TOGAF Building Blocks, Ontologies, Terminologies, and all that Jazz...

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Architecture Modeling in TOGAF

- Enterprise Architecture Modeling
- An Ontology for TOGAF 9
- A View of Service Oriented Architectures
all models are wrong, some models are useful…

George E.P. Box
ISO 15704: Annex A - GERAM

Generalised Enterprise Reference Architecture and Methodology

Views

Instantiation

Generic
Partial
Particular

Customer service
Management and control

Software
Hardware

Resource
Organisation
Information
Function

Machine
Human

Life-cycle phases

Reference Architecture

Particular Architecture

Identification

Concept

Requirements

Preliminary design

Design

Detailed design

Implementation

Operation

Decommission


- Subdivision according to genericity
- Subdivision according to purpose of activity
- Subdivision according to physical manifestation
- Subdivision according to model content
- Subdivision according to means of implementation
TOGAF Modeling

- Preliminary Framework and Principles
- Architecture Vision
- Architecture Change Management
- Business Architecture
- Information System Architectures
- Implementation Governance
- Migration Planning
- Opportunities and Solutions
- Technology Architecture
- Requirements

+ 

PROCESS MODELS

WORKING ENTERPRISE SYSTEMS

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Building Block Concept
Integrated Views and Viewpoints
TOGAF Architecture Modeling

- Architecture Information Base
- Enterprise Continuum
- Viewpoints
- Views
- Representations
- Building Blocks
TOGAF 9*

Current Architectures

Business Requirements

Target Architectures

Architecture Development Method

Architecture Information Base

* Proposed
TOGAF 9 Content*

* Proposed
TOGAF 9 Enterprise Continuum

* Proposed

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TOGAF Technical Reference Model
TOGAF In³
Integrated Information Infrastructure
Defining Service Oriented Architecture

An **architectural style** that supports **service orientation**

- **Service orientation**
  A way of thinking in terms of services and service based development and the outcomes that services bring

- **Service**
  A logical representation of a repeatable business activity that has a specified outcome (e.g., check customer credit; provide weather data, consolidate drilling reports), is self-contained and maybe composed of other Services. It is a black box to consumers of the Service

- **Architectural Style**
  The combination of distinctive features in which Enterprise Architecture is done, or expressed

- The SOA Architectural style’s distinctive features:
  - Based on the design of the services comprising an enterprise’s (or inter-enterprise) business processes. Services mirror real-world business activity
  - Service representation utilizes business descriptions. Service representation requires providing its context (including business process, goal, rule, policy, service interface and service component) and service orchestration to implement service
  - Has unique requirements on infrastructure. Implementations are recommended to use open standards, realize interoperability and location transparency.
  - Implementations are environment specific, they are constrained or enabled by context and must be described within their context.
  - Requires strong governance of service representation and implementation
  - Requires a “Litmus Test”, which determined a “good services”
SOA: From Model to Reality

Source: OASIS SOA Reference Model

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SOA Ontology Core Classes and Properties

- Provider
- Service
- Consumer
- Effect
- Interface

- Description
  - Describes
  - Provides
  - Consumes
  - Produces
  - Has
  - Uses

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What Is An Ontology?

• An ontology is an explicit description of a domain:
  – concepts
  – properties and attributes of concepts
  – constraints on properties and attributes
  – Individuals *(often, but not always)*

• An ontology defines
  – a common vocabulary
  – a shared understanding
TOGAF Ontology*

- Enterprise
- Artifact
- Activity
- Continuum
- Architecture
  - Location
- Person
  - System
  - Application
- Capability
- Process
  - Architecture Information Base
  - Organization Unit

* Proposed
TOGAF Ontology - Artifact

- Enterprise
  - Artifact
  - Activity
  - Continuum
  - Architecture
    - Location
    - Person
    - System
    - Application
  - Capability
    - Process
    - Architecture Information Base
    - Organization Unit

- Business Scenario
  - Requirement
  - Model
    - Viewpoint
    - View
    - Building Block
    - Principle
    - Policy
    - Guideline
    - Initiative

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TOGAF Ontology and SOA

- Enterprise
  - Artifact
  - Activity
  - Continuum
  - Architecture
    - Location
  - Person
    - System
    - Application
  - Capability
  - Process
  - Architecture Information Base
  - Organization Unit

- Business Scenario
  - Requirement
  - Model
  - Viewpoint
  - View
  - Building Block
    - Principle
    - Policy
    - Guideline
  - Service
## Properties for Class **Building Block**

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<th>Cardinality</th>
<th>Type</th>
<th>Other Facets</th>
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<td>Integer</td>
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<tr>
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<td>required...</td>
<td>Symbol</td>
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<tr>
<td>status</td>
<td>required...</td>
<td>Symbol</td>
<td>allowed-values={Waiting, In_Process, Completed...}</td>
</tr>
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</tr>
</tbody>
</table>

These properties are inherited by **Service**

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Additional SOA Properties for Service

- `hasDescription`  (multiple Description)
- `hasInterface`  (multiple Interface)
- `isConsumedBy`  (multiple Consumer)
- `isProvidedBy`  (multiple Provider)
- `produces`  (multiple Effect)
Summary

• TOGAF provides an effective architecture development method and proven modeling techniques for creating enterprise models.
• TOGAF Building blocks are the fundamental elements for expressing architecture models.
• The TOGAF Ontology provides a clear articulation of the artifacts used in TOGAF models.
• The TOGAF Ontology clarifies the meaning of terminology that can be confusing and misinterpreted.
• TOGAF modeling techniques can be applied to Service Oriented Architecture problems.
Thank You!