodel describing the kinds of building blocks
A building block (described using catalogues, matrices, diagrams, patterns etc.) represents an architectural or solution component that can be reused
A collection of building blocks is referred to as architecture artefact



TOGAF Architecture Development Method (ADM)

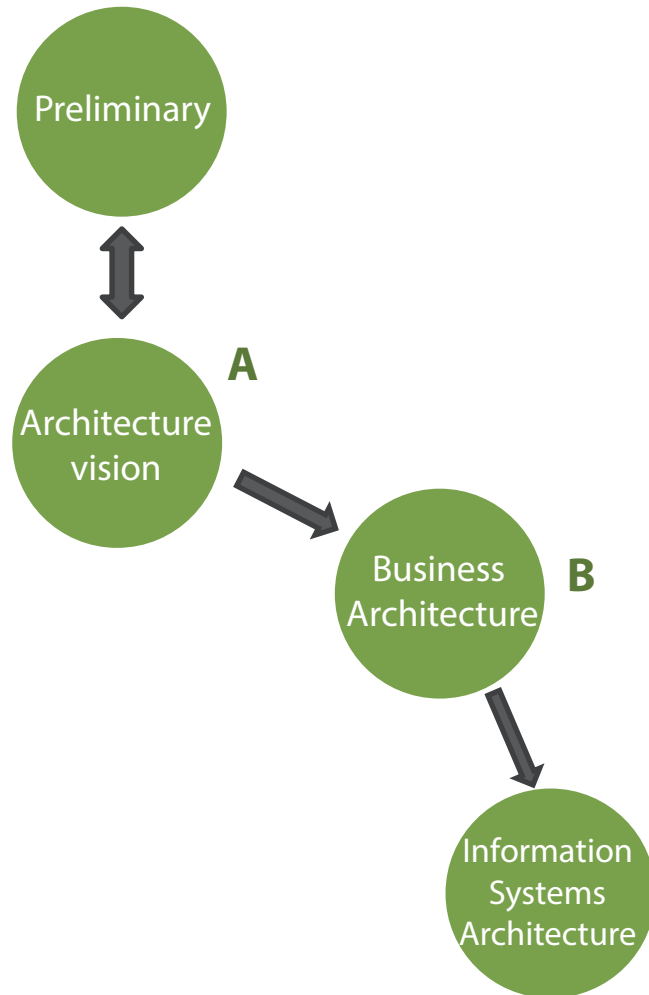
ADM is the core of the TOGAF framework

It essentially describes the sequence of inter-related steps which constitutes an iterative process for developing enterprise architecture

The framework does not prescribe the number of iterations or the scope of each iteration

This iterative process can be adapted to the context of each organization

The framework explicitly encourages tailoring the ADM for effectiveness in the context of a given enterprise



Preliminary Phase :

Customizing the framework to organizational context
Necessary approvals and funding activities required to support the architecture work
Determining the governing principles

Phase A:

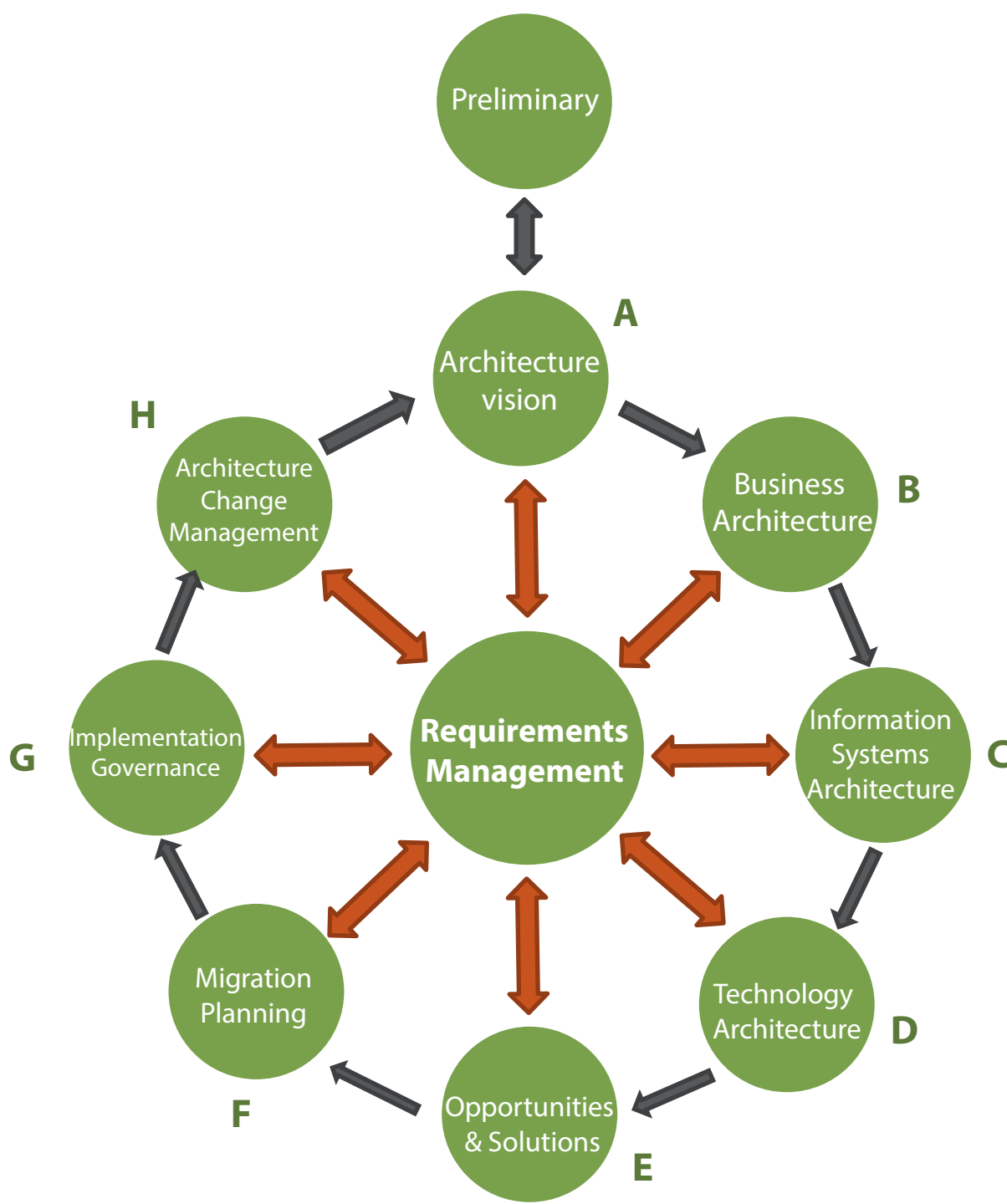
The architectural vision is established
Scope of iteration is defined
Stakeholders are identified

Phase B:

Business architecture is developed in alignment with architecture vision

Phase C:

Information systems architecture, incorporating both
Applications architecture
Information (Data) architecture



Phase D:

Captures and describes the building blocks that make up the enterprise's technology infrastructure

Phase E:

Identifies how the developed architecture can be delivered and realized through solutions

Phase F:

Formulates an architecture road map that describes transition from current state to future state architecture

Phase G:

Provides the architectural oversight of implementation

Phase H:

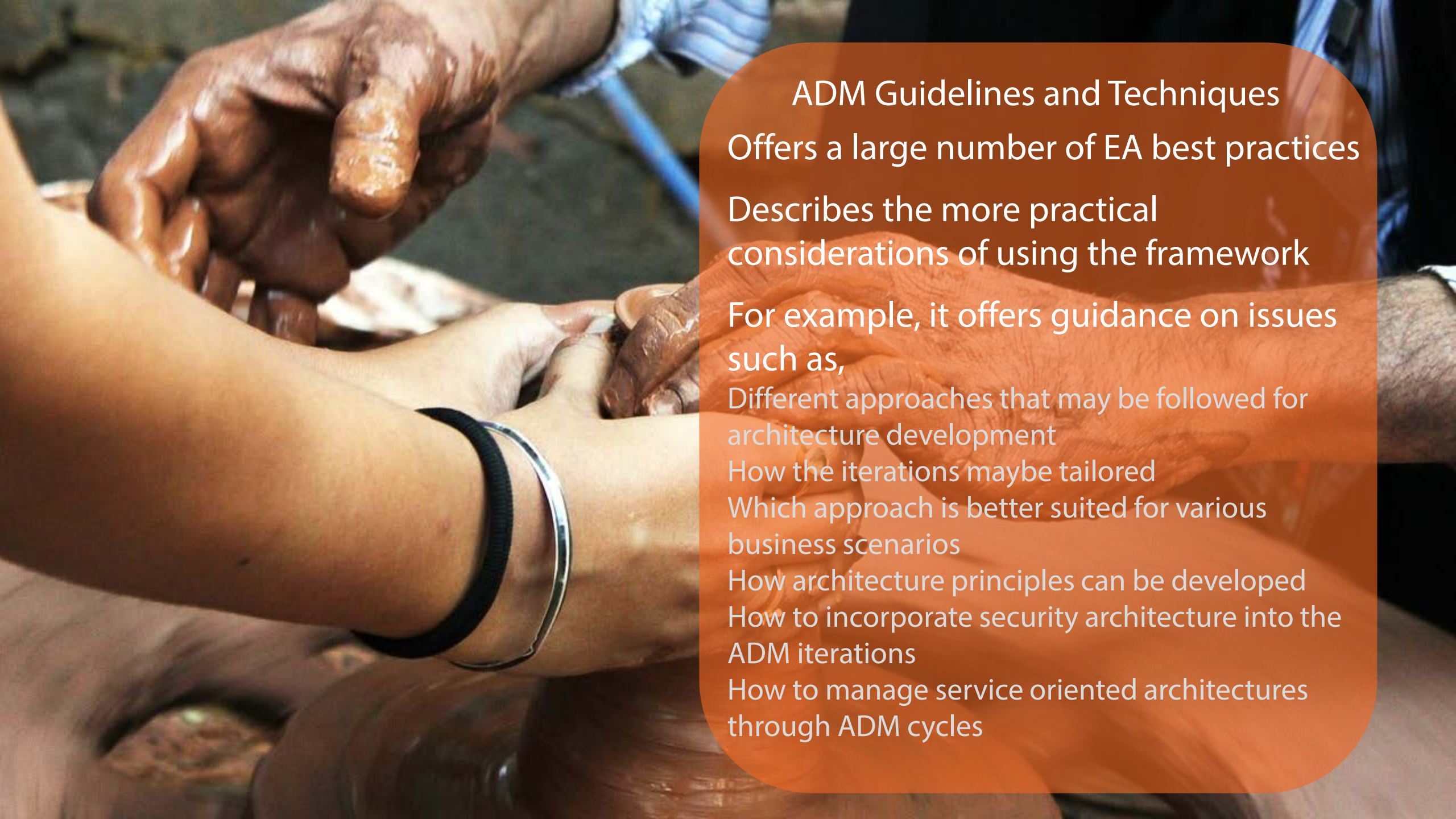
Establishes procedures for change management while transitioning from current state to target state

Requirements Management

Operates through all phases of the ADM

Collaboratively managing architectural requirements

Ensures alignment with vision and iteration scope



ADM Guidelines and Techniques

Offers a large number of EA best practices

Describes the more practical considerations of using the framework

For example, it offers guidance on issues such as,

- Different approaches that may be followed for architecture development

- How the iterations may be tailored

- Which approach is better suited for various business scenarios

- How architecture principles can be developed

- How to incorporate security architecture into the ADM iterations

- How to manage service oriented architectures through ADM cycles

Achieving Reuse



Enterprise repository gets built out through ADM cycles along the lines of Architecture Content Framework specifications

Overtime, the architecture repository of the enterprise grows in volume

It is important for the enterprise to harvest existing building blocks and architectural assets to create new architectures and solutions



TOGAF framework recommends a view of the architecture repository through what it refers to as the **Enterprise Continuum**

Enterprise Continuum is a view of the enterprise's architecture that facilitate discovery, consistent communication and reuse

Enterprise Continuum

Generic

Specific

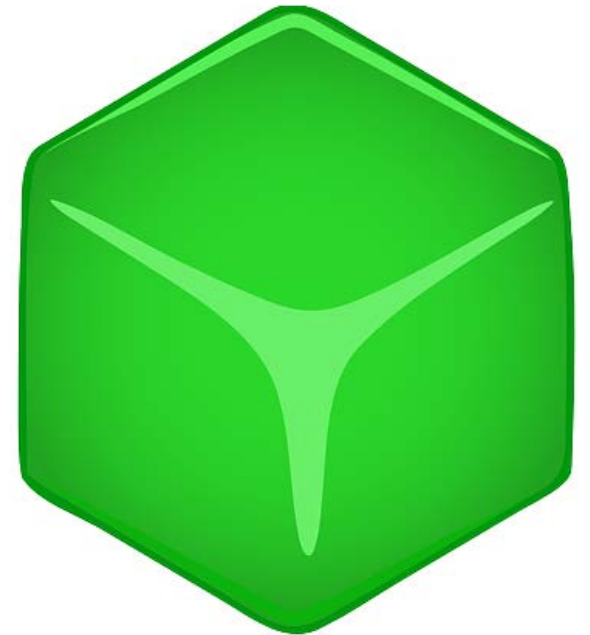
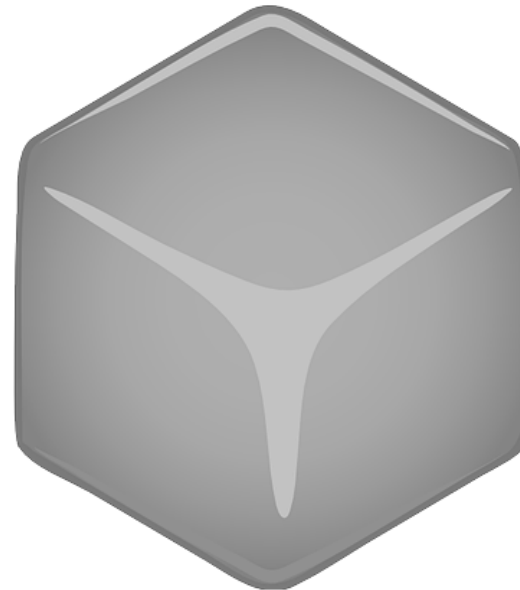


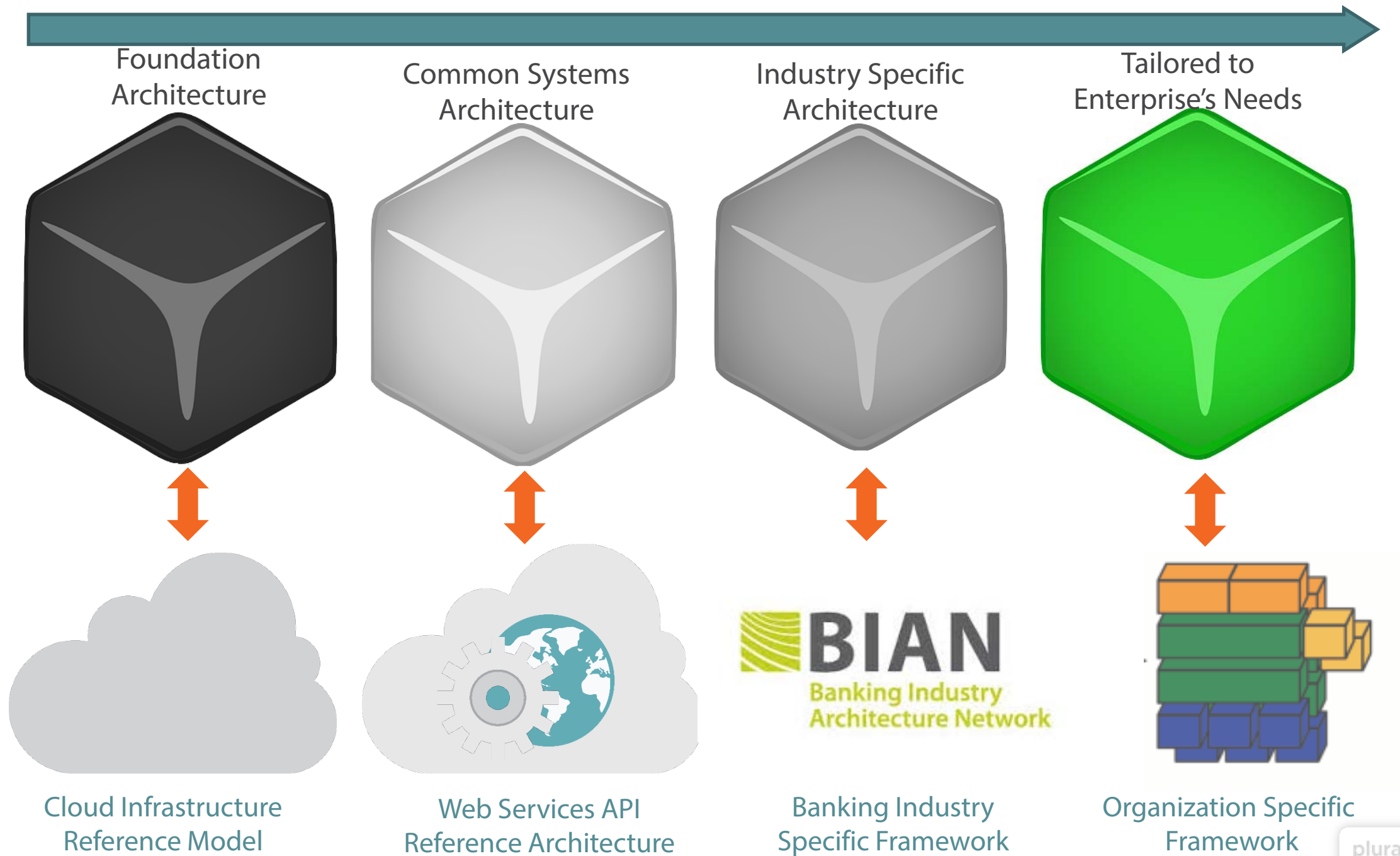
Foundation
Architecture

Common Systems
Architecture

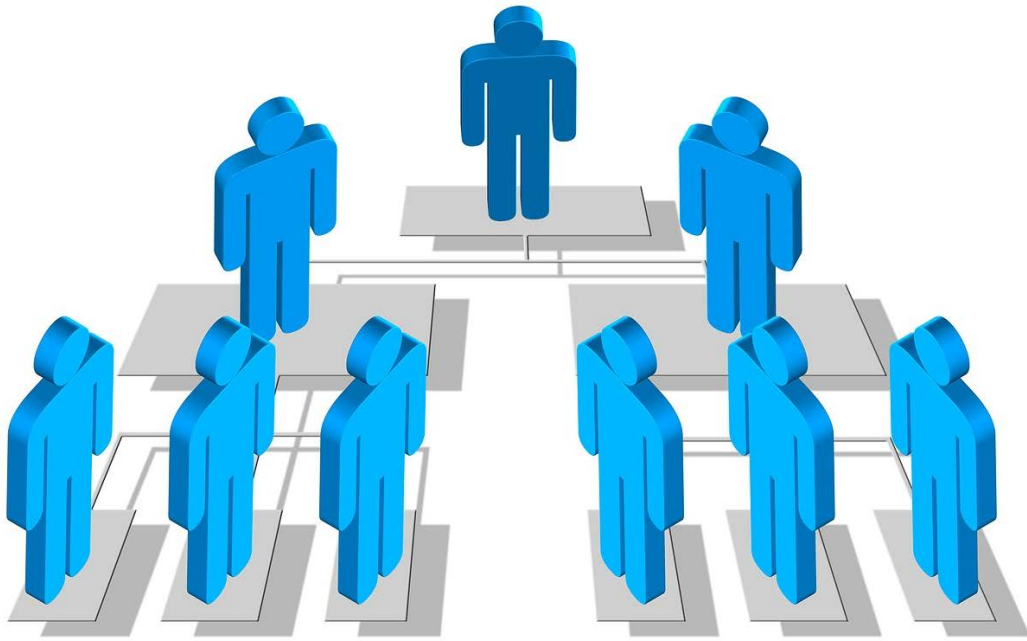
Industry Specific
Architecture

Tailored to Enterprise's
Needs





Architecture Capability Framework



Architecture capability framework offers guidelines on

Establishing and running an EA capability

Running an architecture board

Ensuring architecture compliance through governance

It also defines architecture roles and the EA skills framework

The guidance in its current form is not entirely complete and is expected to be further elaborated in future versions of the framework



Comparing TOGAF & Zachman Frameworks

TOGAF is more prescriptive and incorporates lot more guidance than Zachman framework

Zachman framework is primarily a content metamodel and an enterprise architecture ontology

TOGAF framework integrates six different dimensions including a content framework, process model, the capabilities framework, a large body of best practices guidelines and techniques, the enterprise continuum and some reference models

TOGAF ADM allows a lot of flexibility in its iterative process model, while Zachman deliberately does not prescribe a process model

Some enterprises use Zachman framework for its content metamodel while adopting TOGAF ADM for a process model

Quick Recap

We began by looking at generic definition of conceptual frameworks before exploring enterprise architecture frameworks

We then looked at Zachman framework and how it offers a metamodel and ontology that enables defining the enterprise architecture from various stakeholder perspectives

Finally we looked at TOGAF, which is a more elaborate EA framework incorporating a content framework, process model, capability framework, guidelines and reference models