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Module 32
Adapting the ADM: SOA

THE Open GROUP

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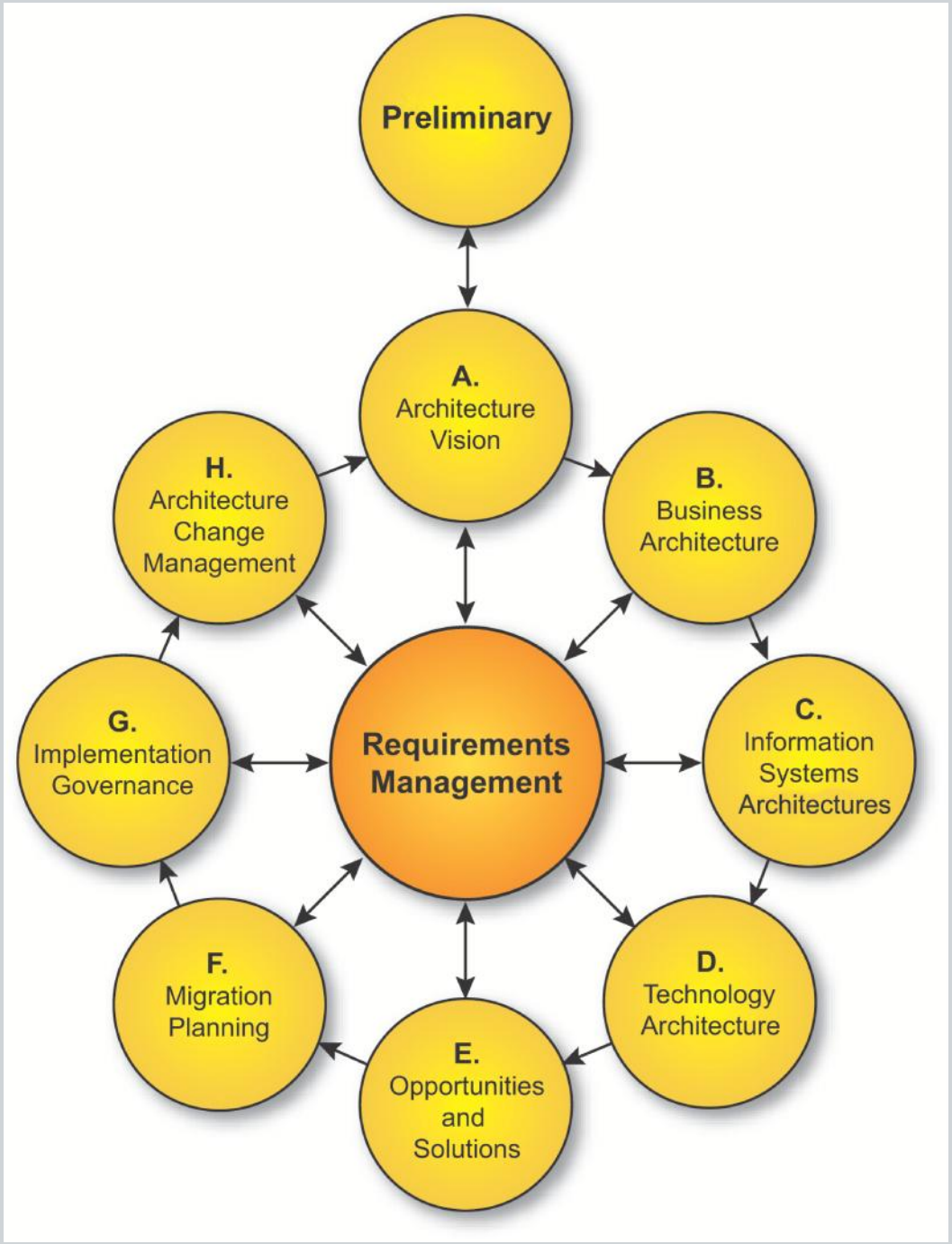
Adapting the ADM: SOA



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Roadmap

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
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 – 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

- Part III, ADM Guidelines and Techniques, Chapter 22

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Module Objectives

The objectives of this module are:

- Obtain an understanding of how the ADM can be adapted for the SOA style of architecture
  - SOA as an architectural style
  - How Enterprise Architecture supports SOA
  - The recommended SOA adaptations to the ADM

What is Service Oriented Architecture?

- An *architectural style* that supports *service orientation*
- *Architectural Style*
  - The combination of distinctive features in which architecture is performed or expressed.
- *Service Orientation*
  - A way of thinking in terms of services and service-based development and the outcomes of services.

What is Service Oriented Architecture?

- It has the following distinctive features:
  - It is based on the design of the services
  - Service representation utilizes business descriptions to provide context and implements services using service orchestration.
  - It places unique requirements on the infrastructure
  - Implementations are environment-specific - they are constrained or enabled by context and must be described within that context.
  - It requires strong governance of service representation and implementation.
  - It requires a "Litmus Test", which determines a "good service".

SOA as an Architectural Style

- Is intended to simplify the business
  - Including interoperation of parts of the business
- Allows for identification of functional capabilities of an organization
- Can be used to avoid duplication of similar capabilities across an organization
- Allows for applications to be structured so facilitate flexibility and agility

Complexities arising from SOA

- It creates a more fine-grained IT Landscape
  - 100s or 1000s of services to manage as opposed to 10s or 100s of applications
- New Stress points are created:
  - Understanding the relationships between technology portfolio and service portfolio
  - SLA definition, governance, and impact management
  - Tracing business to IT
  - Communication, alignment, and semantics
  - Platform and interoperability
  - Performance, visibility and optimization

How EA supports SOA

- Enterprise architecture supports SOA by providing frameworks, tools, and techniques
- Key benefits provided by using EA for SOAs include:
  - Consistent abstractions of strategies and deliverables to support planning and analysis
  - The ability to link different perspectives to a single business problem providing a consistent model to address various domains and tests for completeness
  - Identification of clear roadmaps to achieve future state
  - Traceability that links IT and other assets to the business they support
  - Support for impact assessment, risk/value analysis, and portfolio management
  - Identified and documented principles, constraints, frameworks, patterns, and standards
  - Governance frameworks and process that ensure the appropriate authority for decision-making

How EA supports SOA (Cont'd)

- Enterprise architecture provides the context and analysis capabilities to:
  - Show how SOA solutions can be effectively architected to support business capabilities
  - Show which services should be built and which should be re-used
  - Show how services should be designed

Adapting the ADM for SOA

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Preliminary Phase

- *This is where the Architecture Capability is adapted to support SOA*
- Principles
  - Service Orientation
- Determining Organization Readiness for SOA
  - OSIMM
- Governance
  - The Open Group SOA Governance Model and Vitality Method
- Adapting Reference Architectures to the Organization:
  - The SOA Reference Architecture
- Establishing a SOA Center of Excellence as an initial “Footprint”
  - Consideration for Partitioning

Preliminary Phase Enhancements

Objectives
- Ensure SOA supporting Principles in place
- Ensure SOA Governance in place

Inputs
- Existing SOA Reference Architectures
- Existing industry SOA Maturity models
- Existing SOA Governance Frameworks
- Existing Industry best practice SOA principles

Steps
- Identify and establish Principles
  - SOA supporting Principles
- Confirm governance
  - Refer to The Open Group SOA Governance Framework, and specifically the SOA Governance Vitality Method (SGVM)
- Evaluate SOA Maturity
  - Use The Open Group Service Integration Maturity Model (OSIMM)
- Define and establish architecture organization
  - Establish an SOA Center of Excellence

Outputs
- SOA Maturity Assessment
- Architecture principles
  - including SOA principles
- Architecture Governance Framework
  - The Open Group SOA Governance Framework

Phase A: Architecture Vision

- The Architecture Vision will reflect SOA
- One difference is the style of language used
  - The Open Group SOA Ontology provides a taxonomy and ontology for SOA
- It is important to ensure that stakeholders understand the implications of SOA and are prepared for the organizational impacts of SOA services

Phase A Enhancements

Objectives
•No additional objective material

Inputs
•Organizational Model
- SOA Centre of Excellence
- SOA Maturity Assessment
- SOA Readiness Assessment
- SOA Governance

•Tailored Architecture Framework
- SOA meta-model extensions
- SAO Reference Architecture

•Available higher-level (Strategic/ Segment) architecture

Steps
•Identify stakeholder concerns
- SOA specific concerns

•Define scope
- Ensure scope is appropriate for SOA
- Tailor deliverables to level of architecture

•Evaluate Business Capabilities
- SOA readiness

•Confirm Principles
- SOA supporting Principles

Outputs
•Statement of Architecture Work
- with SOA as an approach

•Architecture principles
- including SOA principles

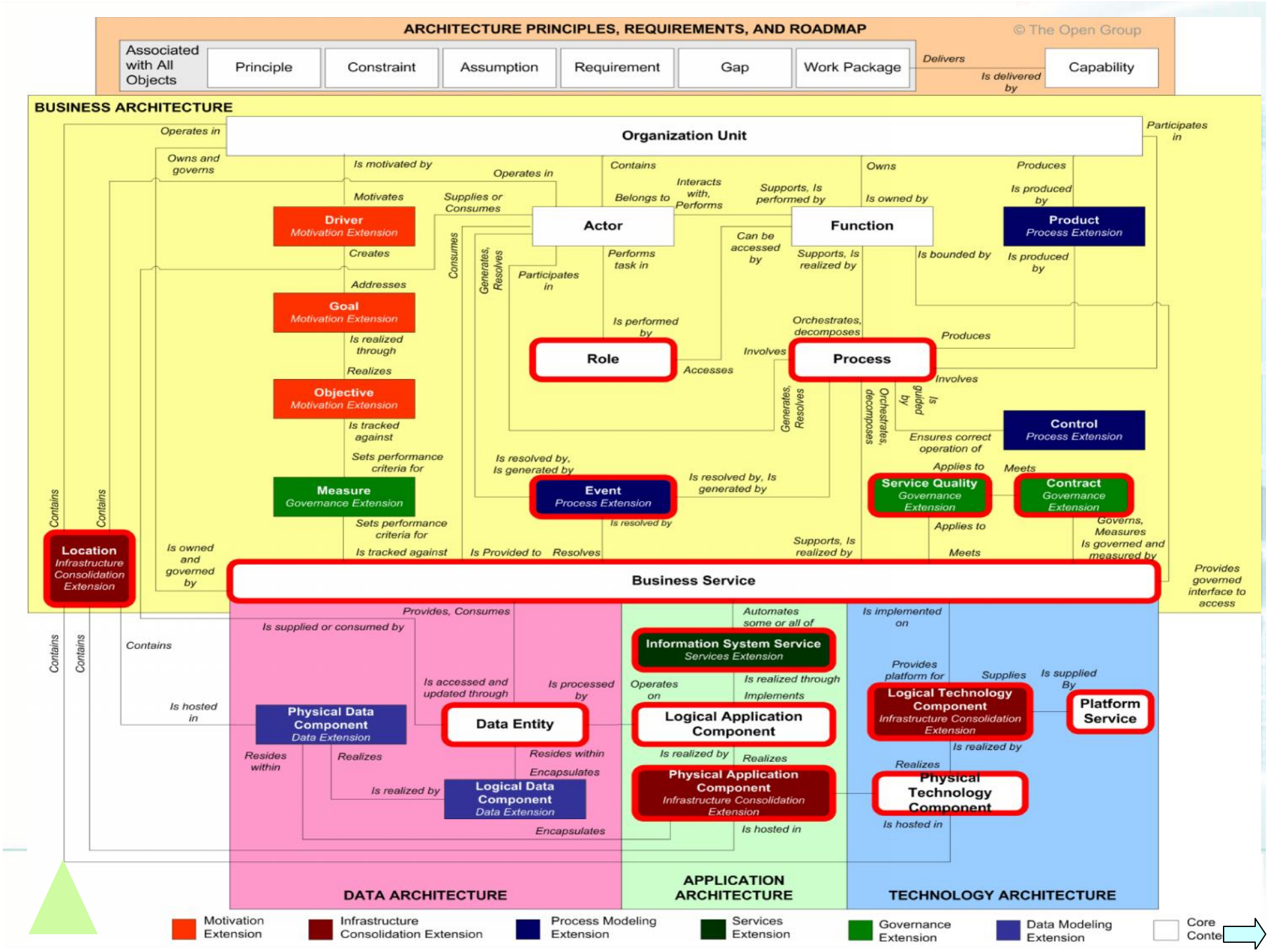
•Capability assessment
- including SOA readiness

•Architecture Vision
- with SOA thinking

•Additional content populating the Architecture Repository
- including SOA Reference Architecture

Architecture Development: Phases B,C and D

- There are a number of Metamodel entities that are key to SOA
- It is typically necessary to extend the Metamodel to fully support SOA


ARCHITECTURE PRINCIPLES, REQUIREMENTS, AND ROADMAP
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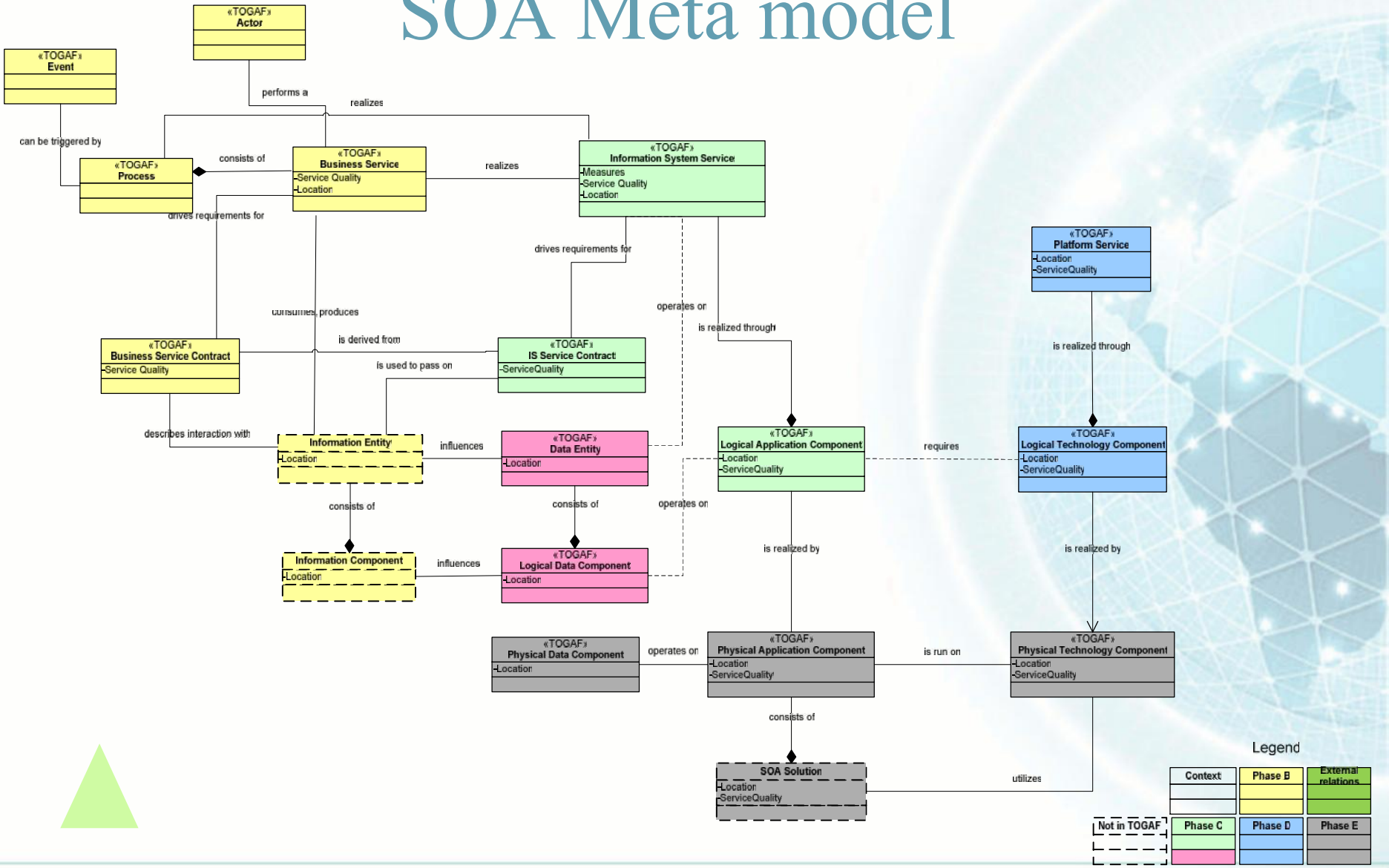
Associated with All Objects
Principle
Constraint
Assumption
Requirement
Gap
Work Package
Delivers
Is delivered by
Capability
BUSINESS ARCHITECTURE
Organization Unit
Driver
Motivation Extension
Goal
Motivation Extension
Objective
Motivation Extension
Measure
Governance Extension
Actor
Role
Function
Process
Event
Process Extension
Product
Process Extension
Control
Process Extension
Service Quality
Governance Extension
Contract
Governance Extension
Location
Infrastructure Consolidation Extension
Business Service
Data Entity
Physical Data Component
Data Extension
Logical Data Component
Data Extension
Information System Service
Services Extension
Logical Application Component
Physical Application Component
Infrastructure Consolidation Extension
Logical Technology Component
Infrastructure Consolidation Extension
Physical Technology Component
Platform Service
DATA ARCHITECTURE
APPLICATION ARCHITECTURE
TECHNOLOGY ARCHITECTURE
Motivation Extension
Infrastructure Consolidation Extension
Process Modeling Extension
Services Extension
Governance Extension
Data Modeling Extension
Core Conte

SOA Meta model



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Phase B Artifacts

Artifact	Purpose
Business Service Interaction Diagram	This diagram shows all the business services in scope and their relations and the information flowing between the business services
Business Process Diagram	This is a set of diagrams that show the business processes and their decomposition, their interactions, and the information with which they are concerned.
Business Vocabulary Catalog	List of the key terms used in describing the business processes and information.
Business Services Catalog	This is a list of the enterprise's business services and their functional and non-functional requirements.
Business Service/Location Catalog	To understand where the business services needs to be executed.
Event/Process Catalog	To understand which process is run in relation to an event
Contract/Service Quality Catalog	To understand the non-functional properties of a contract
Business Service Interaction Matrix	To show relations between Business Services
Business Service/Information Matrix	To show how information entities are used by business services and to find faults in that model
Information Component Model	To define the logical structure of the information in the organization.

Phase B Enhancements

Objectives
•No additional objective material

Inputs
•Organizational Model
- SOA Centre of Excellence
- SOA Maturity Assessment
- SOA Readiness Assessment
- SOA Governance

•Tailored Architecture Framework
- SOA meta-model extensions
- SOA Reference Architecture

•Available higher-level (Strategic/ Segment) architecture

Steps
•Select Reference models, viewpoints & tools
- SOA meta-model & content extensions
- Information Entity & Information Component

Outputs
•Validated business Principles
- SOA supporting Principles

•Target Business Architecture
- Business Service (with contract)
- Business Process
- Information Entity
- Information Component

•Draft Architecture Requirements
- Technical requirements for SOA

•Outputs may include
- Business Service Interaction Diagram
- Business Process Diagram
- Business Vocabulary Catalog
- Business Services Catalog
- Business Service/Location catalog
- Event/Process catalog
- Contract/Service Quality Catalog
- Business Service Interaction Matrix
- Business Service/Information matrix
- Information component model

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Phase C
Information Systems Architectures

- SOA make little difference to the Data Architecture
- But has a major impact on Application Architecture
- With SOA, the traditional software applications are replaced by sets of loosely-coupled services
- But SOA is not only about services, it is also the solutions created by using combinations of services
  - These solutions are usually structured using the Business Processes and Business Services defined in Phase B

Phase C Artifacts

Artifact	Purpose
IS Service Interaction Diagram	This shows potential SOA services (IS Services) and the interactions between them, and their use of information.
Business Process/IS Service Matrix	This matrix shows the relation between each Business Process and the IS Services supporting the process
IS Service Contract Catalog	The catalog lists all IS Services, their Contracts and the related Service Qualities to enable analysis of the non-functional requirements for potential SOA Services.
IS Service/Application (existing) catalog	This catalog connects IS Services (potential SOA Services), Contracts and Service Qualities with existing applications (baseline Physical Application Components)
IS Service/Data entity matrix	This matrix shows what data is handled by potential SOA Services (IS Services).
Logical SOA Component Matrix	This matrix shows the relationship between the logical SOA Components (Logical Application Components) and the potential SOA Services (IS Services)
Logical SOA Solution Diagram	This diagram shows the relations between the logical SOA components (Logical Application Components) and other logical solutions (Logical Application Components).
Service Distribution Matrix	This matrix shows the services distributed on physical locations to fulfill legal or other requirement

Phase C Enhancements

Objectives
•Extend Applications section to include 'Applications & Services'

Inputs
•Organizational Model
- SOA Centre of Excellence
- SOA Maturity Assessment
- SOA Readiness Assessment
- SOA Governance

•Tailored Architecture Framework
- SOA meta-model extensions
- SOA Reference Architecture

•Available higher-level (Strategic/ Segment) architecture

Steps
•Select Reference models, viewpoints & tools
•SOA meta-model & content extensions
•IS Service Contract
•Relationship between IS Service & Data Entity

Outputs
•Validated business Principles
- SOA supporting Principles

•Target Information Systems Architecture
- IS Service (with contract)
- Service Portfolio

•Draft Architecture Requirements
- Technical requirements for SOA

•Outputs may include
- Service Interaction Diagram
- Business Process/Service Matrix
- Service Contract Catalog
- IS Service/Application (existing) catalog
- IS Service/Data entity matrix
- Logical SOA Component Matrix
- Logical SOA Solution Diagram
- Service Distribution Matrix

Phase D

- The Technology Architecture defines the software and hardware infrastructure needed to support the portfolio of services
- A good starting point is The Open Group SOA Reference Architecture
- The Open Group Service-Oriented Infrastructure (SOI) Reference Model also provides guidance for adapting an organization's infrastructure for service-orientation

Phase D Artifacts

Artifact	Purpose
Logical Technology Architecture Diagram	This diagram is used to show and analyze the instance of the Open Group SOA Reference Architecture.
Logical Application and Technology Matrix	This matrix is used to show and analyze the relations between the Logical Application Components and the Logical Technology Components

Phase D Enhancements

Objectives
•No additional objective material

Inputs
•Organizational Model
- SOA Centre of Excellence
- SOA Maturity Assessment
- SOA Readiness Assessment
- SOA Governance

•Tailored Architecture Framework
- SOA meta-model extensions
- SAO Reference Architecture

•Available higher-level (Strategic/ Segment) architecture

Steps
•Select Reference models, viewpoints & tools
- SOI Reference Model
- Relationship between Logical Technology Component & Logical Application Component

Outputs
•Validated business Principles
- SOA supporting Principles

•Target Technology Architecture
- Expected processing load & distribution of load across technology

•Draft Architecture Requirements
- Technical requirements for SOA

•Outputs may include
- Logical Technology Architecture Diagram
- Logical Application and Technology Matrix

Phase E

- This phase addresses the question of what SOA solutions the enterprise will have, and how they will be managed
- Solution delivery options are considered
  - A delivery option that that is often considered is out-sourcing of services, as opposed to the development of services in-house or acquisition of software products that perform the services

Phase E Artifacts

Artifact	Purpose
Physical SOA Solution Matrix	This matrix shows all the components of a SOA Solution
Physical SOA Solution Diagram	This diagram shows the relations between the physical SOA solution (Physical Application Components) and other solutions (Physical Application Components).
Physical Service Solution Matrix	This matrix shows which existing services are re-used, which services could be provided by external services (SaaS) and which services needs to be developed as wrappings of new/existing applications and which needs to be developed.
Application Guidelines	This document provides the guidelines on how to develop the SOA Solution and Services.
Physical Technology Architecture diagram	This diagram is used to show and analyze the physical technical solution for the SOA infrastructure.
Physical Application and Technology Matrix	This matrix is used to show and analyze the physical infrastructure used to run the physical application
Technology Portfolio Catalog	This is a list of products and kinds of product that will be used in the implementation, including SOA run-time infrastructure,
Technology Guidelines	This document provides the guidelines on how to use SOA infrastructure

Phase E Enhancements

Objectives
•No additional objective material

Inputs
•Organizational Model
- SOA Centre of Excellence
- SOA Maturity Assessment
- SOA Readiness Assessment
- SOA Governance

•Tailored Architecture Framework
- SOA meta-model extensions
- SOA Reference Architecture

•Available higher-level (Strategic/ Segment) architecture

Steps
•Select Reference models, viewpoints & tools
- Physical Data Component
- Physical Application Component
- Technology Application Component
- SOA Solution

Outputs
•Architecture Roadmap
- SOA & SOI Roadmap

•Draft Architecture Requirements
- Technical requirements for SOA

•Outputs may include
- Physical SOA Solution Matrix
- Physical SOA Solution Diagram
- Physical Service Solution Matrix
- Application Guidelines
- Physical Technology Architecture diagram
- Physical Application and Technology Matrix
- Technology Portfolio Catalog
- Technology Guidelines

Summary

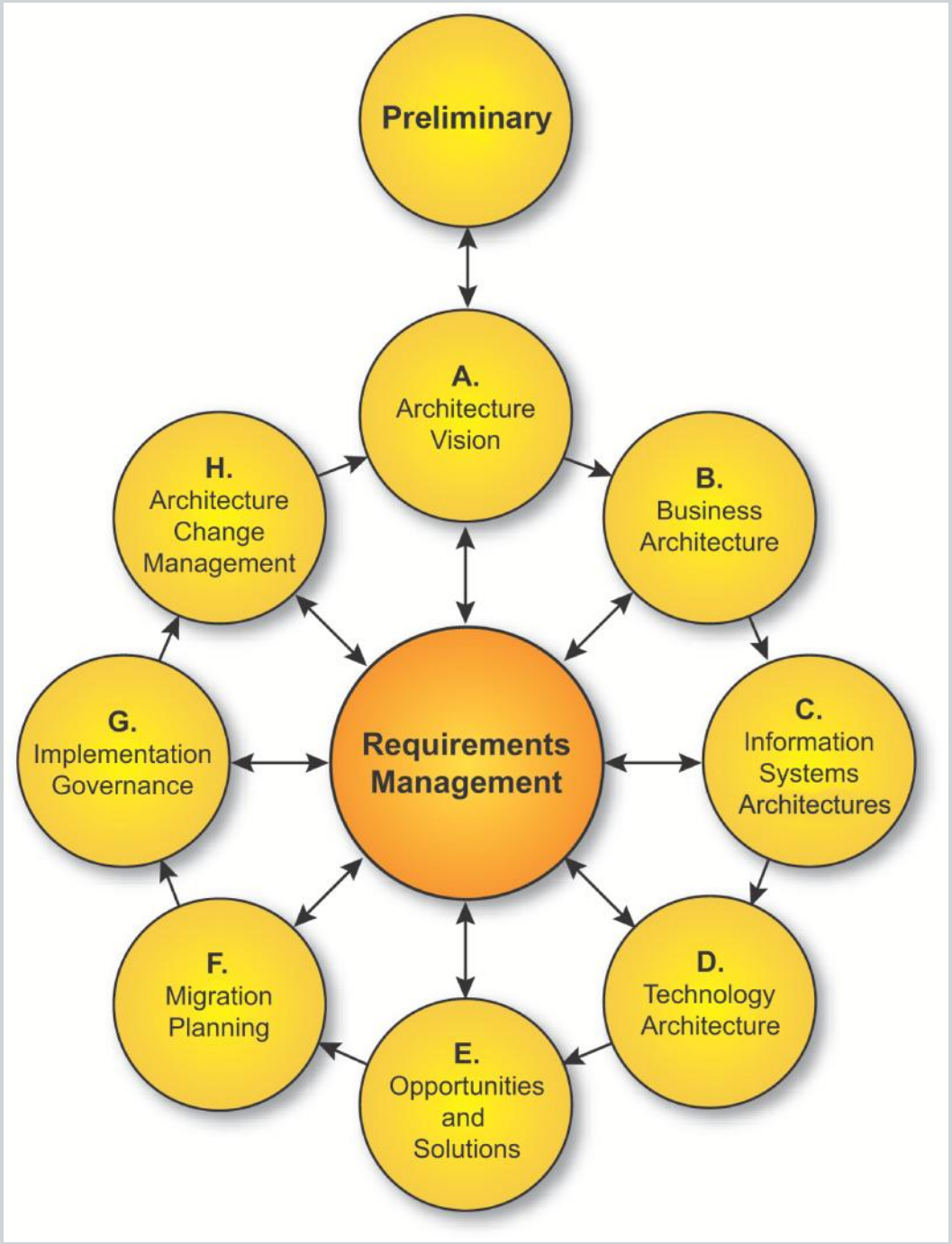
- The use of SOA as an architectural style is intended to simplify the business
- Concepts from the TOGAF content metamodel relate directly to SOA
- Enterprise architecture can be used to support SOA by providing a set of tools and techniques to address many of the non-technical challenges associated with SOA adoption
- TOGAF provides guidance and a set of resources for adapting the ADM for SOA development
- The Open Group SOA Work Group has a number of other documents that support SOA development

Exercise

A service contract can be automated as an XML web service.

In groups, brainstorm as many other technical interface methods for exchanging information as possible.

Adapting the ADM: SOA



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