



Business Services Architecture and Enterprise Architecture

■ This Workshop – Two parts

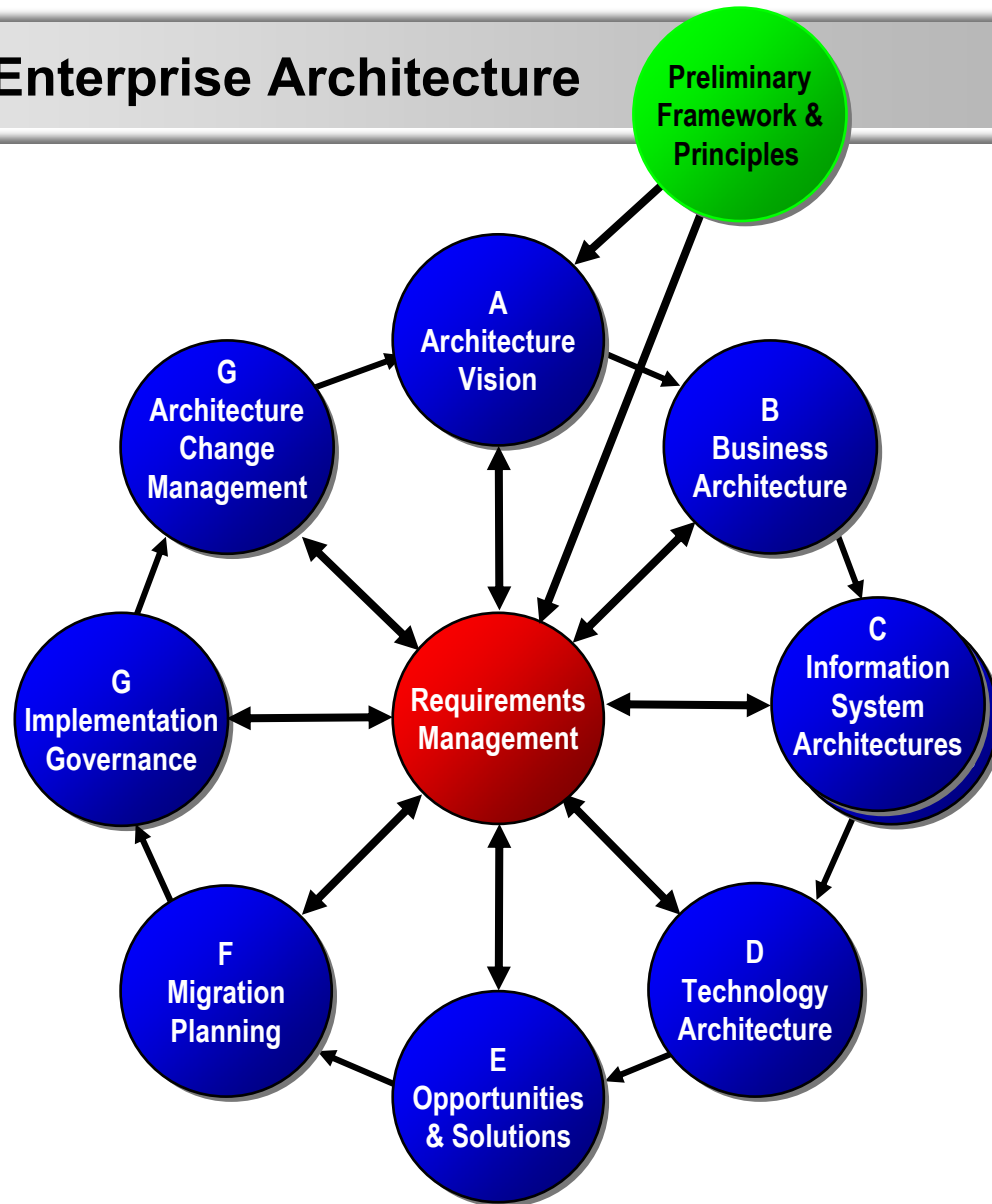
- Background: Business Value of Enterprise Architecture
- TOGAF Architectures and the Business Services Architecture

■ We will use the key steps, methods and information requirements of TOGAF as a role model to create the

- Business Architecture and the supporting
 - Information Systems Architectures
 - Business Services Architecture

■ On the way we will examine the Zachman Framework and its relationship with the TOGAF Business and Information Systems Architecture deliverables

TOGAF 8 Enterprise Architecture



Preliminary Phase Objectives

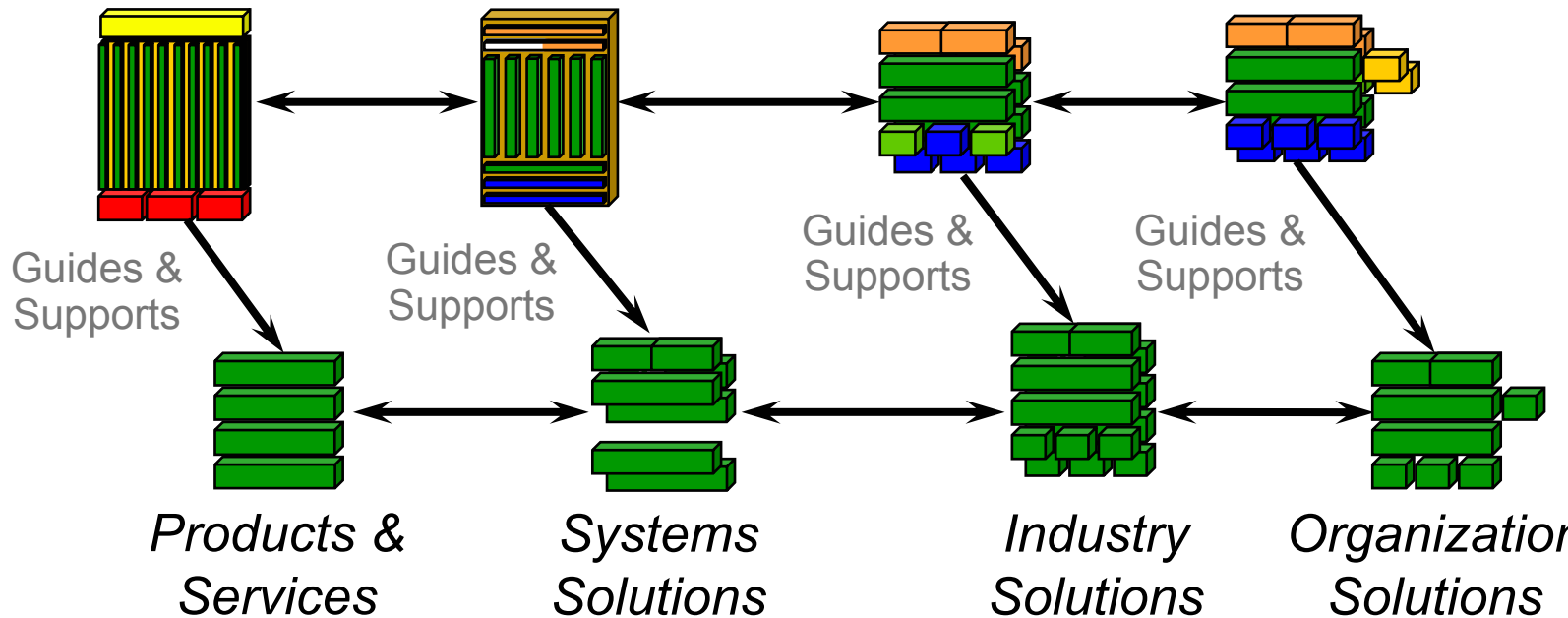
- To ensure that everyone who will be involved in or benefit from this approach is committed to the success of the architectural process.
- To define the architecture principles that will inform the constraints on any architecture work.
- To define the "architecture footprint" for the organization - the people responsible for performing architecture work, where they are located, and their responsibilities.
- To define the scope and assumptions
- To define the framework and detailed methodologies that are going to be used to develop enterprise architectures in the organization concerned.
- To set up and monitor a process to confirm the fitness for purpose of the defined framework.
- To define a set of criteria for evaluating architecture tools repositories and repository management processes to be used to capture, publish, and maintain architecture artefacts



Business Focused TOGAF Enterprise Continuum

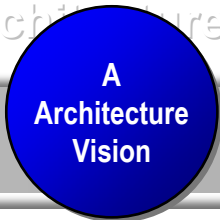
Architecture Continuum

Foundation Architectures *Common Systems Architectures* *Industry Architectures* *Organization Architectures*



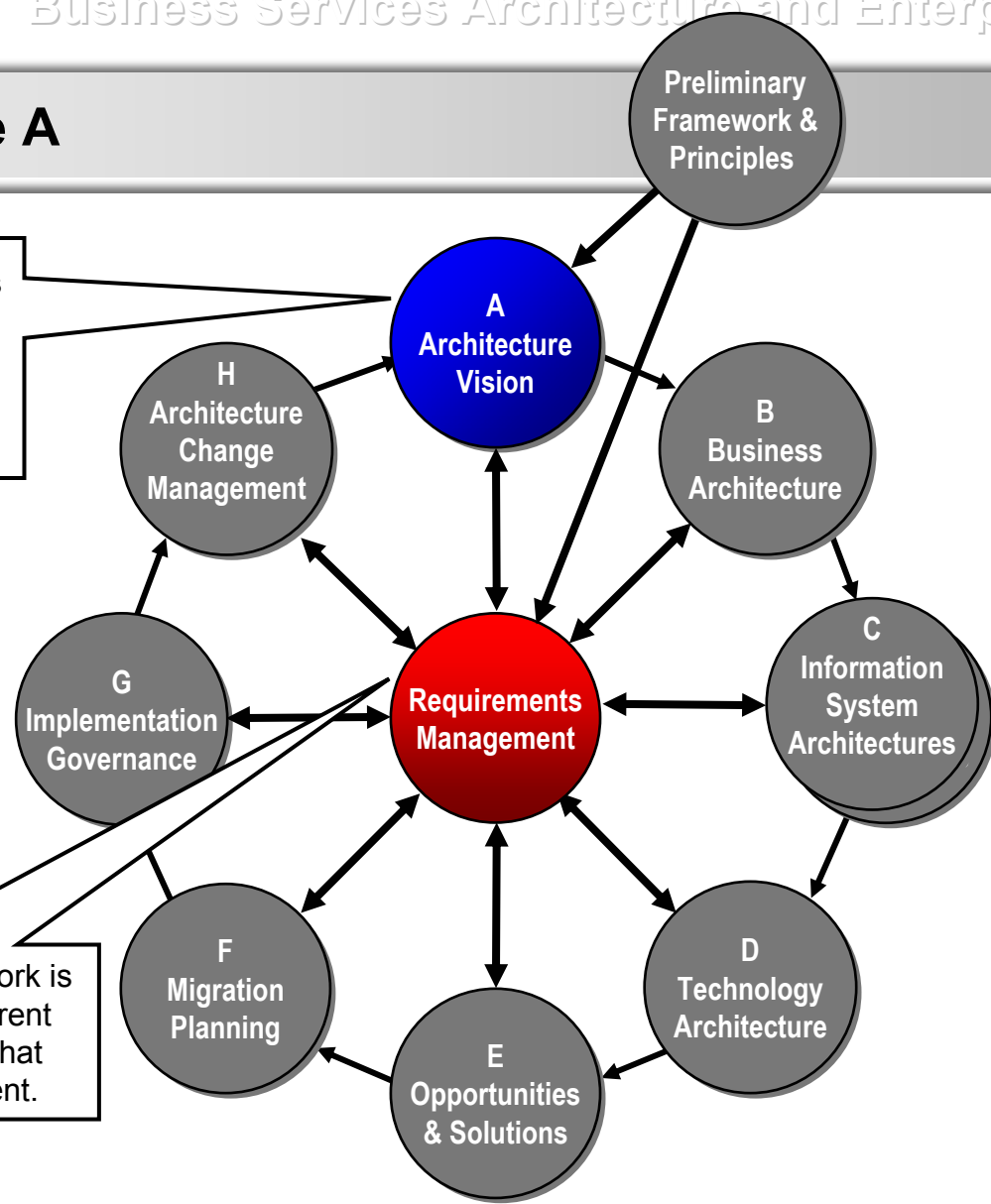
Solutions Continuum





Phase A

The objective of Phase A is to define the scope; create the vision; identify the stakeholders and obtain approvals.

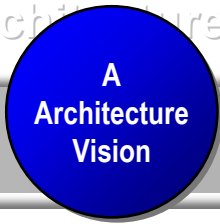


During each Phase, the work is validated against the current business requirements that motivate the development.



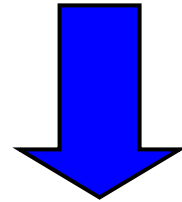
TOGAF 8: Phase A

- Ensure that this evolution of the architecture development cycle has proper recognition and endorsement from the corporate management of the enterprise, and the support and commitment of the necessary line management.
- Validate the business principles, business goals, and strategic business drivers of the organization.
- Define the scope of, and to identify and prioritize the components of, the current architecture effort.
- Define the relevant stakeholders, and their concerns and objectives.
- Define the key business requirements to be addressed in this architecture effort, and the constraints that must be dealt with
- Articulate an architectural vision that demonstrates a response to those requirements and constraints.
- Secure formal approval to proceed.
- Understand the impact on, and of, other enterprise architecture development cycles going on in parallel.



TOGAF 8 Phase A Steps

■ Use Business Scenarios



✓ Request for Architecture Work

✓ Existing Business Goals and Business Drivers

✓ Existing Business & Architecture Principles

✓ Enterprise Continuum

Establish project

Identify Business Principles, Goals and Strategy

Review Architecture Principles

Scope the Architecture Project

Define Constraints

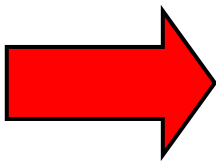
Create the Business Scenario & Architecture Vision

Produce Statement of Architecture Work & Gain Approval

Version 1 of:

- Business Baseline Architecture
- Technical Baseline Architecture
- Business Target Architecture
- Technical Target Architecture

- ✓ Refined Business & Architecture Principles
- ✓ Architecture Vision
- ✓ Statement of Architecture Work

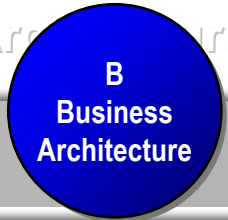


What is a Business Scenario?

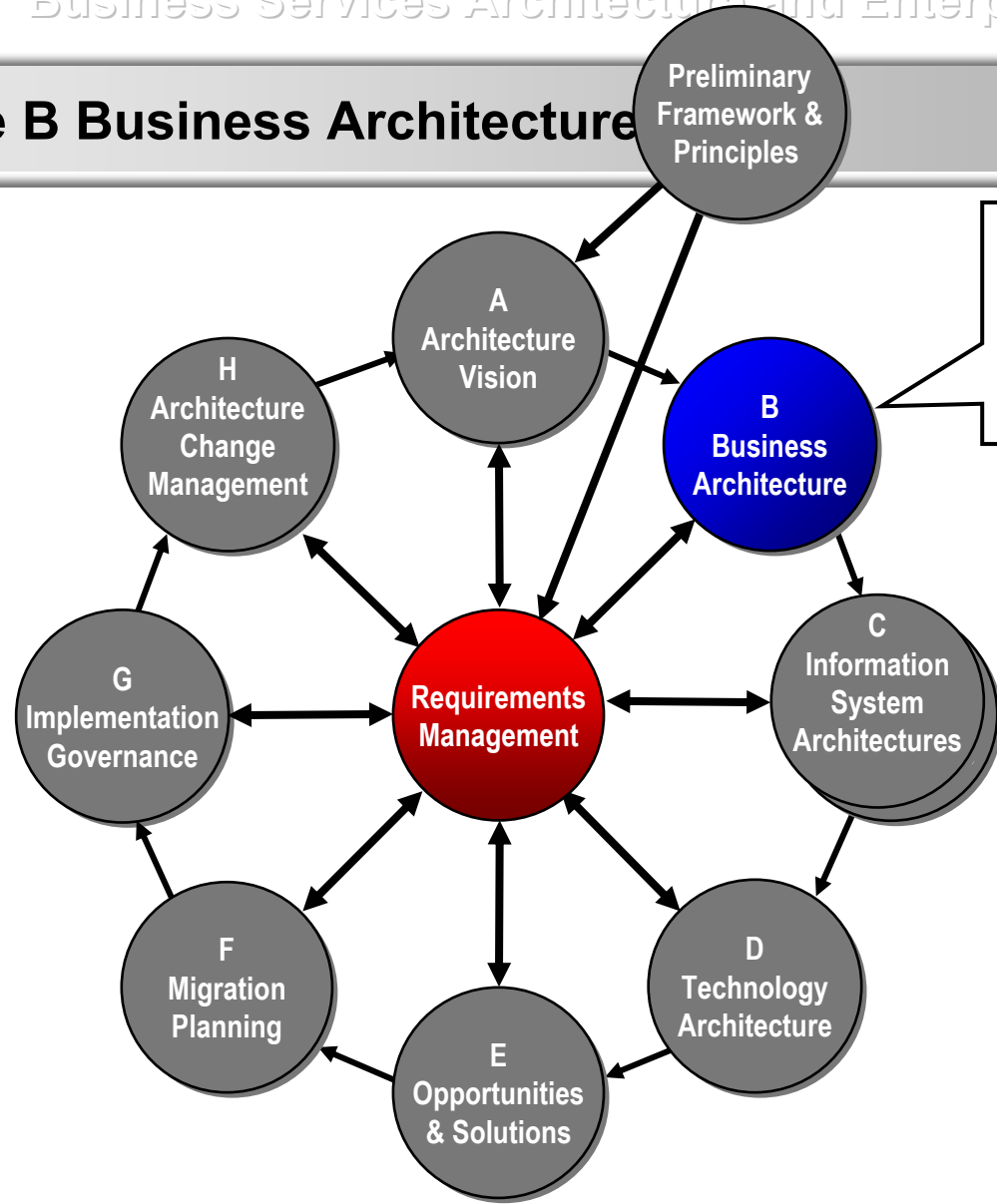
- The TOGAF technique for identifying and articulating the business requirements implied in new business functionality to address key business drivers, and the implied technical architecture requirements.
- The technique may be used iteratively, at different levels of detail in the hierarchical decomposition of the Business Architecture.
- The generic Business Scenario process is as follows:

What is a Business Scenario?

- **Problem:** Identify, document and rank the problem that is driving the project.
- **Business and technical environments:** Document, as high-level architecture models, the business and technical environment where the problem situation is occurring.
- **Objectives and Measures of Success:** Identify and document desired objectives, the results of handling the problems successfully.
- **Human Actors:** Identify human actors and their place in business model, the human participants and their roles.
- **Computer Actors:** Identify computer actors and their place in technology model, the computing elements and their roles.
- **Roles and Responsibilities:** Identify and document roles, responsibilities and measures of success per actor, the required scripts per actor, and the desired results of handling the situation properly.
- **Refine:** Check for fitness for purpose of inspiring subsequent architecture work, and refine only if necessary.



Phase B Business Architecture



The objective of Phase B is to describe the current baseline Business Architecture and to develop a Target Business Architecture



What are the Objectives for Business Architecture work?

B
Business
Architecture

TOGAF Phase B Objectives

- Describe the current baseline business architecture
- Develop a target Business Architecture
 - describing the product and/or service strategy,
 - the organizational, functional, process, information, and geographic aspects of the business environment
 - based on the business principles, business goals, and strategic drivers.
- Analyze the gaps between the baseline and target Business Architectures
- Select the relevant architectural viewpoints that will enable the architect to demonstrate how the stakeholder concerns are addressed in the Business Architecture.
- Select the relevant tools and techniques to be used in association with the selected viewpoints

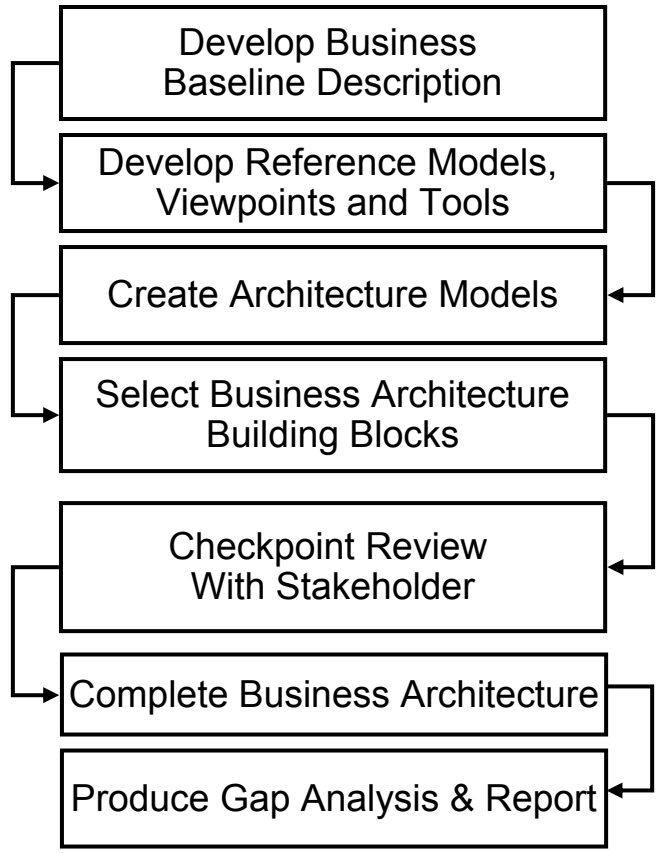
Business Architecture Re-use

- **Key elements of the Business Architecture may be produced elsewhere**
- The enterprise mission, vision, strategy and goals may be produced as part of a wider business strategy or enterprise planning activity with its own life-cycle in the enterprise.
- The new architecture work will need to verify and update the currently documented business strategy and plans, and/or to bridge between high-level business drivers, business strategy and goals on the one hand, and the specific business requirements
- **A key objective is to reuse existing material and components as much as possible.**
 - Use existing architecture definitions and architectural descriptions
 - Use only information that allows informed decisions to be made for the scope
- **If little or no business architecture work has been undertaken:**
 - the architecture team need to research, verify and gain buy-in to, the key business objectives and processes that the architecture is to support.
 - as a free-standing exercise or preceding architecture development or as part of the Architecture Development
- **Business Scenarios or other methods of information capture may be used.**
- If new business processes required then this Phase will involve a lot of detailed work including a Process Architecture.

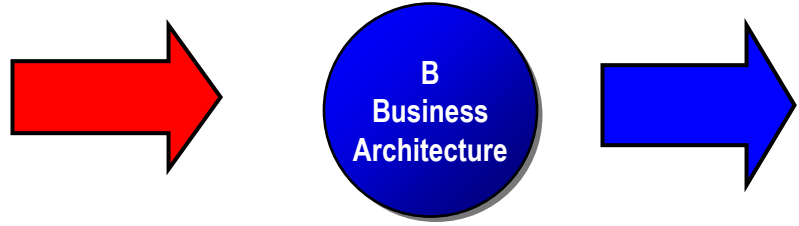


TOGAF 8 ADM: How do you create a Business Architecture?

- Inputs**
- Request for Architecture Work
 - Approved Statement of Architecture Work / Project Definition, including in particular:
 - Scope and constraints
 - Refined statements of Business Principles, Business Goals and Strategic Drivers
 - Architecture Principles
 - Architecture Vision
 - Business Scenarios, including:
 - Business Baseline Version 1
 - Technical Baseline Version 1
 - Business Architecture Version 1
 - Technical Architecture Version 1
 - Enterprise Continuum



- Outputs**
- Statement of Architecture Work
 - Validated Business Principles, business goals, and strategic drivers
 - Target Business Architecture - Version 2
 - Business Baseline - Version 2
 - Views corresponding to the selected viewpoints addressing key stakeholder concerns
 - Gap analysis results
 - Technical requirements - drivers for the Technical Architecture work:
 - Business Architecture Report
 - Updated business requirements



NEXT

Business Architecture: Components

TOGAF

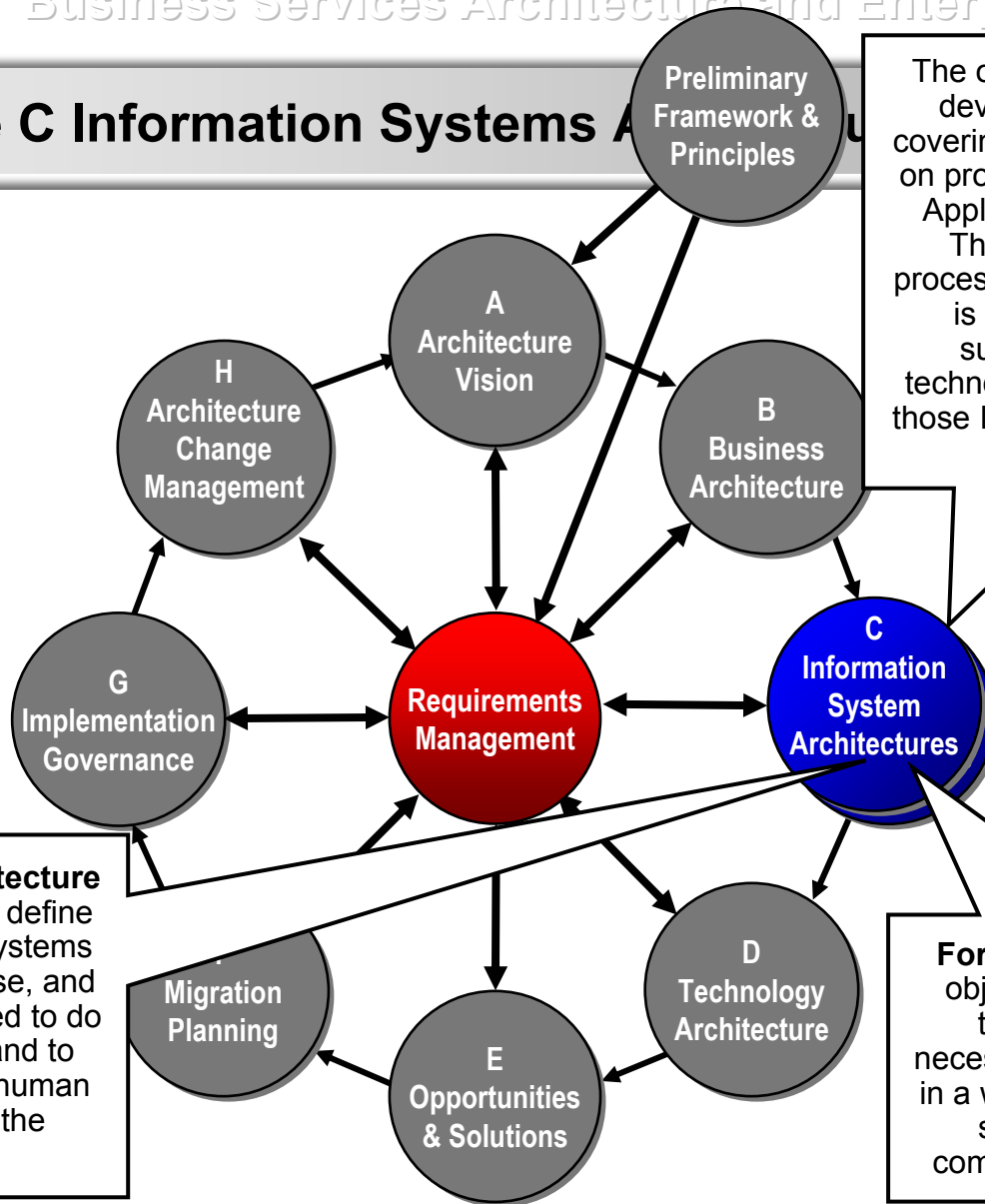
■ Target Business Architecture

- *Organization structure*. identifying business locations and relating them to organizational units.
- *Business goals and objectives*. for each organizational unit.
- *Business functions*. a detailed, recursive step involving successive decomposition of major functional areas into sub-functions.
- *Business Services* - the services that each enterprise unit provides to its customers, both internally and externally.
- *Business processes*, including measures and deliverables
- *Business roles*, including development and modification of skills requirements.
- *Correlation of organization and functions*. Relate business functions to organizational units in the form of a matrix report.

TOGAF 8 Role Model

- Are we ready to do our IT Architecture?
- Do we need to complete the Business Architecture before we can proceed further?
- Do we need an Information Systems Architecture before we can create an IT Architecture?
- What is the scope of the Information Systems Architecture?
- What else do we need?
 - Information
 - Process
 - Data
 - Applications
 - Business Requirements
- Who needs to buy-in?

Phase C Information Systems Architecture



The objective of this phase is to develop target architectures covering either or both (depending on project scope) of the Data and Application Systems domains. The scope of the business processes supported in this phase is limited to those that are supported by information technology, and the interfaces of those IT-related processes to non-IT-related processes.

For the Application Architecture the objective and goal is to define what kinds of application systems are relevant to the enterprise, and what those applications need to do in order to manage data and to present information to the human and computer actors in the enterprise.

For the Data Architecture, the objective is to define the major types and sources of data necessary to support the business in a way that is understandable by stakeholders and which is complete, consistent and stable.



TOGAF Information Systems Architecture

Objectives

- To develop target architectures covering the Data and Application Systems domains.

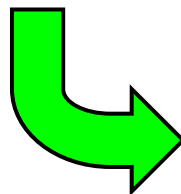
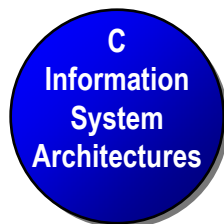
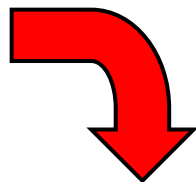
- The scope of the business processes supported in this phase is limited to
 - those that are supported by information technology
 - the interfaces of IT-related processes to non-IT-related processes.

- The focus is on a combination of Data and Applications Architecture, in either order.

Inputs and Outputs

Inputs

- Statement of Architecture Work
- Validated Business Principles, business goals, and strategic drivers
- Target Business Architecture - Version 2
- Business Baseline - Version 2
- Views corresponding to the selected viewpoints addressing key stakeholder concerns
- Gap analysis results
- Technical requirements - drivers for the Technical Architecture work:
- Business Architecture Report
- Updated business requirements



Outputs

- Statement of Architecture Work
- Target Data Architecture
- Target Applications Architecture
- Data Architecture Views addressing key stakeholder concerns
- Applications Architecture Views addressing key stakeholder concerns
- Data Architecture Report
- Applications Architecture Report
- Gap Analysis
- Constraints on Technology Architecture work:
- Business Architecture Changes & Report
- Impact Analysis
- Updated Business Requirements

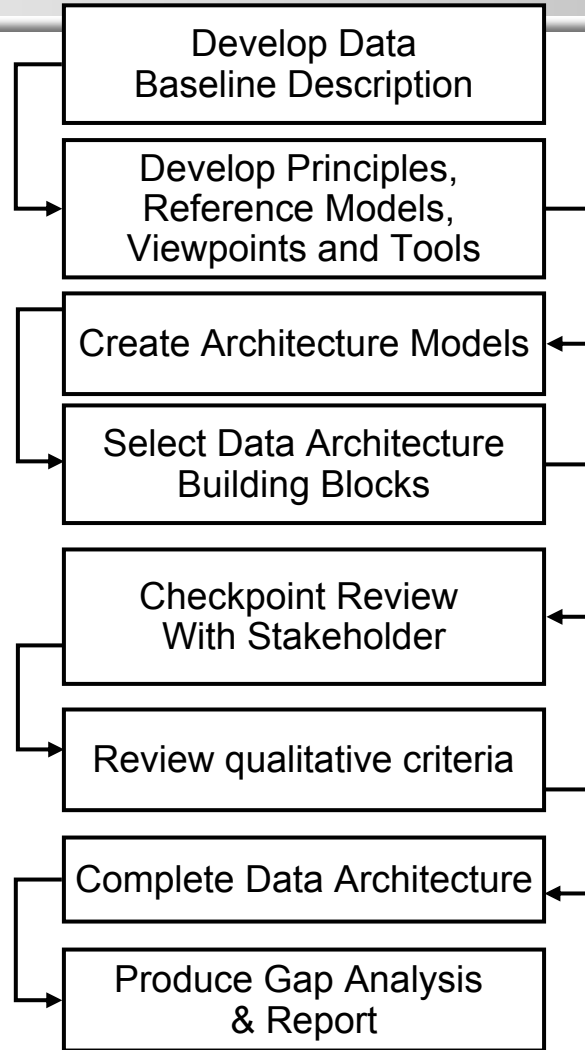


Data Architecture: Objectives

- To define the major types and sources of data necessary to support the business, in a way that is
 - understandable by stakeholders
 - complete and consistent
 - stable
- The goal is to define the data entities relevant to the Enterprise
- Linkages to existing files and databases may be developed and demonstrate significant areas for improvement.
- This effort is NOT concerned with database design, or design of logical or physical storage systems.

Data Architecture

- Inputs**
- Data Principles
 - Request for Architecture Work
 - Statement of Architecture Work
 - Architecture Vision
 - Relevant technical requirements that will apply to this phase
 - Gap analysis
 - Business Baseline - Version 2
 - Target Business Architecture - Version 2
 - Re-usable building blocks from the Enterprise Continuum
 - Definitions of current data



Outputs

- Statement of Architecture Work
- Data Baseline Description - if appropriate
- Validated or new Data Principles
- Target Data Architecture
- Conceptual data model
- Logical data model
- Data Management Process models
- Data entity / business function matrix
- Data interoperability requirements
- Viewpoints and views addressing key stakeholder concerns for data
 - Data dissemination view
 - Data lifecycle view
 - Data security view
 - Data model management view
- Gap analysis results
- Technical requirements
- Data Architecture Report,
- Impact Analysis
- Data Architecture driven changes to the Business and Application Architectures
- Constraints on the Technology Architecture
- Updated business requirements



Applications Architecture

Objective

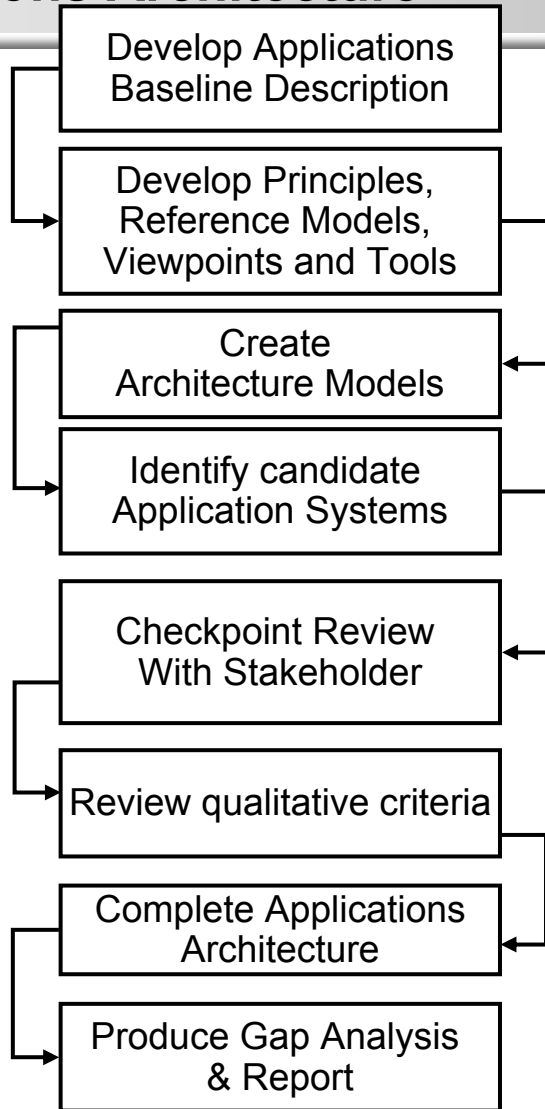
- To define the major kinds of application system required to process the data and support the business.
- The goal is to define what kinds of application systems are relevant to the enterprise, and what those applications need to do in order to manage data and to present information to the human and computer actors in the enterprise.
- The applications :
 - are described as logical groups of capabilities that manage the data objects in the data architecture and support the business functions in the Business Architecture.
 - and their capabilities are defined without reference to particular technologies.
 - The applications are stable and relatively unchanging over time.
- The technology used to implement the applications will change over time, based on the technologies currently available and changing business needs.
- This effort is NOT concerned with applications systems design



Applications Architecture

Inputs

- Applications Principles
- Request for Architecture Work
- Statement of Architecture Work
- Architecture Vision
- Relevant technical requirements that will apply to this phase
- Business Architecture Gap analysis
- Business Baseline - Version 2
- Target Business Architecture - Version 2
- Re-usable building blocks
- Data Baseline Description
- Target Data Architecture



Outputs

- Statement of Architecture Work
- Applications Baseline Description
- Validated and New Applications Principles
- Zachman Framework: Scope/Data
- Target Applications Architecture
 - Process Systems Model
 - Place Systems Model
 - Time Systems Model
 - People Systems Model
 - Applications interoperability requirements
- Viewpoints and views addressing key stakeholder concerns.
 - Common Applications services view
 - Applications Interoperability view
 - Applications / Information View
 - Applications / User locations View
- Gap analysis results
- Applications Architecture Report
- Impact Analysis
 - Business Architecture change requirement
 - Data Architecture change requirement
 - Constraints on the Technology Architecture
 - Updated business requirements

NEXT

The Zachman Framework

- The Zachman Framework is a widely used approach for developing and/or documenting an enterprise-wide information systems architecture.
- The purpose of the framework is to provide:
 - A basic structure which supports the organization, access, integration, interpretation, development, management and change of a set of architectural representations of the organization's information systems.
 - Definitions of objects or descriptions of architectural representations, referred to as artifacts.
 - Global plans, technical details, lists and charts, and natural language statements.
 - A capability such that any approach, standard, role, method, technique, or tool can be placed in it.
 - A tool to organize any form of metadata for the enterprise.



The Zachman Framework

| | <i>What?</i> Data | <i>How?</i> Function | <i>Where?</i> Network | <i>Who?</i> People | <i>When?</i> Time | <i>Why?</i> Motivation | |
|-----------------------------------------------------|----------------------|-------------------------|--------------------------|-----------------------|----------------------|---------------------------|--------------------------|
| <i>Planner's Viewpoint</i> Contextual | | | | | | | Scope |
| <i>Owner's Viewpoint</i> Conceptual | | | | | | | Enterprise Models |
| <i>Designer's Viewpoint</i> Logical | | | | | | | Systems Models |
| <i>Builder's Viewpoint</i> Physical | | | | | | | Technology Models |
| <i>Sub-contractor's Viewpoint</i> Out-of-context | | | | | | | Detailed Representations |
| Functioning Enterprise | | | | | | | Actual Systems |

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Zachman Comparison with TOGAF

- The Zachman Framework provides a very comprehensive and well-established taxonomy of the various viewpoints, models and other artifacts of an enterprise architecture. Zachman recommends that all the cells be covered.
- The Zachman Framework does not provide:
 - Processes for developing viewpoints or conformant views or the order in which they should be developed.
 - A method such as TOGAF's ADM, or a Foundation Architecture such as the Technical Reference Model and Standards Information Base.
- The vertical axis of the Zachman Framework provides a source of potential viewpoints for the architect to consider.
- The horizontal axis could be regarded as providing a generic taxonomy of concerns.

- TOGAF provides:
 - The capability to develop viewpoints and views.
 - Viewpoints not included in the Zachman Framework, e.g. Security.
- TOGAF ADM defines a process for driving the selection of viewpoints.



Business Architecture Artifacts

■ Function

- Business Function
- Business Process
- Activity
- Task
- Business Services

■ Network

- Location

■ People

- Organisation Unit
- Role
- Actor
- Stakeholder

■ Time

- Event

■ Motivation

- Business Goal
- Business Objective
- Concern
- Business Requirement
- Business Principle
- Strategic Driver



Business, Data and Applications Architectures

| | <i>What?</i> Data | <i>How?</i> Function | <i>Where?</i> Network | <i>Who?</i> People | <i>When?</i> Time | <i>Why?</i> Motivation | |
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| <i>Planner's Viewpoint</i> Contextual | | | | | | | Scope |
| <i>Owner's Viewpoint</i> Conceptual | Data | Business | | | | | Enterprise Models |
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| <i>Builder's Viewpoint</i> Physical | | | | | | | Technology Models |
| <i>Sub-contractor's Viewpoint</i> Out-of-context | | | | | | | Detailed Representations |
| Functioning Enterprise | | | | | | | Actual Systems |

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Summary

| | Data | Function | Network | People | Time | Motivation |
|------------------------------|-----------------|----------------------|----------|-------------------|----------------|----------------------|
| Scope | | | | | | |
| Enterprise (Business) | Business Entity | Business Function | Location | Organisation Unit | Business Event | Business Goal |
| | | Business Process | | Role | | Business Objective |
| | | Activity | | Actor | | Concern, |
| | | Task | | Stakeholder | | Business Requirement |
| | | Business Service | | | | Strategic Driver |
| | | | | | | Business Principle |
| System (Application) | Data Entity | Application Function | Location | Actor | System Event | Requirement |
| | | Application Service | Node | Role | | Business Rule |
| Technology | | | | | | |
| Detailed | | | | | | |
| Actual Systems | | | | | | |





Business Services Architecture and Enterprise Architecture

Business Services Architectures



Business Services Architecture and Enterprise Architecture

Service:

- A service is a function that is well-defined, self-contained and does not depend on the context or state of other services.
- A service is a discoverable building block, capable of performing a defined task, such as providing a function.



Business Services Architecture and Enterprise Architecture

Service-oriented architecture:

- An architectural style that depicts each building block as a service.
- The collections of building blocks are intended to communicate with each other, be platform-independent and they can be dynamically located or accessed.



Business Services Architecture and Enterprise Architecture

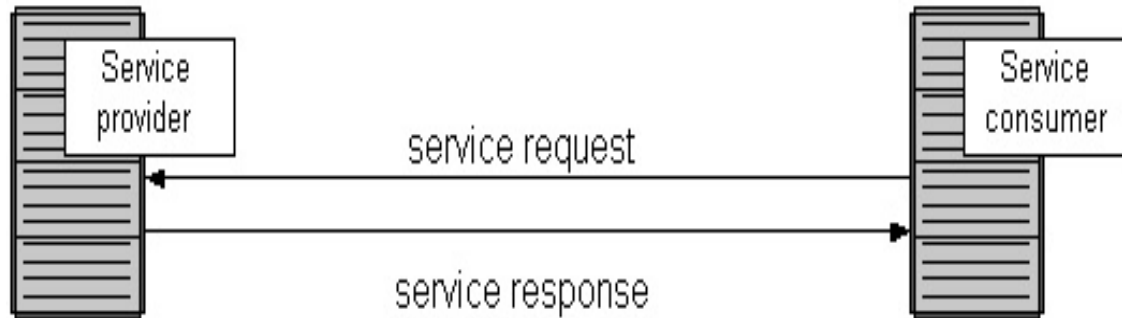
Basic Service-oriented Architecture

- Service Consumer
- Service Provider
- Service Request
- Service Response



Business Services Architecture and Enterprise Architecture

Basic Service-oriented Architecture





Business Services Architecture and Enterprise Architecture

Application Service:

- An application function that is well-defined, self-contained, and does not depend on the context or state of other application services.
- An application service is a discoverable application building block, capable of performing a defined task, such as providing an application function.



Business Services Architecture and Enterprise Architecture

Business Service

- A business function that is well-defined, self-contained, and does not depend on the context or state of other business services.
- A business service is a discoverable building block capable of performing a defined task such as providing a business function.



Business Services Architecture and Enterprise Architecture

Business Service

- External:
 - Interacts with an external actor, eg a customer

- Internal:
 - Interacts with another business service within the enterprise



Business Services Architecture and Enterprise Architecture

Business Value

- A Business Service must have an association to a business objective....
-so that its business value is measurable....
-in terms of the extent to which it achieves the objective.



Business Services Architecture and Enterprise Architecture

Business Value

- A Business Service must have an association to a business objective....
-so that its business value is measurable....
-in terms of the extent to which it achieves the objective.



Business Services Architecture and Enterprise Architecture

Business Value – Boundaryless Information Flow

- Associations between:
 - Business services is a requirement....
 -breaking down barriers between business functions and units

 - Application and technology services is part of the solution....
 -bridging technology barriers.



Business Services Architecture and Enterprise Architecture

Elements of a Business Services Architecture

- Business Service (Function)
- Actor
- Request
- Response
- Business Objective
- Information
- Location?
- Organisation Unit?
- Business Event?



Business Services Architecture and Enterprise Architecture

Process

- For a customer oriented view:
 - Identify customers
 - Identify associated external services
 - Map services to objectives
 - Identify associated internal services
 - Map to application services?



Business Services Architecture and Enterprise Architecture

Representation

- Catalogue each Business Service, with:
 - Service name
 - Service description
 - Associations to:
 - Actors
 - Business Objectives
 - Service Requests
 - Service Responses
 - Applications Services/Building Blocks



Business Services Architecture and Enterprise Architecture

Representation

- Cross-reference matrix
 - Service-Actor (request/response)
 - Service-Service (internal request/response)
 - Service-Objective
 - Business Service-Application Service



Business Services Architecture and Enterprise Architecture

Representation

- UML
 - Use Case
 - Actor
 - Association



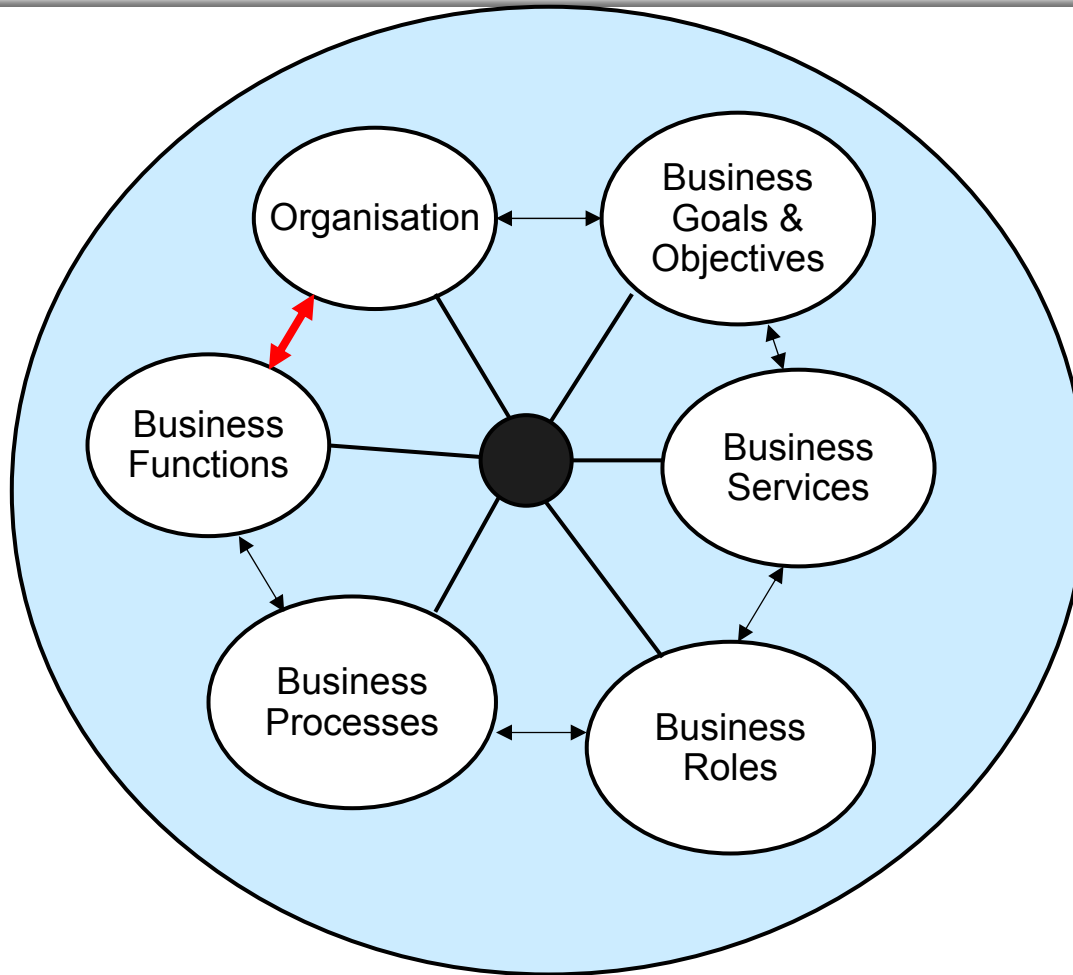
Business Services Architecture and Enterprise Architecture

Representation

- Process Model
 - Process Step or Activity
 - Swim Lanes

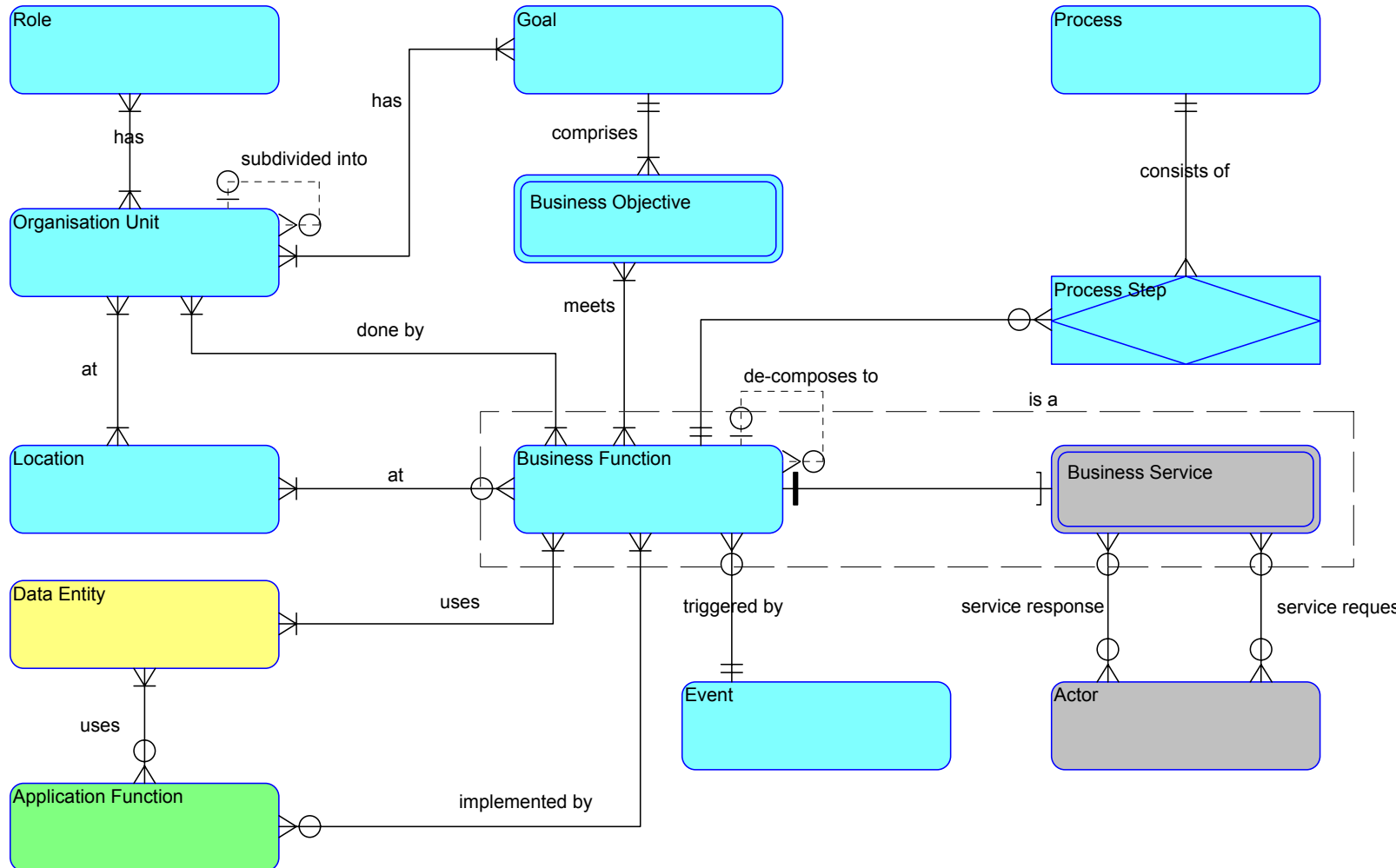
- Functional Decomposition
 - Business Function hierarchy

What is in the Business Architecture Meta Model





How does the Business Architecture Metamodel work?



TOGAF Business Value & Services Conclusions

- TOGAF Business Architecture determines the
 - Business Services Architecture
 - Information Systems Architectures
 - Applications Architecture
 - Data Architecture
 - Technology Architecture
- The Business Architecture is the most critical element of the Enterprise Architecture and should ideally be underwritten by the Stakeholders and the Board.
- A Business Architecture without business buy-in is meaningless.

TOGAF Business Value & Services Conclusions

- Finally....

- The Business Architecture is the means by which businesses define their:
 - requirements
 - services
 - deliverables
 - constraints
 - principles

- and most important

- derive maximum business value.



Thank you

