TOGAF®

Version 9.1 Enterprise Edition

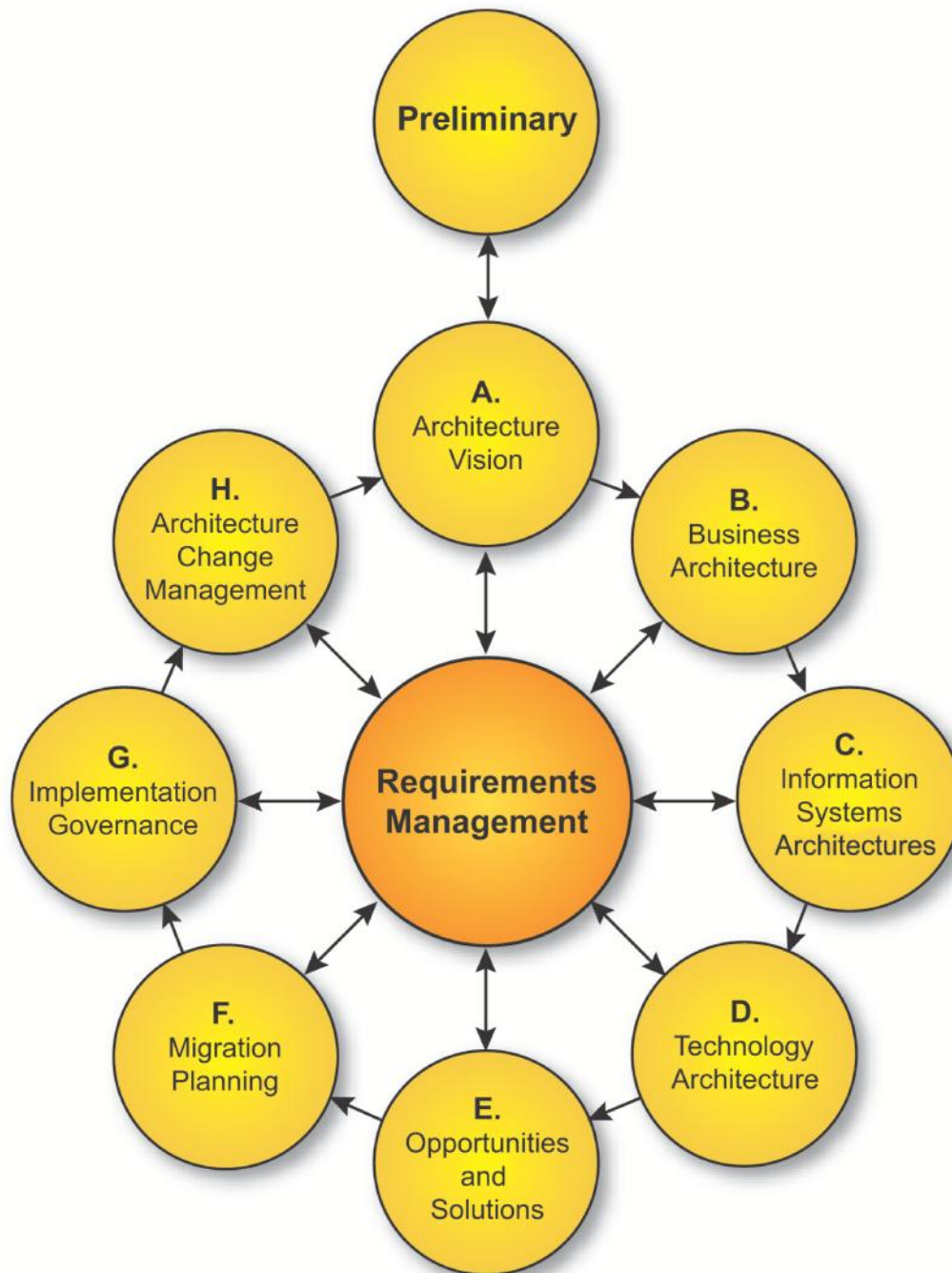# Module 1
Management
Overview

THE Open GROUP

Management Overview

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Module Objectives

- To provide a management overview of TOGAF, an Open Group Standard
    - The Open Group
    - The Architecture Forum
    - Why enterprise architecture
    - Why a framework
    - TOGAF 9.1
    - TOGAF 9 Certification
    - Summary

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Agenda

- The Open Group
- The Architecture Forum
- Why Enterprise Architecture
- Why a Framework
- TOGAF 9.1
- TOGAF 9 Certification
- Summary

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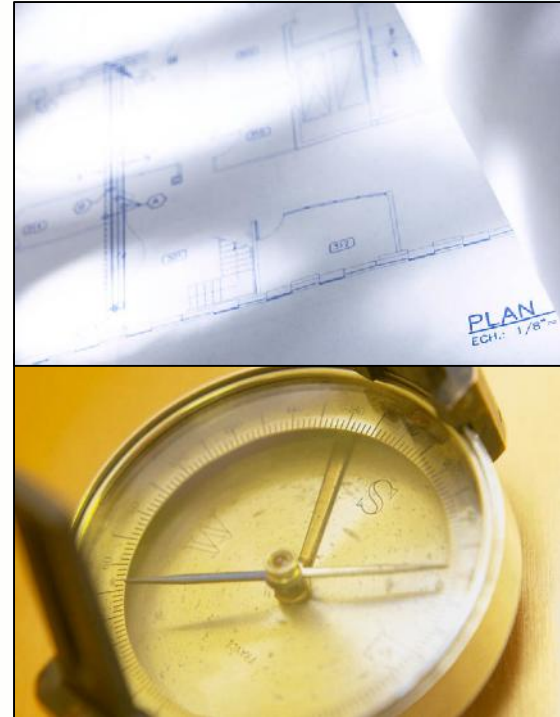
The Open Group …

- Is an international vendor - and technology – neutral consortium that organizations rely on to lead the development of IT standards and certifications

- Provides guidance and open environment to enable interoperability and vendor-neutrality

- Membership is open to all enterprises, small, medium and large, anywhere in the world

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Our Vision

Boundaryless Information Flow™

- achieved through global interoperability
- in a secure, reliable and timely manner

"*Boundaryless does not mean there are no boundaries – it means that boundaries are permeable to enable business.*"

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Our Mission

The mission of The Open Group is to drive the creation of Boundaryless Information Flow™ achieved by:

• Working with customers to capture, understand and address current and emerging requirements, establish policies, and share best practices;

• Working with suppliers, consortia and standards bodies to develop consensus and facilitate interoperability, to evolve and integrate specifications and open source technologies;

• Offering a comprehensive set of services to enhance the operational efficiency of consortia; and

• Developing and operating the industry's premier certification service and encouraging the procurement of certified products.

Tackling Boundaryless Information Flow	White Papers	Standards	Product & service certification	People & professional certification
Enterprise Architecture	✓	✓	✓	✓
Cloud Computing	✓	✓	✓	✓
Interoperability	✓	✓	✓	✓
Portability of applications	✓	✓	✓	✓
Real-time and Embedded Systems	✓	✓	✓	✓
Security, compliance, identity and risk management	✓	✓	✓	✓
Service Oriented Architecture	✓	✓	✓	✓
Trusted technology	✓	✓	✓	✓

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Activities

- Governing Board work groups
    - Open CA Work Group
    - Open CITS Work Group
    - UNIX Work Group
- Member Forums
    - Architecture, ArchiMate®
    - Enterprise Management, Platform
    - Real Time & Embedded, Security and Identity Management
    - Trusted Technology Forum, Jericho Forum
- Work Groups
    - Business Architecture
    - Cloud Computing
    - Quantum Lifecycle
    - Semantic Interoperability, including Universal Data Element Framework (UDEF)
    - Service Oriented Architecture (SOA)

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Forums/Work Areas of The Open Group

- Meeting points for Suppliers and Buyers
- Each Forum is effectively an autonomous consortium operating within The Open Group
  - Direction determined by members
  - Outputs approved by members
  - Must obey some rules to respect anti-trust legislation
- Forums initiate new areas of work, often in partnership with other Forums
  - …leading to industry standards
  - …leading to certification programs based on those standards

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How members work

- **Mostly virtual**
  - E-mail, teleconference, web conference
- **Collaboration infrastructure**
  - Track activities for projects, forums etc
- **Quarterly Global Member Meetings**
- **Local Member Meetings**

Key Deliverables
Open Standards
•Professional
•Process and methodology
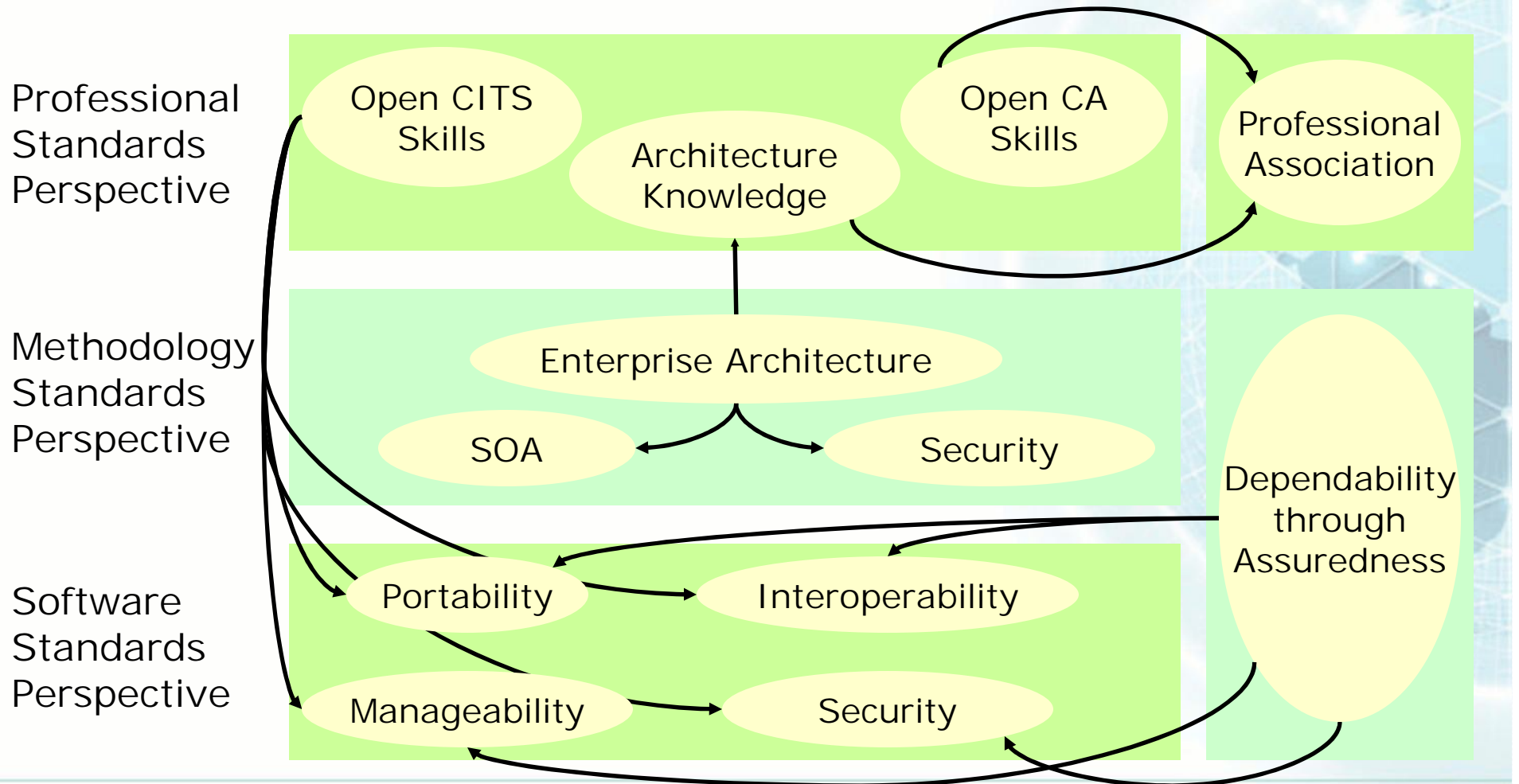•Software, technical
Certification of conformance to standards
Conferences and events – global and local

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Why "Customers" join

- We can build relationships with peers in our or other industries and share knowledge
- **We can talk to suppliers in a non-selling environment**
- We can influence the priorities being addressed by the industry
- **We have early access to the solutions being developed to address our urgent issues**
- We can track forums, work groups, projects and activities that are relevant to our enterprise
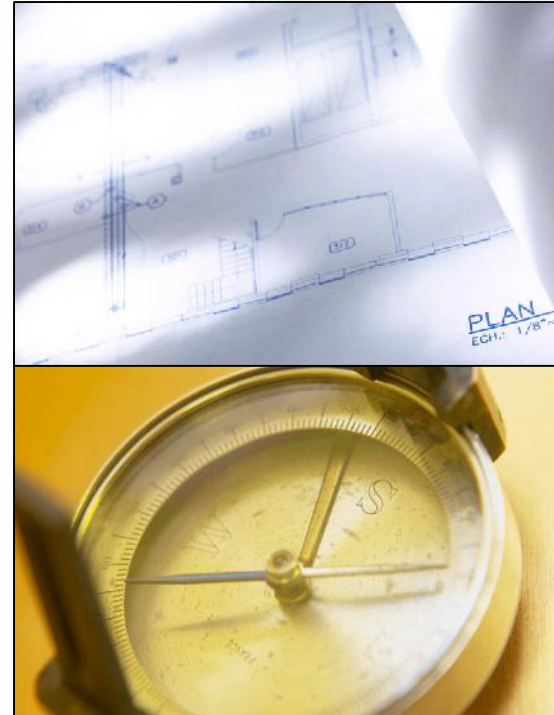
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The Open Group Scorecard

Professional Standards Perspective

- Open CITS Skills
- Architecture Knowledge
- Open CA Skills
- Professional Association

Methodology Standards Perspective

- Enterprise Architecture
- SOA
- Security

Software Standards Perspective

- Portability
- Interoperability
- Manageability
- Security

Dependability through Assuredness

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Agenda

- The Open Group
- The Architecture Forum
- Why Enterprise Architecture
- Why a Framework
- TOGAF 9
- TOGAF 9 Certification
- Summary

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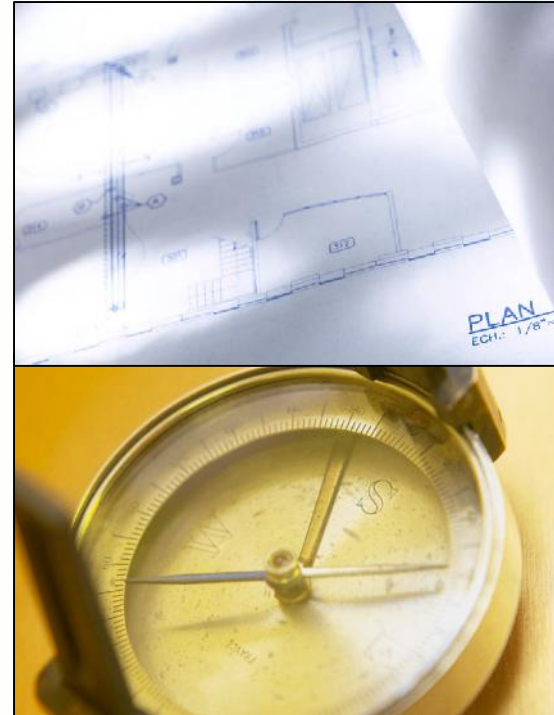
Architecture Forum – Mission

- The mission of The Open Group Architecture Forum is to advance The Open Group vision of *Boundaryless Information Flow*, for and between enterprises,

- Through a set of programs that focus on all architectural aspects, including:

  - Providing broad and deep leadership to the EA community

  - Validating, publishing, fostering, and maintaining best practices for EA

  - Developing, organizing, researching, and publishing thought leaders in EA

  - Initiating and managing programs and projects to support these activities

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Stakeholders and Value

- Customer Architects
  - reduced time, cost, risk
- Tools Vendors
  - bigger market, bigger market share
- IT Solution Vendors
  - greater cost-efficiency
- Integrators
  - greater cost-efficiency, better service
- Academic /Research Organizations
  - funding support

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What is an Enterprise?

- A collection of organizations that share a common set of goals
  - Government agency
  - Part of a corporation
  - Corporation
- Large corporations may comprise multiple enterprises
- May be an "extended enterprise" including partners, suppliers and customers

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What is an Architecture?

- An Architecture is the fundamental organization of something, embodied in:
    - its components,
    - their relationships to each other and the environment,
    - and the principles governing its design and evolution.

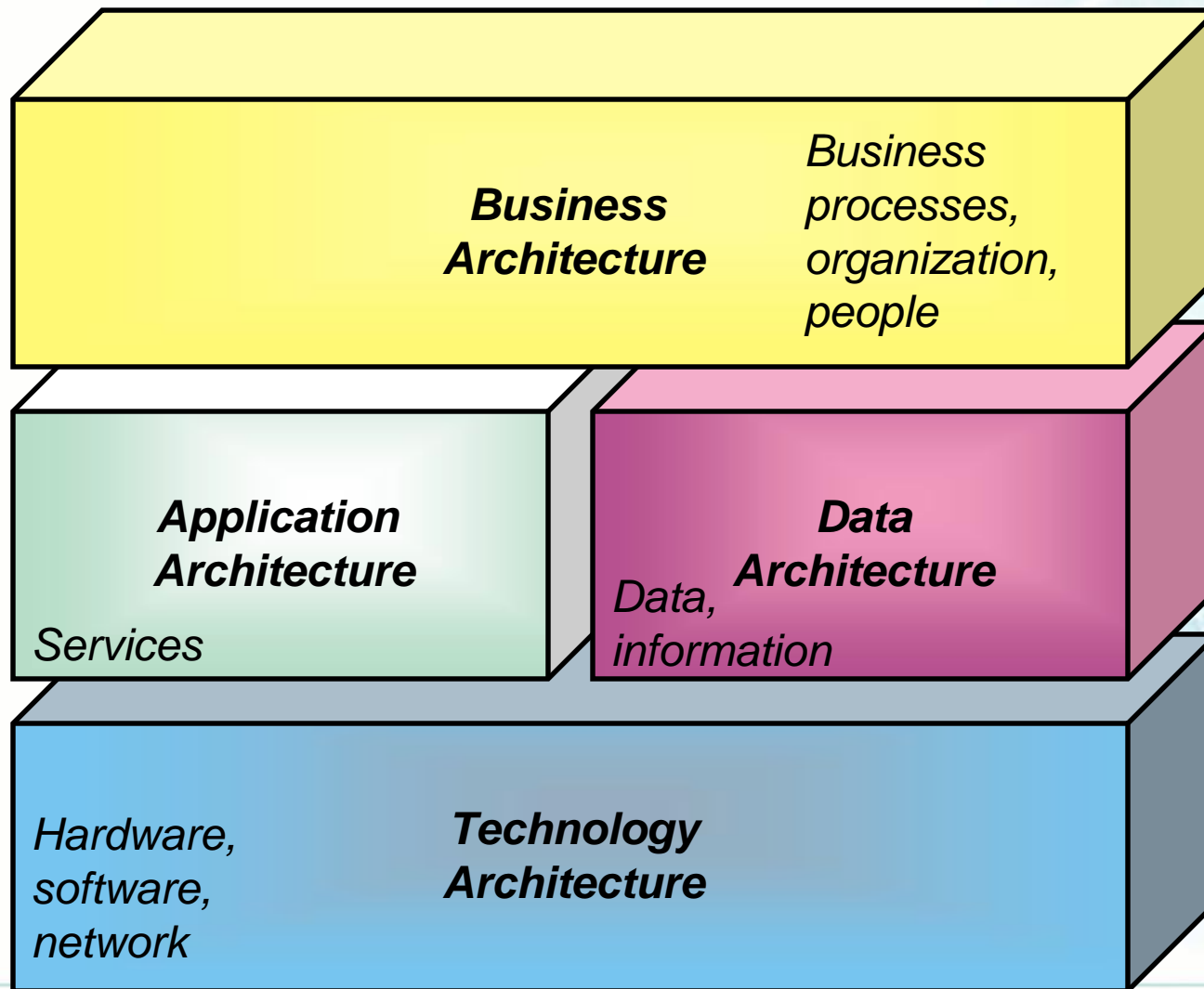Adapted from ANSI/IEEE Standard 1471-2000

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What is Enterprise Architecture?

Enterprise Architecture is:

- The organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the firm's operating model.[1]

- A conceptual blueprint that defines the structure and operation of an organization. The intent of an enterprise architecture is to determine how an organization can most effectively achieve its current and future objectives. [2]

[1] MIT Center for Information Systems Research

[2] SearchCIO.com

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Architecture Types

Business Architecture — *Business processes, organization, people*

Application Architecture — *Services*

Data Architecture — *Data, information*

Technology Architecture — *Hardware, software, network*

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Why Enterprise Architecture?

- Effective management and exploitation of information through IT is key to business success
- Good information management = competitive advantage
- Current IT systems do not really meet the needs of business
  - Fragmented, duplicated
  - Poorly understood
  - Not responsive to change
- Investment in Information Technology
  - Focussed on system maintenance
  - Tactical developments rather than a strategic plan

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Why Enterprise Architecture?

- Two key reasons why you need an enterprise architecture:

  – Critical to business survival and success

  – Enables managed innovation within the enterprise

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Pressure to develop Enterprise Architecture

- Laws and regulations
  - Clinger-Cohen Act (US Information Technology Management Reform Act 1996)
  - EU Directives on the Award of Public Contracts
  - Sarbanes-Oxley
- More extended enterprises
- More co-operative IT operations
- Greater publicity to failures
- Increase in litigation
- Audit requirements

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Business Benefits of Enterprise Architecture

- It helps an organization achieve its business strategy

- Faster time to market for new innovations and capabilities

- More consistent business processes and information across business units

- More reliability and security, less risk

Source: "Why Enterprise Architecture Matters?", The Open Group White Paper, W076

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Business Benefits of Enterprise Architecture

- A more efficient business operation
- A more efficient IT operation
- Better return on existing investment,
- Reduced risk for future investment
- Faster, simpler, and cheaper procurement

See also: "Why Enterprise Architecture Matters?", The Open Group White Paper, W076

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The Importance of Governance

- An Enterprise Architecture is only as good as the decision making framework that is established around it → "governance" framework

- The Governance Framework depends on
  - Clear authority structure
  - The right participants
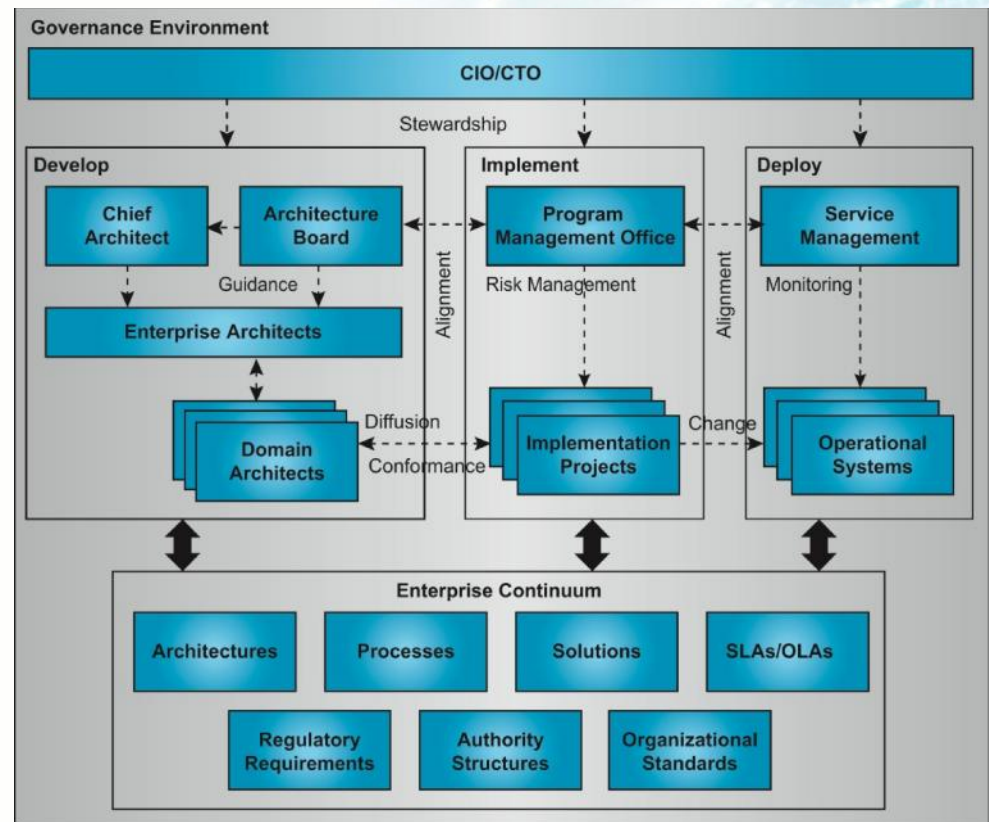
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What do we mean by Governance?

- The way in which decisions are made

- Who is responsible?
- Who is involved?
- Who is accountable?

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What is an Architecture Framework?

- Definition 3.13: Architecture Framework
  - *A conceptual structure used to develop, implement and sustain an enterprise architecture*
- It should describe a method for designing target state of the enterprise in terms of a set of building blocks, and for showing how the building blocks fit together
- It should contain a set of tools and provide a common vocabulary
- It should also include a list of recommended standards and compliant products that can be used to implement the building blocks

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The Value of a Framework

- Provides a practical starting point for an Architecture Project
  - Avoids the initial panic when the scale of the task becomes apparent
  - Systematic – "Codified common sense"
  - Captures what others have found to work in real life
  - Contains a Baseline set of resources for reuse

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Enterprise Architecture Development Method

A comprehensive general method

Complementary to, not competing with, other frameworks

Widely adopted in the market

Tailorable to meet an organization and industry needs

Available under a free perpetual license

Vendor, tool and technology neutral open standard

Avoids re-inventing the wheel

Business IT alignment
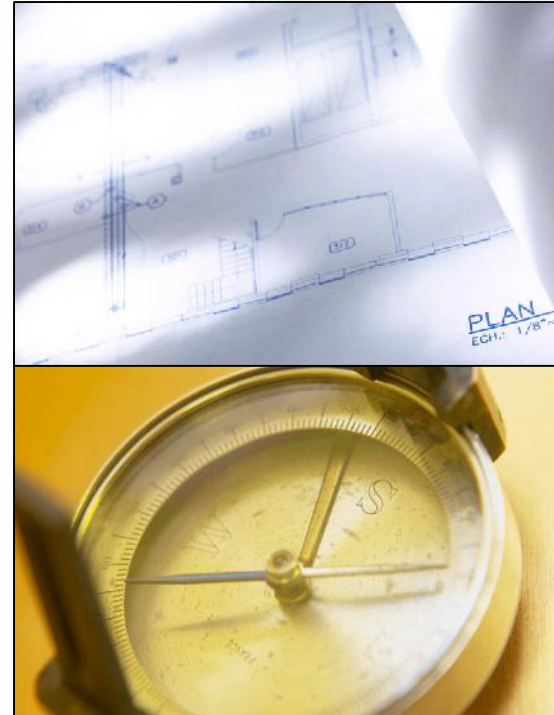
Based in best practices

Possible to participate in the evolution of the framework
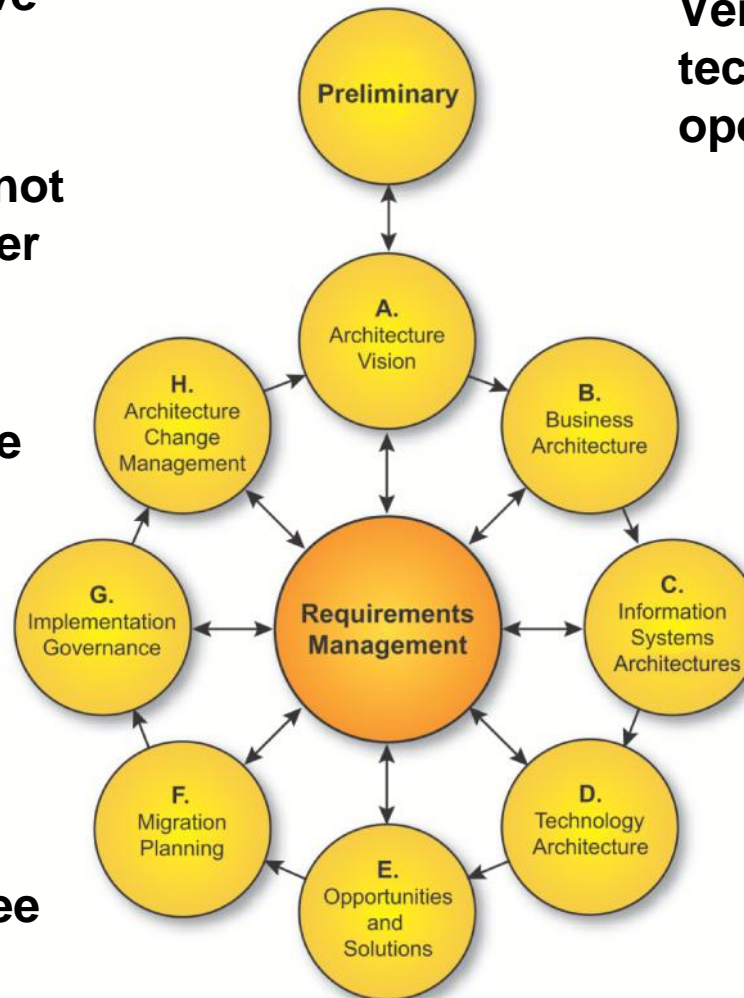
Preliminary

A. Architecture Vision

H. Architecture Change Management

B. Business Architecture

G. Implementation Governance

Requirements Management

C. Information Systems Architectures

F. Migration Planning

D. Technology Architecture

E. Opportunities and Solutions

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TOGAF Origins

- A <u>customer</u> initiative

- A <u>framework</u>, not an architecture
  - A generic framework for developing architectures to meet different business needs
  - <u>Not</u> a "one-size-fits-all" architecture

- Originally based on TAFIM (U.S. DoD)

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TOGAF Development

1994	Requirement	Proof of need
1995	TOGAF Version 1	Proof of concept
1996	TOGAF Version 2	Proof of application
1997	TOGAF Version 3	Relevance to practical architectures (building blocks)
1998	TOGAF Version 4	Enterprise Continuum (TOGAF in context)
1999	TOGAF Version 5	Business Scenarios (architecture requirements)
2000	TOGAF Version 6	Architecture Views (IEEE Std 1471)

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TOGAF Development

2001	TOGAF Version 7	Architecture Principles; Compliance Reviews
2002	TOGAF Version 8	Extension to Enterprise Architecture
2003	TOGAF Version 8.1	Requirements Management; Governance; Maturity Models; Skills Framework
2006	TOGAF Version 8.1.1	Technical Corrigendum 1 applied
2009	TOGAF Version 9	Evolutionary restructure; Architecture Content Framework
2011	TOGAF Version 9.1	Technical Corrigendum 1 applied

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Member (End User) Driven

- Customer members demand architecture standards …
  - Customer members select TAFIM as preferred starting point…
  - DoD Information Systems Agency (DISA) donate TAFIM as base
    - TOGAF first published
      - TOGAF 7 – Technical Edition

'93   '94   '96   '01   '02   '03   '06   '09   '11

TOGAF 9 Enterprise Edition

TOGAF 9.1

TOGAF 8.1.1

- The Interoperable Enterprise Business Scenario first published

TOGAF 8 – Enterprise Edition First TOGAF Certification Program Launched
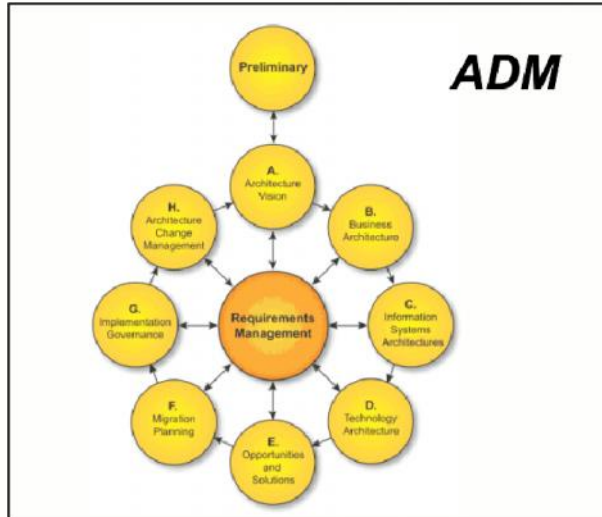
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TOGAF Scope

- TOGAF emphasizes business goals as architecture drivers, and provides a repository of best practice, including:
    - **TOGAF Architecture Development Method (ADM)**
    - **ADM Guidelines & Techniques**
    - **TOGAF Architecture Content Framework**
    - **Enterprise Continuum**
    - **TOGAF Reference Models**
    - **TOGAF Capability Framework**

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TOGAF Goals

- ## Long-term:
  - An industry standard, generic enterprise architecture method….
  - ….usable on its own or in conjunction with frameworks having products relevant/specific to particular sectors.
    - Several frameworks have mind share:
      - Zachman, Spewak, DoD Framework, FEAF, TEAF, …
    - Almost all focus on products, not method
    - TOGAF <u>and</u>…. (not TOGAF <u>or</u>….)

- ## Version 9:
  - An evolution from TOGAF 8.1.1. Closer alignment with the business. Restructuring for ease of use. Overall structure and core method for enterprise architecture that can be filled out in future years.

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TOGAF 9 Components
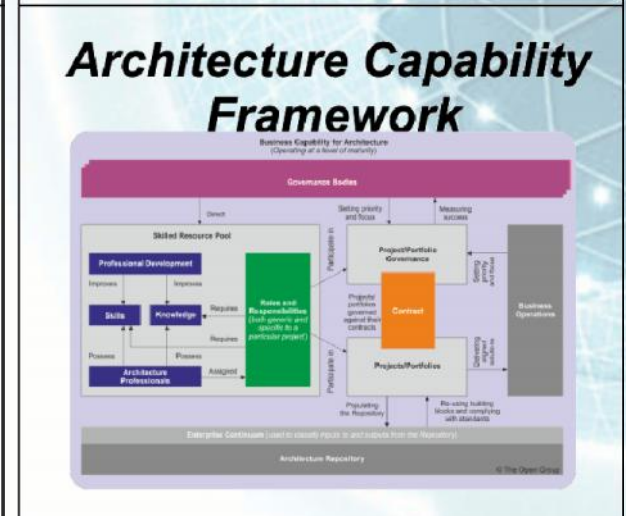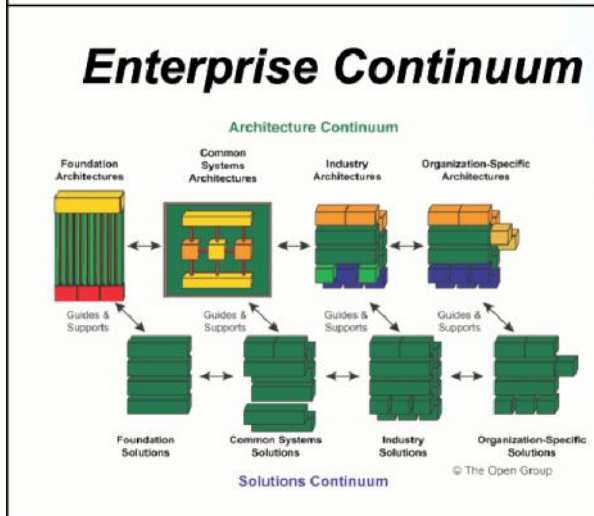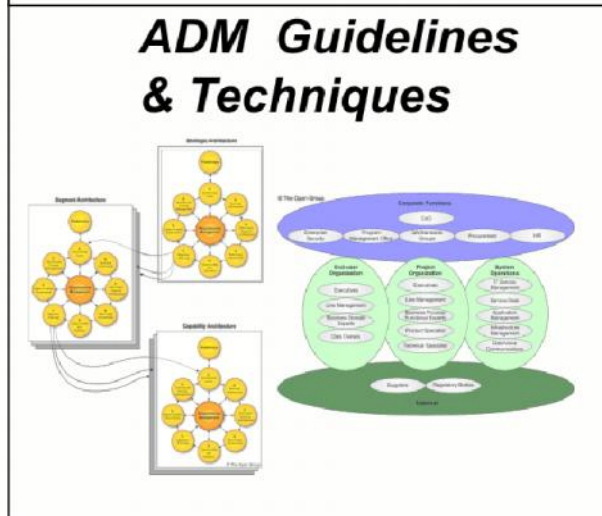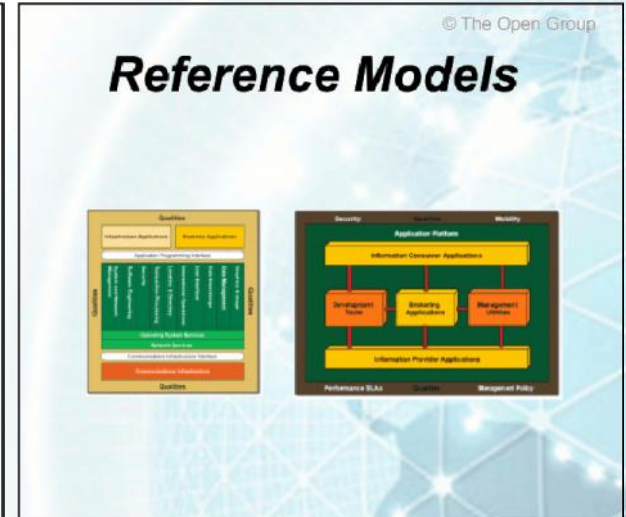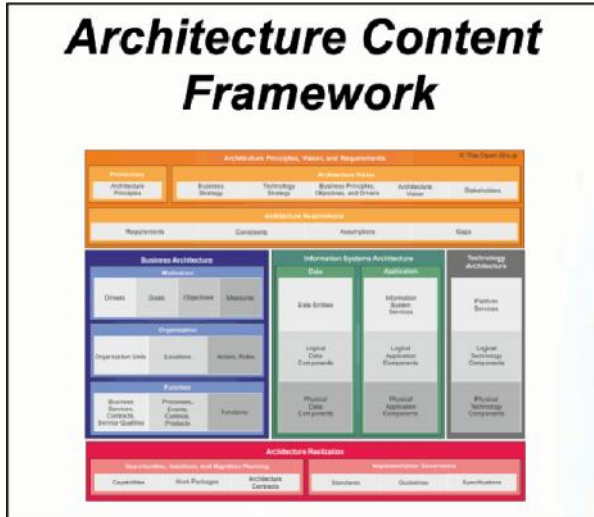
TOGAF 9.1 Standard

Part I - Introduction
Preface, Executive Overview, Core Concepts, Definitions and Release Notes
Part II – Architecture Development Method
Introduction to ADM
ADM Phase Narratives
Part III – ADM Guidelines and Techniques
Guidelines for Adapting the ADM Process
Techniques for Architecture Development
Part IV – Architecture Content Framework
Architecture Content Metamodel
Architectural Artifacts
Architecture Deliverables
Building Blocks
Part V – Enterprise Continuum and Tools
Enterprise Continuum
Architecture Partitioning
Architecture Repository
Tools for Architecture Development
Part VI – TOGAF Reference Models
Foundation Architecture: Technical Reference Model
Integrated Information Infrastructure Reference Model
Part VII – Architecture Capability Framework
Architecture Board
Architecture Compliance
Architecture Contracts
Architecture Governance
Architecture Maturity Models
Architecture Skills Framework

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TOGAF 9 Components

- **Architecture Development Method (ADM)**
  - An iterative sequence of steps to develop an enterprise-wide architecture

- **ADM Guidelines and Techniques**
  - Guidelines and techniques to support the application of the ADM

- **Architecture Content Framework**
  - A detailed model of architectural work products, including deliverables, artifacts within deliverables, and the Architecture Building Blocks (ABBs) that deliverables represent.
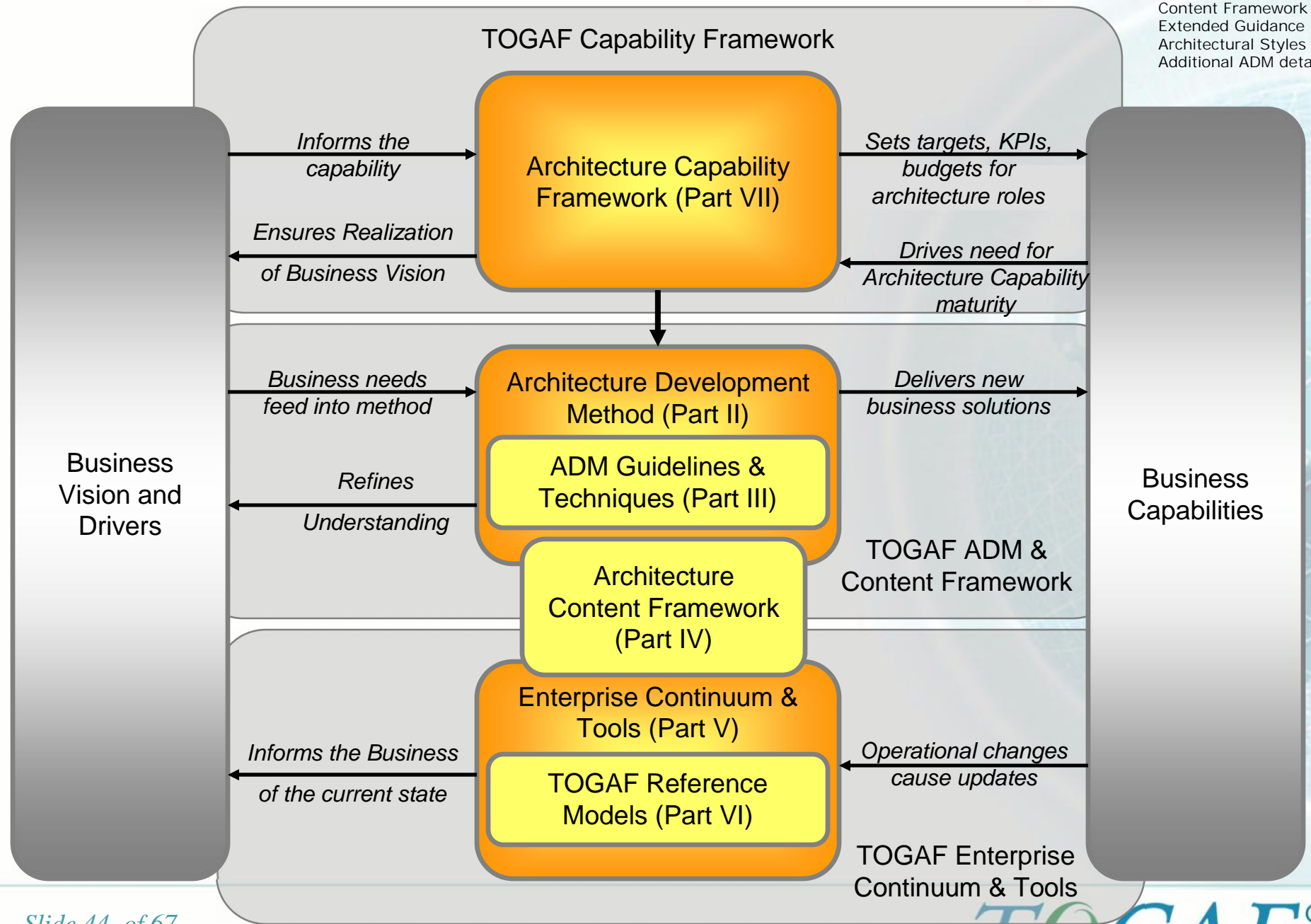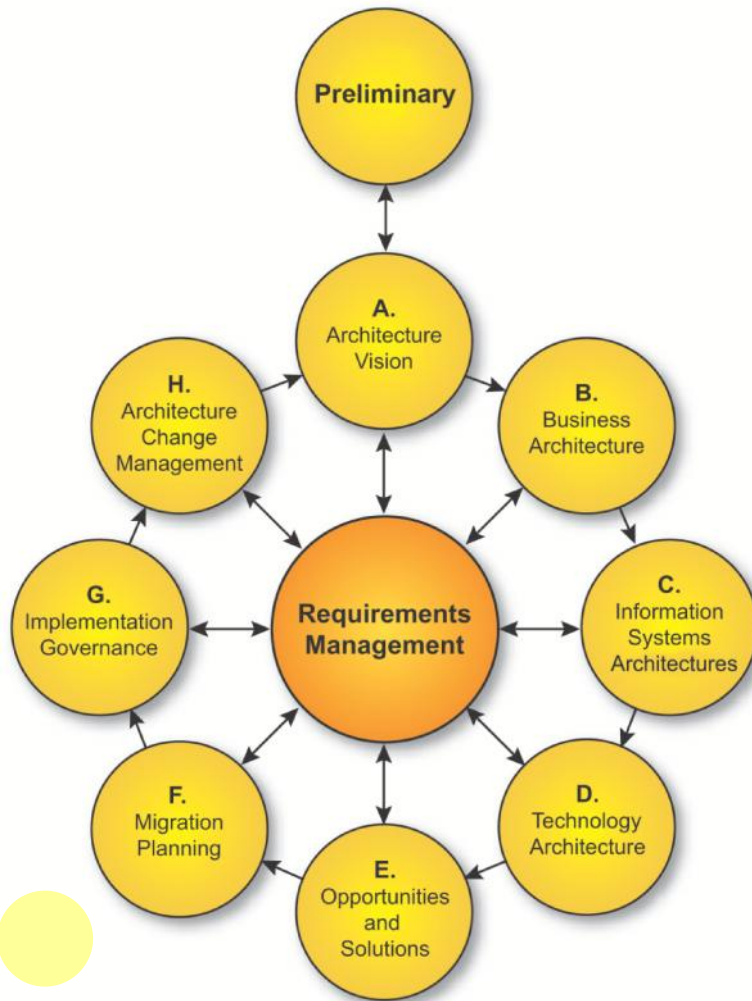
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TOGAF 9 Components

- ## The Enterprise Continuum

  - A model for structuring a virtual repository and methods for classifying architecture and solution artifacts

- ## TOGAF Reference Models:

  - The TOGAF **Technical Reference Model** (TRM)

  - The **Integrated Information Infrastructure Model** (III-RM).

- ## The Architecture Capability Framework

  - A structured definition of the organizations, skills, roles and responsibilities to establish and operate an Enterprise Architecture.

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TOGAF Capability Framework

Modular Structure
Content Framework
Extended Guidance
Architectural Styles
Additional ADM detail

Architecture Capability Framework (Part VII)

Business Vision and Drivers

Business Capabilities

Informs the capability

Ensures Realization of Business Vision

Sets targets, KPIs, budgets for architecture roles

Drives need for Architecture Capability maturity

Architecture Development Method (Part II)

ADM Guidelines & Techniques (Part III)

Business needs feed into method

Refines Understanding

Delivers new business solutions

TOGAF ADM & Content Framework

Architecture Content Framework (Part IV)

Enterprise Continuum & Tools (Part V)

TOGAF Reference Models (Part VI)

Informs the Business of the current state

Operational changes cause updates

TOGAF Enterprise Continuum & Tools

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ADM – Basic Principles

An iterative method, over the whole process, between phases and within phases

Each iteration = new decisions:
- Enterprise coverage
- Level of detail
- Time horizon
- Architecture asset re-use:
  - previous ADM iterations
  - other frameworks, system models, industry models,…

Decisions based on:
- Competence / resource availability
- Value accruing to the enterprise.

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ADM – Basic Principles
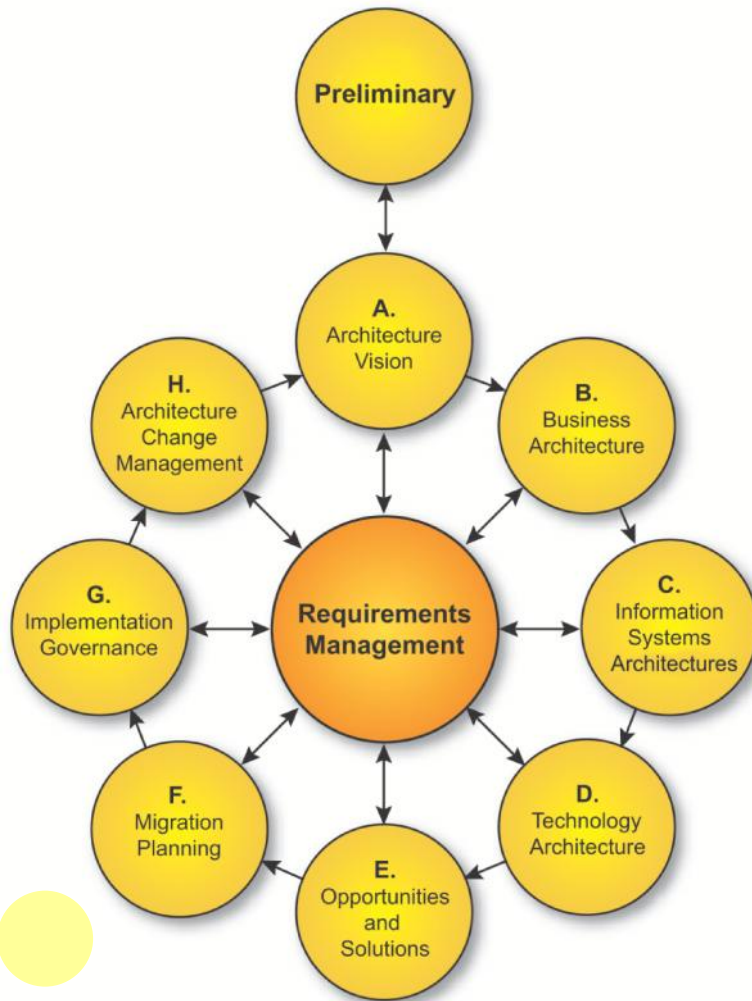
Every phase is validated against and validates the current requirements of the business

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Preliminary Phase
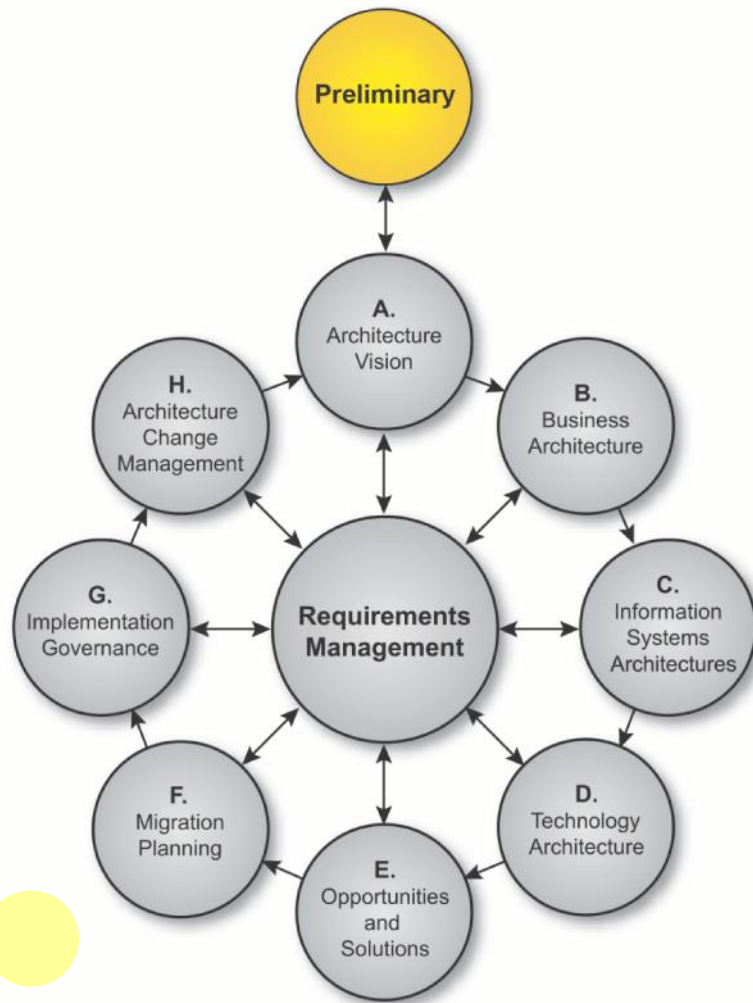
- This phase includes the preparation and initiation activities to create an Architecture Capability
  - Understand business environment
  - High level management commitment
  - Agreement on scope
  - Establish principles
  - Establish governance structure
  - Customization of TOGAF

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Phase A
Architecture Vision
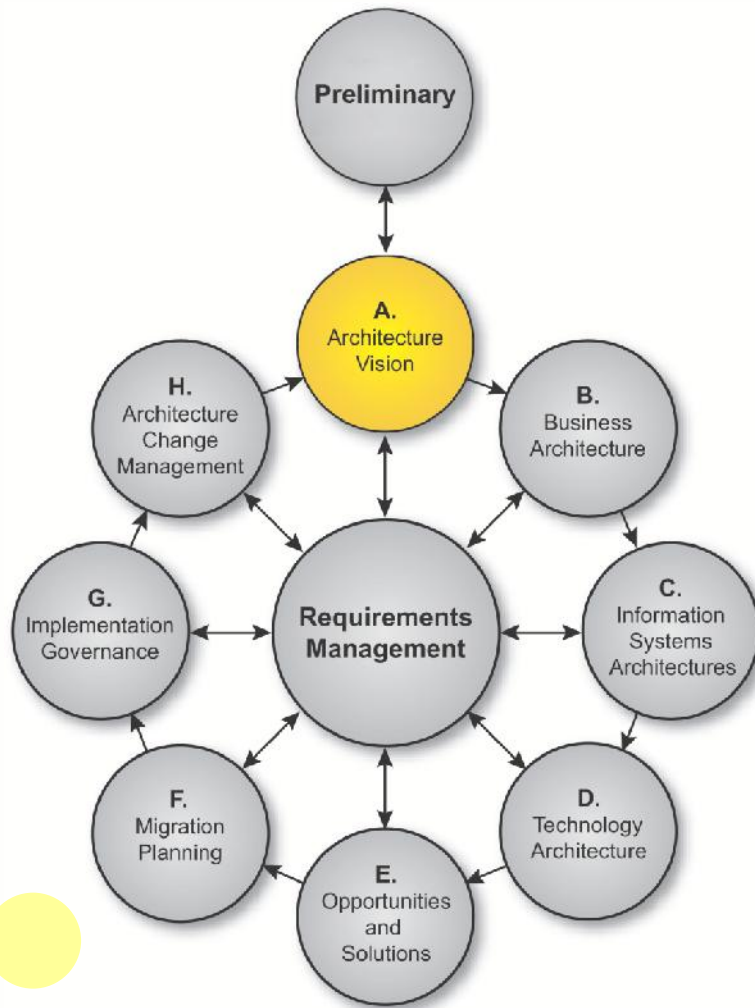
- Initiates one iteration of the architecture process
  – Sets scope, constraints, expectations
  – Required at the start of every architecture cycle
- Create the Architecture Vision
- Validates business context
- Creates Statement of Architecture work

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Phase B
Business Architecture
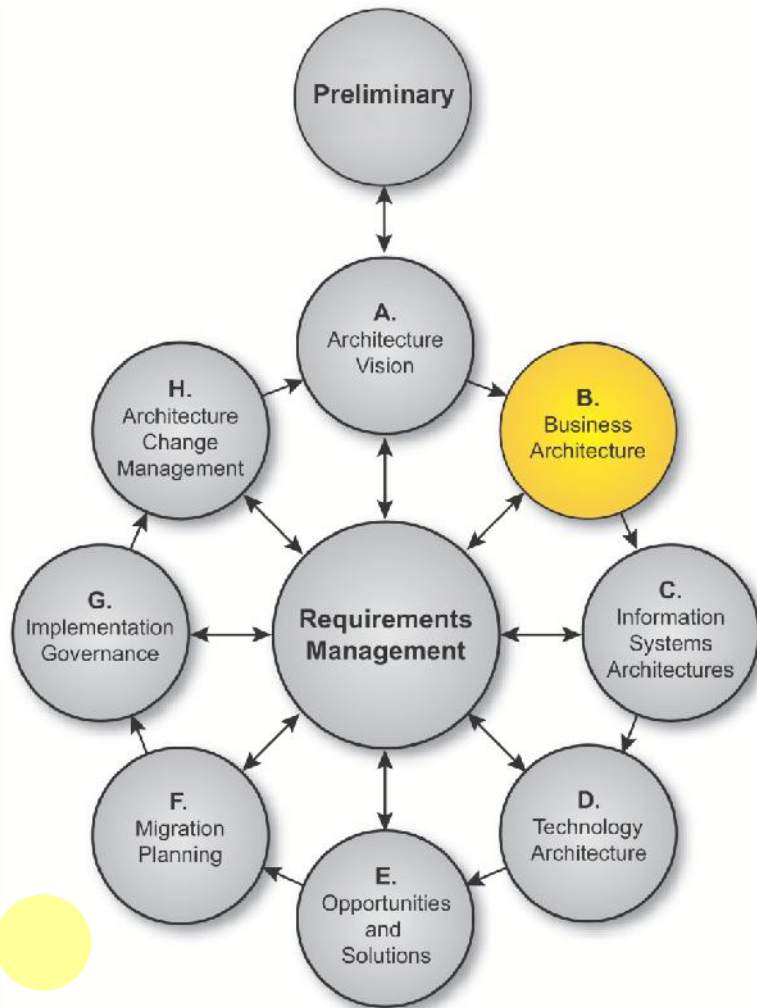
- The fundamental organization of a business, embodied in
  - its business processes and people,
  - their relationships
    - to each other and the environment,
  - and the principles governing its design and evolution
- Shows how the organization meets its business goals

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Business
Architecture - Contents
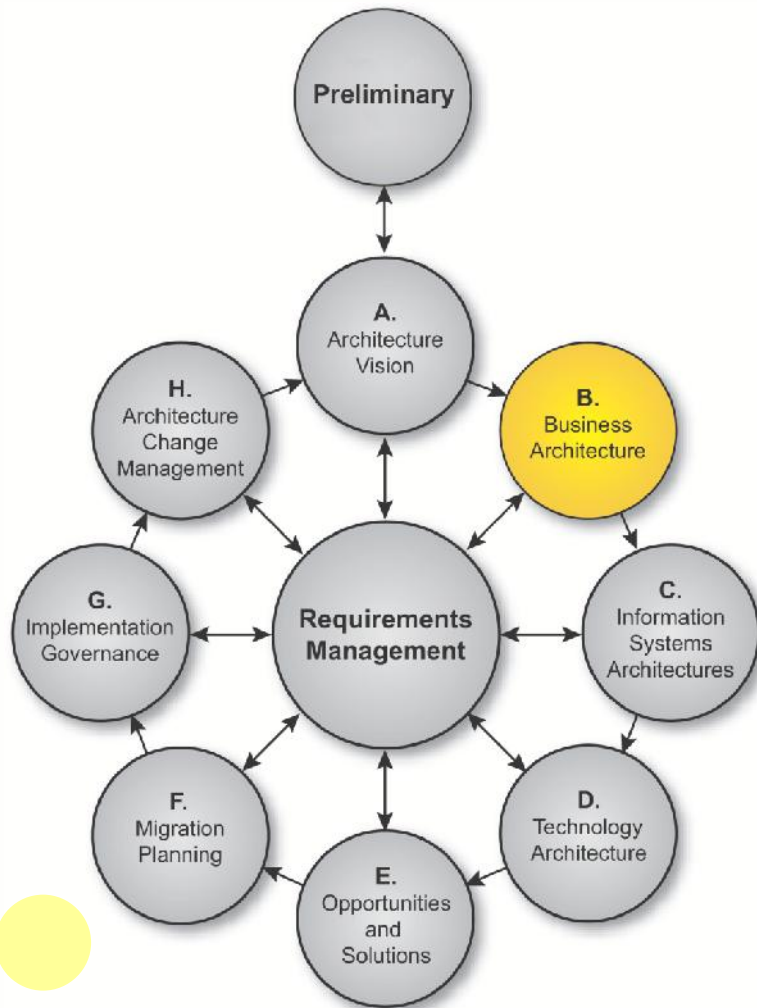
- Organization structure
- Business goals and objectives
- Business functions
- Business Services
- Business processes
- Business roles
- Correlation of organization and functions.

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Business Architecture - Steps
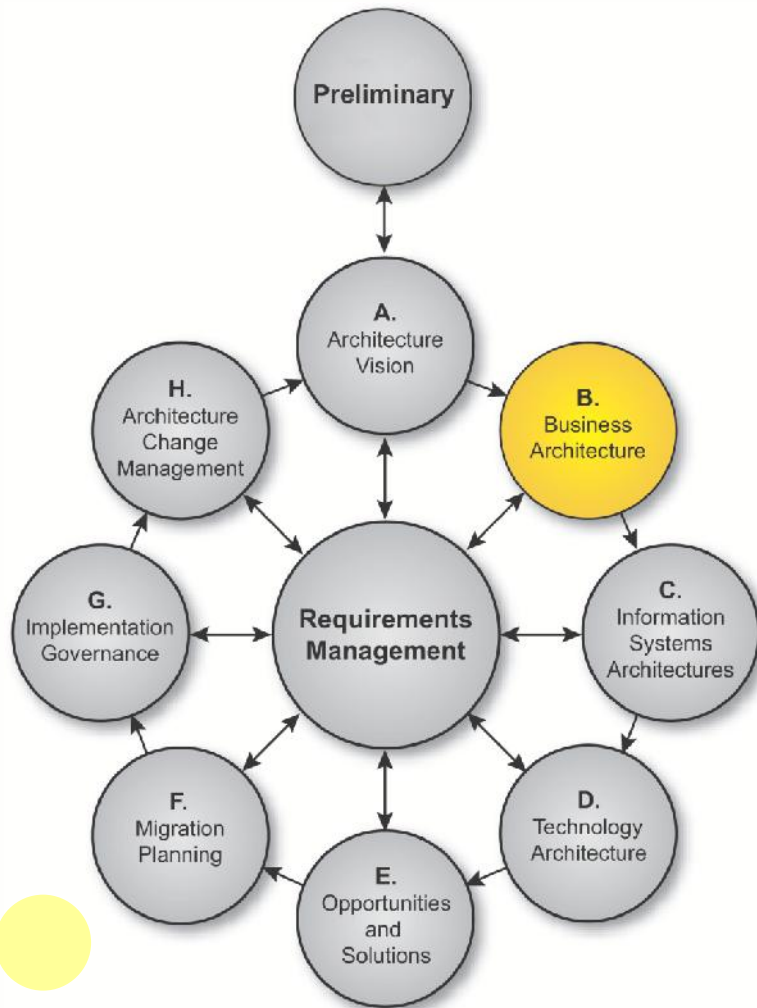
1. Select reference models, viewpoints and tools
2. Define Baseline Architecture Description
3. Define Target Architecture Description
4. Perform gap analysis
5. Define candidate roadmap components
6. Conduct formal stakeholder review
7. Finalize the Architecture
8. Create Architecture Definition Document

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Phase C
Information Systems Architectures
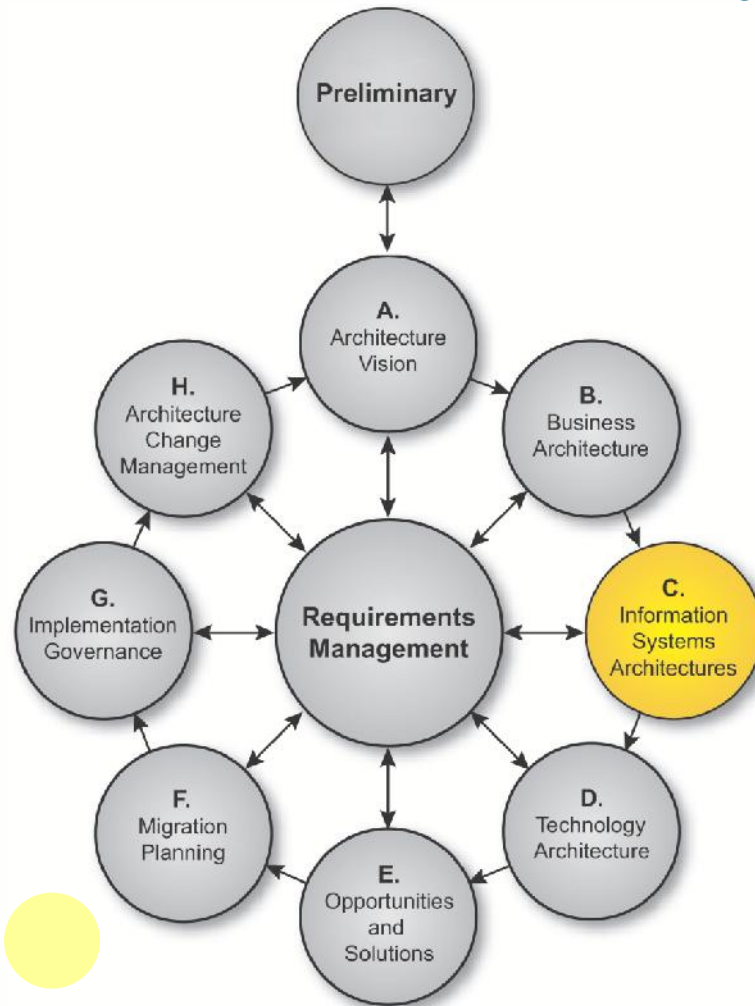
- The fundamental organization of an IT system, embodied in
  - The major types of information and applications that process them
  - relationships to each other and the environment, and the principles governing its design and evolution
- Shows how the IT systems meets the business goals of the enterprise

Continued

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Data or Applications first ?
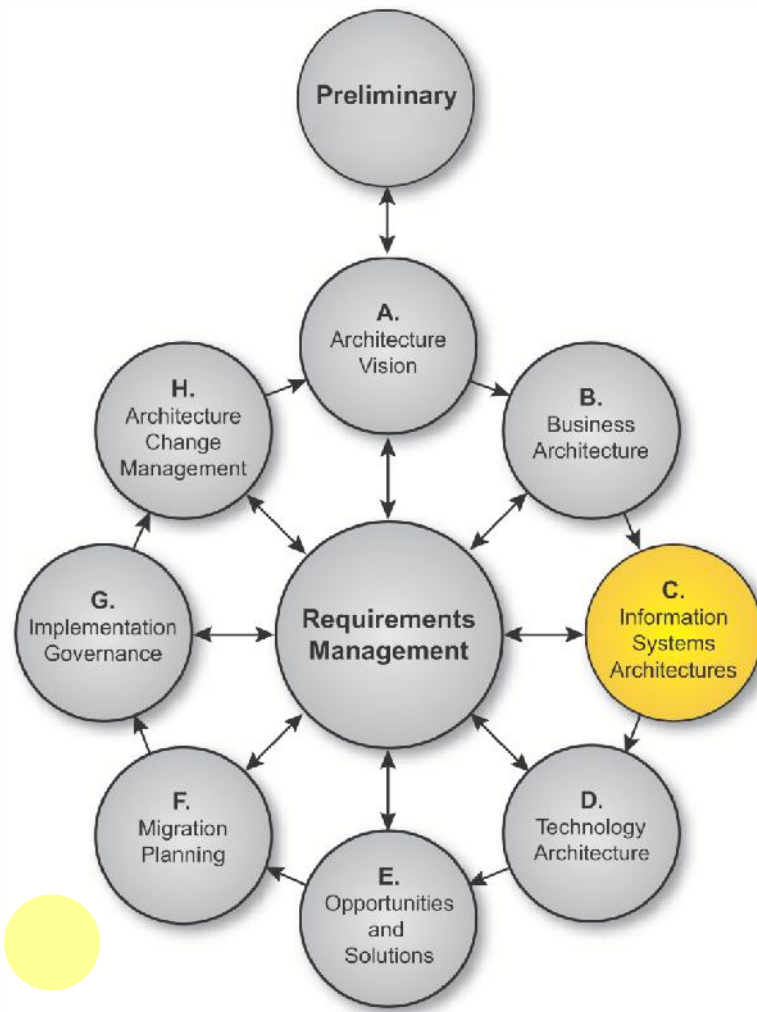
- It is usually necessary to address both
  - Not always the case, depending on project scope and constraints
- May be developed in either order, or in parallel
  - Theory suggests Data Architecture comes first
  - Practical considerations may mean that starting with Application Architecture may be more efficient
- There will need to be some iteration to ensure consistency

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Phase D
Technology Architecture
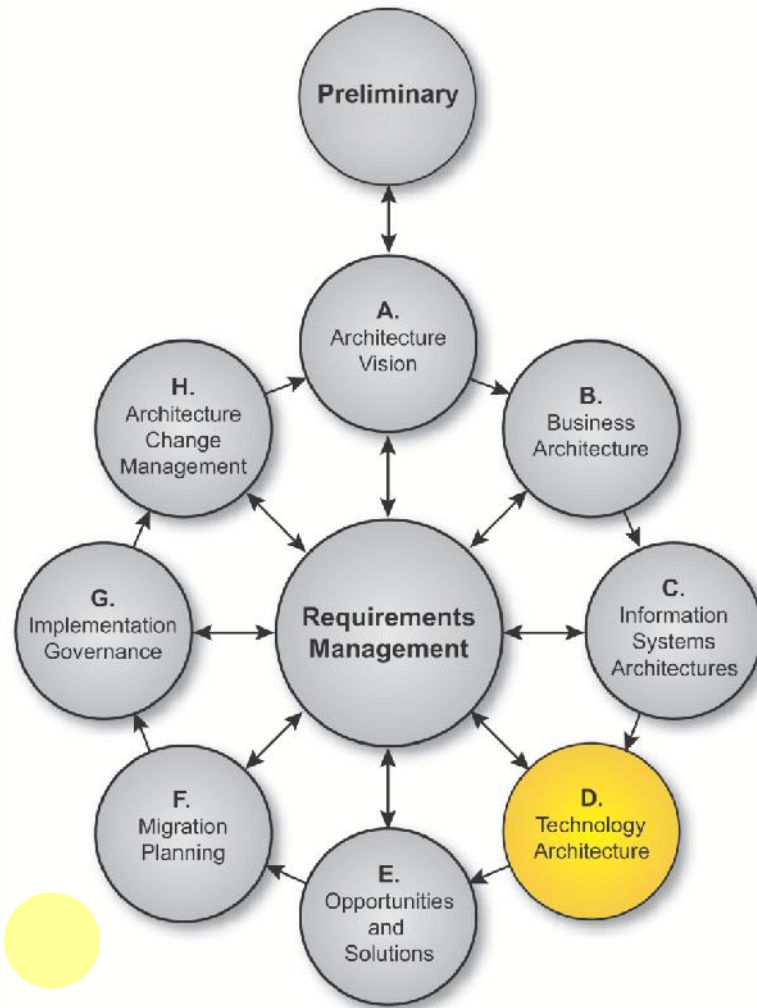
- The fundamental organization of an IT system, embodied in
  - its hardware, software and communications technology
  - their relationships to each other and the environment,
  - and the principles governing its design and evolution

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Phase E
Opportunities and Solutions
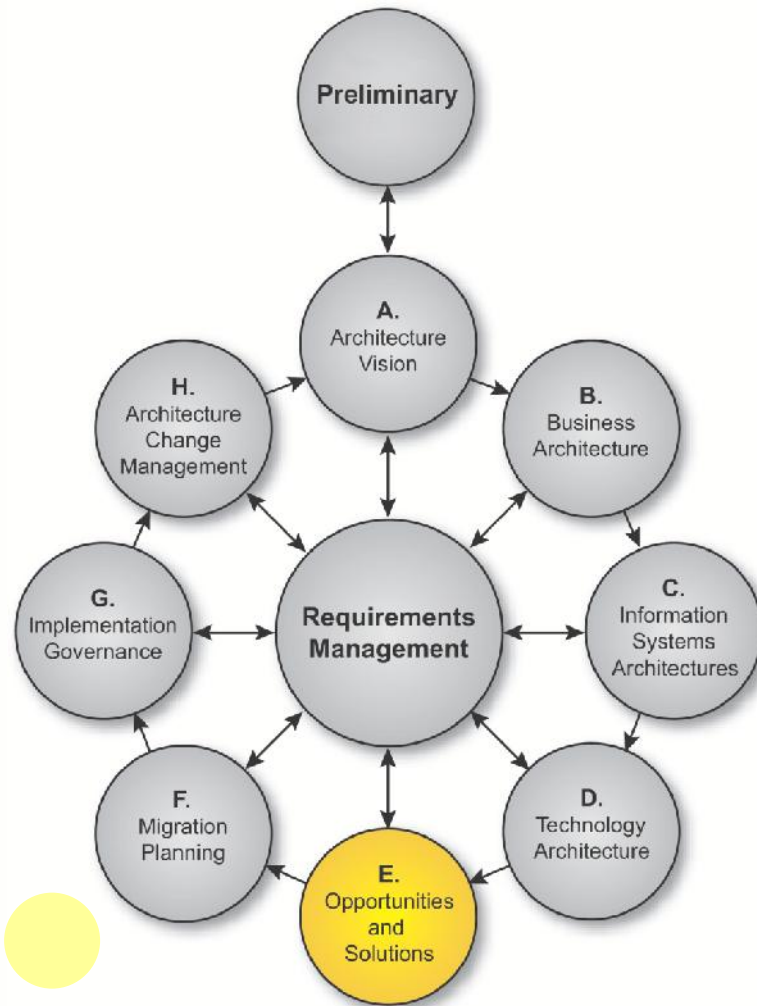
- Perform initial implementation planning
- Identify the major implementation projects
- Determine if an incremental approach is required, if so define Transition Architectures
- Decide on approach
  - Make v Buy v Re-Use
  - Outsource
  - COTS
  - Open Source
- Assess priorities
- Identify dependencies

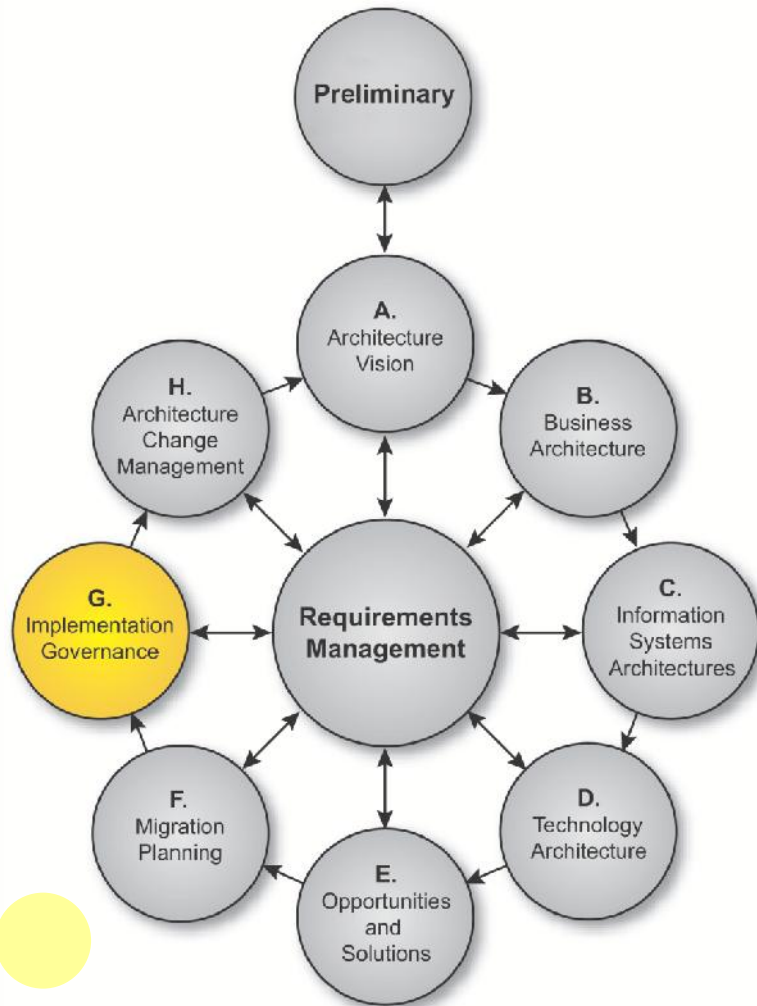TOGAF®

Phase F
Migration Planning
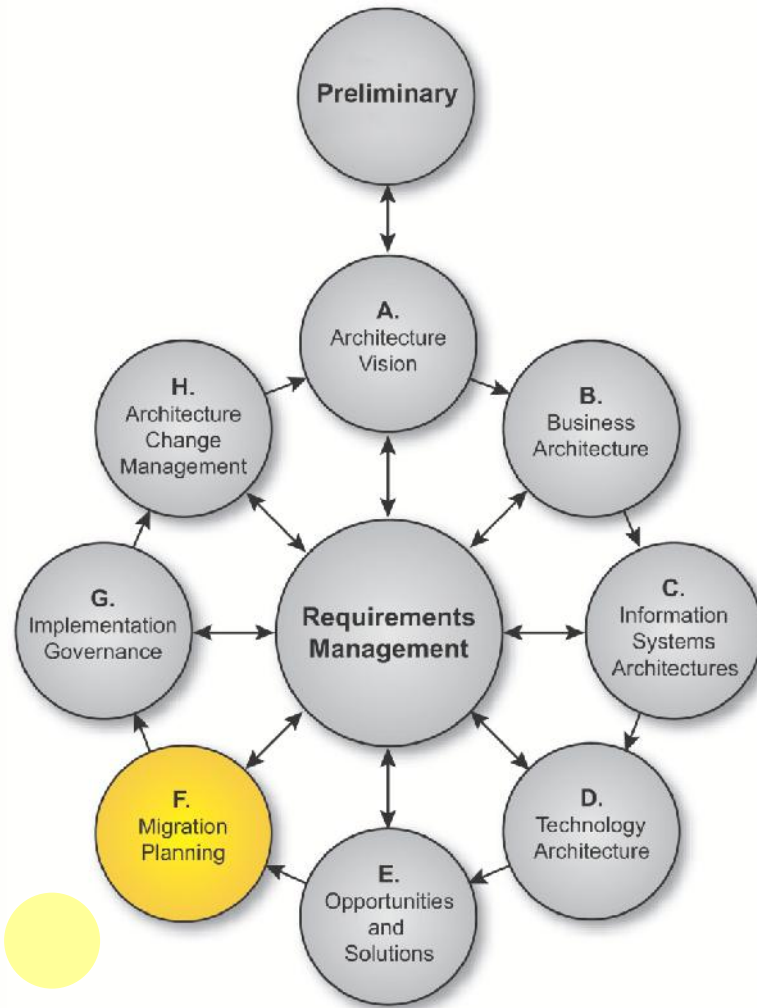
- For work packages and projects identified in Phase E perform
  - Cost/benefit analysis
  - Risk assessment
- Finalize a detailed Implementation and Migration Plan

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Phase G
Implementation Governance

- Provide architectural oversight for the implementation.
- Defines architecture constraints on implementation projects
- Govern and manage an Architecture contract
- Monitors implementation work for conformance
- Produce a *Business Value Realization.*

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Phase H
Architecture Change Management
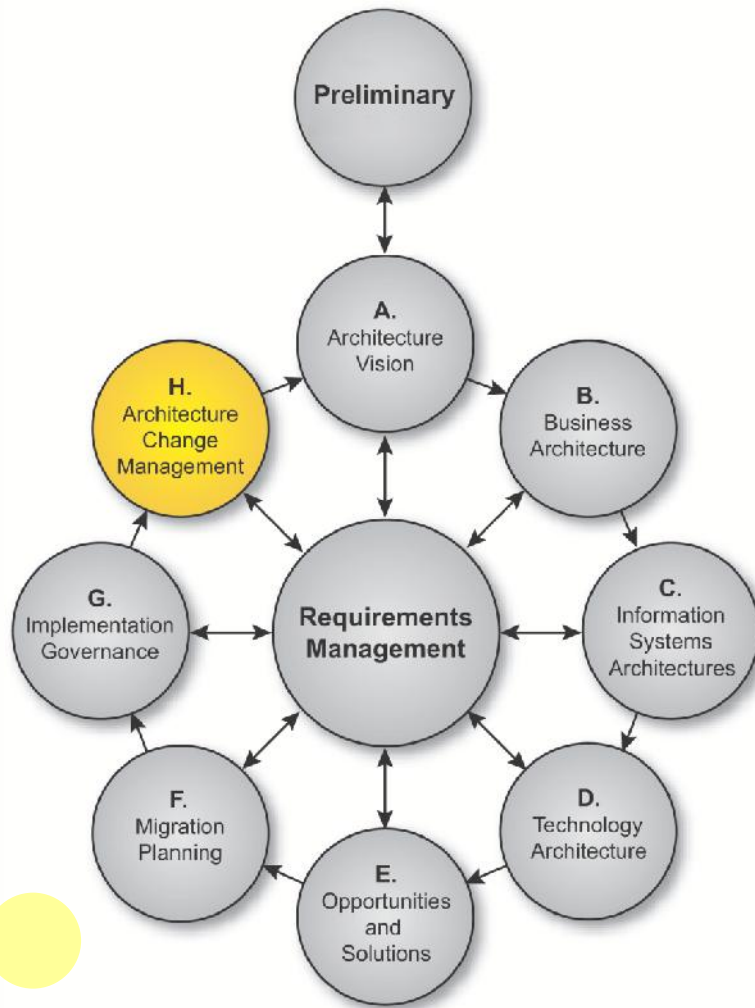
- Provide continual monitoring and a change management process
- Ensures that changes to the architecture are managed in a cohesive and architected way
- Establishes and supports the Enterprise Architecture to provide flexibility to evolve rapidly in response to changes in the technology or business environment
- Monitors the business and capacity management.

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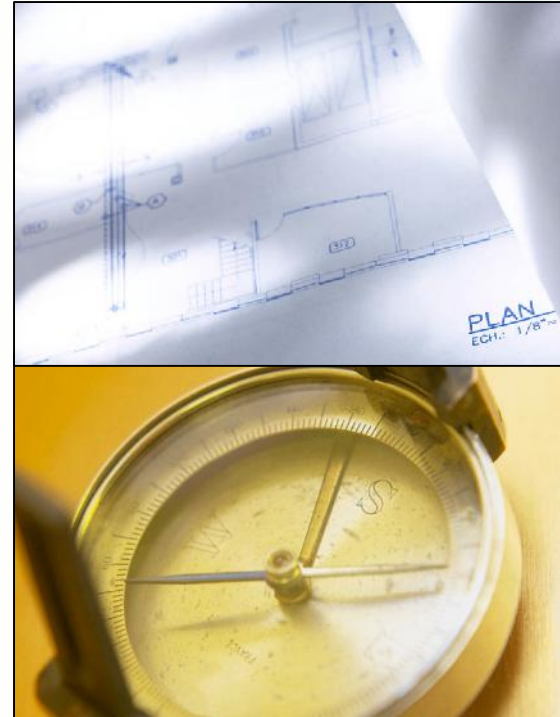
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TOGAF Certification

Certification Level	Purpose
TOGAF 9 Foundation	To provide validation that the candidate has gained knowledge of the terminology and basic concepts of TOGAF 9 and understands the core principles of Enterprise Architecture and TOGAF
TOGAF 9 Certified	To provide validation that in addition to knowledge and comprehension, the candidate is able to analyze and apply knowledge of TOGAF

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TOGAF Foundation
Target Audience

- Individuals who require a basic understanding of TOGAF 9

- Professionals who are working in roles associated with an architecture project such as those responsible for planning, execution, development, delivery and operation

- Architects who are looking for a first introduction to TOGAF 9

- Architects who want to achieve Level 2 certification in a stepwise approach.
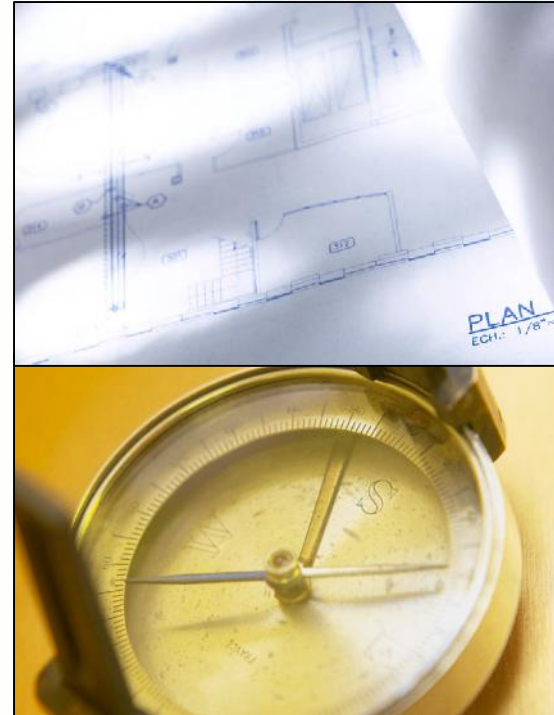
TOGAF®

TOGAF Certified
Target Audience

- Individuals who require a deeper understanding of TOGAF 9;

- Professionals who are working in an organization where TOGAF 9 has been adopted and who need to participate in architecture projects and initiatives;

- Architects who will be responsible for developing architecture artifacts;

- Architects who wish to introduce TOGAF 9 into an architecture practice;

- Architects who want to achieve a recognized qualification to demonstrate their detailed knowledge of TOGAF 9.

TOGAF®

Some Figures about TOGAF

- Developed by 300+ organisations worldwide involved in its development
  - Large IT users
  - IT vendors
  - System Integrators
  - Academics
- Used in major IT projects worldwide
  - IBM, HP, Sun, Infosys, …..
- Community of knowledgeable TOGAF practitioners
  - More than 16000 certified
- Supported by Architecture Tools

TOGAF®

Agenda

- The Open Group
- The Architecture Forum
- Why Enterprise Architecture
- Why a Framework
- TOGAF 9.1
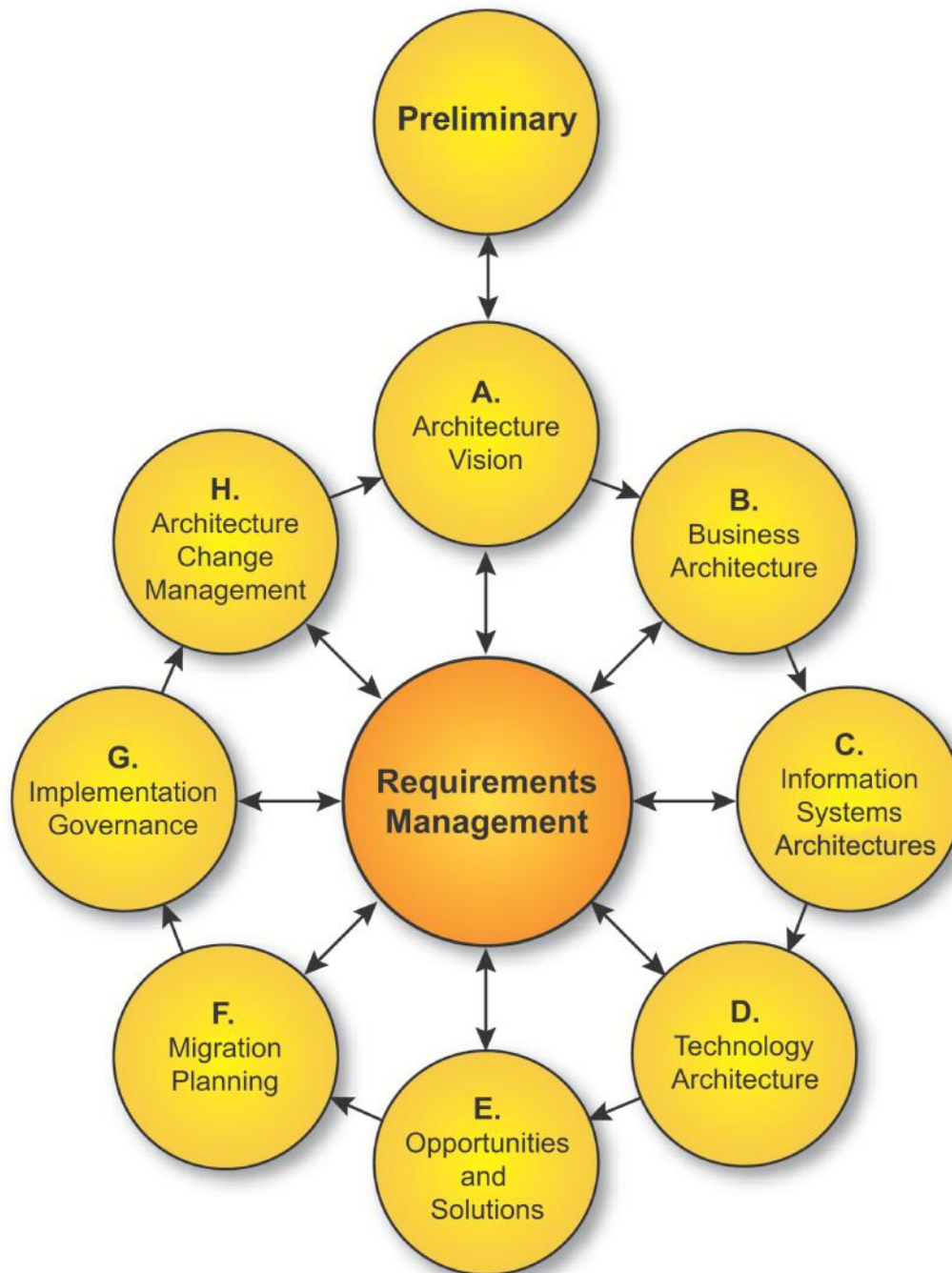- TOGAF 9 Certification
- Summary

TOGAF®

Summary

TOGAF®, an Open Group Standard, is…

- An effective, industry standard framework and <u>method</u> for enterprise architecture.

- Complementary to, not competing with, other enterprise frameworks

- A repository of best practice

    – "Demystifies" architecture development

- Vendor, tool, and technology neutral

- A framework and method for achieving the "Boundaryless Information Flow" vision

TOGAF®

For More Information . . .

- ## The TOGAF Web Site
  - http://www.opengroup.org/togaf/

- ## The Architecture Forum
  - http://www.opengroup.org/architecture/

- ## TOGAF Version 9.1 on-line
  - http://www.opengroup.org/architecture/togaf9-doc/arch/

- ## TOGAF Version 9.1 licensing and downloads
  - http://www.opengroup.org/togaf/

TOGAF®

Management Overview

TOGAF®