Building strong organizations

ArchiMate

The open standard language for modeling and visualizing enterprise architecture

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THE Open Group
Making standards work®
Proposed schedule

- *Introduction*
- *Enterprise Architecture*
- *ArchiMate*
  - Motivation and scope
  - Framework
  - Examples
  - Meta model
  - Views and viewpoints
  - Relations with other languages
  - Support for ArchiMate
- *Summary*
ArchiMate is the open standard for modelling enterprise architecture, maintained by The Open Group in the ArchiMate Forum.

A perfect combination:
- Togaf: enterprise architecture process / method
- ArchiMate: modelling / analysis of TOGAF artefacts / deliverables
Enterprise Architecture

Some basic concepts...
IEEE Std 1471:

Architecture = structure(s) of a system in terms of

- components,
- their externally visible properties,
- their relations,
- and the underlying principles

“Structure with a vision”
EA: Describing Coherence

- Information architecture
- Application architecture
- Process architecture
- Product architecture
- Technical architecture

(Images of architecture diagrams are present in the diagram.)
What is Enterprise Architecture?

- **A process**
  - For developing and using enterprise architecture in an organization

- **A product**
  - the complete and consistent set of methods, rules and models, which will guide the (re)design, migration and implementation of business processes, organizational structures, information systems and the technical infrastructure within an organization

- **For managing change and complexity**
Why Enterprise Architecture?

- Managing change and complexity:
  - Aligning business and IT
  - Outsourcing
  - Impact analysis
  - Project support (project start architectures)
  - Portfolio management
  - Communication with stakeholders
  - ...

- Obtaining insight in current situation (as-is)

- So enterprise architecture as a tool
  - for communication
  - for governance
  - for innovation
Important notions (IEEE 1471)

- A stakeholder is a person or organisation with a certain interest in (part of) an architecture.

- A view is a representation of a system from the perspective of a set of concerns of one or more stakeholders. A view is what you see.

- A viewpoint is where you are looking from. It defines how to build a view, e.g. by means of a template.

- Different stakeholders
  - Have different interests and use different concepts
  - Have different views
  - Have different viewpoints
  - On the basis of one consistent architectural model
Example viewpoint en view

- **Air photo**
  - Concern: development plan
  - Stakeholder: City council

- **Ground photo**
  - Concern: building permit
  - Stakeholder: house owner
IEEE 1471 (summary)

- **Stakeholder**
  - is important to 1..*
  - is addressed to 1..*
  - has 1..*

- **Concern**
  - used to cover 1..*

- **Viewpoint**
  - conforms to

- **View**
  - participates in 1..*
  - establishes methods for 1..*
  - consists of 1..*

- **Model**
  - participates in 1..*
Why one language?

- Communication
- No ambiguity
- Coherence
- Consistency
- Visualization
- Analysis
- Communication...
Archimate

- A language for describing architectures
- Covers business, application and technology layer
  - With relations between these layers
- Graphical language with formal semantics, enabling analysis and tool support
- Techniques for visualization and analysis, aimed at various stakeholders
- Open standard maintained by The Open Group
- See www.opengroup.org/archimate or www.archimate.org
ArchiMate Focus

Visualisation

Integration

Analysis
The ArchiMate Language

- High-level modeling within a domain
- Modeling relations between domains
- Relate to standards
- Basis for visualisations
- Basis for analyses

ArchiMate language
## Layers, Aspects, and Domains

<table>
<thead>
<tr>
<th>Environment</th>
<th>Business</th>
<th>Application</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Passive “object”</td>
<td>Behaviour “verb”</td>
<td>Active “subject”</td>
</tr>
<tr>
<td></td>
<td>Information domain</td>
<td>Process domain</td>
<td>Organization domain</td>
</tr>
<tr>
<td></td>
<td>Data domain</td>
<td></td>
<td>Technical infrastructure domain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Application domain</td>
<td></td>
</tr>
</tbody>
</table>
Some examples of the ArchiMate language for “educational purposes”

*Examples created using BiZZdesign Architect*
Products and services

Contract

Product

Value

Role

Insurance Policy

Damage insurance

Being insured

Customer

Policy mutation Service

Payment Service

Policy Service

Premium Service

Declaration Service

Business services

Aggregation

Association
Business functions

- System development
  - Financial handling
    - Facturation
    - Collecting
  - Marketing
  - Product development
  - Customer relations
- Product development
  - Claims handling
    - Assessment
    - Acceptance
  - Asset management
    - Risk management
    - Treasury
- Contracting
  - Contract changes
  - Customer changes

Composition (by nesting)
Business objects

- Insurance request
- Life insurance
- Travel insurance
- Pension insurance
- Damage insurance
- Damage data

Business object

Aggregation
Specialization
Realization

Representation
Applications and application services

- Business process
- Application service
- Application component

Used-by
Realization
Composition

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Derived relations
Generic meta model ArchiMate

- **Internal**
  - Representation
  - Object
  - Process/function

- **External**
  - Meaning
  - Value
  - Service
  - Interface
  - Role
  - Actor

**Passive structure**
**Behaviour**
**Active structure**
Business layer meta model
Technology layer meta model

Artifact

Infrastructure service

Infrastructure interface

Node

Communication path

System software

Device

Network
Some examples from daily practice
Example: City of Enschede - 1

- Product
- Application with functions
- Application data objects
- Database
Which data is used by which application, and stored in which database
Example: 3 technical universities

Use of business objects (access relation by nesting)
Example: 3 technical universities

Use of application services by the process (used by relation by nesting)
Viewpoints and views in ArchiMate

Classifications and examples
“let’s ask the architect to leave out this rubbish, then we will get a nice result!”
Classification viewpoints ArchiMate

- Deciding
  - product manager, CIO, CEO
- Designing
  - architect, software developer, business process designer
- Informing
  - customer, employee, others

- Details
- Coherence
- Overview

Goal

Contents

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Viewpoint Types

- **Viewpoints for designing**
  - typically used by architects in the design process
  - Examples: Application diagram, Process diagram

- **Viewpoints for deciding**
  - intended to support managers in making decisions
  - Examples: landscape map, cross-reference table, analysis report

- **Viewpoints for informing**
  - inform stakeholders about an architecture
  - Examples: process illustration, animation, cartoon
Level of Detail

- **Details**
  - small part of an architecture with high level of detail
  - e.g. for a software engineer designing and implementing a component, or process owner responsible for optimizing a process

- **Coherence**
  - spans multiple aspects or layers and shows their relations
  - e.g. for an operational manager responsible for IT support for a number of business processes

- **Overview**
  - abstract, comprehensive view of multiple aspects and layers
  - for enterprise architects and upper-level managers
Examples views:

- Registration system
  - Application component Registration system
  - Frequency of use: daily, end of life: 30-06-2007
  - 1) high, 2) Damage

- Payment system
  - Financial: 1) low, 2) Finance
  - Technical: 1) medium, 2) Damage

- Acceptation system
  - Acceptation Interface

- Assessment service
  - Assessment system
  - Document Information System

Legenda:
- Functional quality: high, medium, low
- Technical quality: owner, label

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Modelling and Views

- Declaration Service
- Accept and Register claim
- Acceptation Service
- Assess claim
- Assessment service
- Payment Service
- Pay claim
- Customer administration service
- Customer File Service
- Mainframe
- Message Queing
- DBMS
- CICS
- Payment system
- NAS File Server
- Damage notification
- Acceptation system
- Assessment system
- Customer administration system
- Messaging service
- Claim Files Service
- Customer File Service
- Mainframe
- Message Queing
- DBMS
- CICS
Roadmapping: differences as-is/to-be

2006 - current state
- model
  - evolves in
    - 2008 - in between state
    - changes
      - added
      - removed
    - Program Portfolio
    - Application cooperation
    - Applications and infrastructure
    - Process, service and application
    - Applications
      - Payment system
        - Customer administration system
          - Used-by relation (Payment system - Acceptation system)
          - Used-by relation (Customer administration system - Assessment system)
    - Project Portfolio

2010 - future state
- changes

Legend
- Show differences between periods
  - both in 2006 - current state and 2010 - future state
  - only in period 2006 - current state
  - only in period 2010 - future state
ArchiMate and ...
ArchiMate and other languages

- *ArchiMate: perfect starting point for MDA and software development*
  - ArchiMate incorporates the service paradigm
  - ArchiMate has implementation relationships to process modeling languages (BPNM, BPEL)
  - ArchiMate has implementation relationships to software engineering design languages (UML)

- *ArchiMate connects architectural domains*
  - It has a broader scope, but less detail than UML and BPMN
  - It does not replace specialized languages for different architectural domains, such as UML, BPMN and others
ADM and the ArchiMate framework
Support for ArchiMate

- ArchiMate is commercially supported
  - By (certified) toolvendors
    - BiZZdesign: Architect
    - Casewise: Corporate Modeler
    - IDS Scheer: Aris ArchiMate Modeler
    - Telelogic: System Architect
    - Troux: Metis
  - By a large number of service providers like Atos Origin, BiZZdesign, Capgemini, Getronics, Logica, Ordina,...

- And used by many organisations
  - Finance, governance, transport, energy, water, education, health care, health insurance, industry, public sector, ...
Service providers

- Atos Origin
- Capgemini
- ORDINA
- logica
- Getronics PinkRoccade
- SOGETI
- solutions4u
- INNERVATE
- mendix
- arch1xl
- NOVLUS
- BiZZdesign

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ArchiMate and The Open Group

- ArchiMate is maintained by The Open Group
  - Including certification for tool support, training and individuals
- The ArchiMate Forum
  - Platform and community for everyone involved with the use and evolution of ArchiMate
    - Henry Franken (chair, BiZZdesign)
    - Erik Proper (vice-chair, Capgemini)
    - Roland Ettema (Logica)
    - Garry Doherty (director Open Group)
Summary ArchiMate

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