ArchiMate Tutorial

The open standard language for modelling and visualizing enterprise architecture

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Do you recognize this?
Proposed schedule

- Introduction
- Enterprise Architecture
- ArchiMate
  - Motivation and scope
  - Framework
  - Examples
  - Meta model
  - Views and viewpoints
  - Relations with other languages
  - Support for ArchiMate
- Summary
Enterprise Architecture

- Some basic concepts…
Enterprise Architecture

ISO/IEC 42010:

Architecture: the structure of a system in terms of
- its components,
- their externally visible properties,
- their relations,
- and the underlying principles

“Structure with a vision”
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
Views on Enterprise Architecture?

- **A process**
  - Way of working
  - Aimed at the development and use of enterprise architectures within an enterprise
  - With people and resources

- **A product**
  - A design that shows the coherence between products, processes, organisation, information supply and infrastructure, based on a vision and certain explicit starting points, principles and preferences
  - With the objective of *steering changes*
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

Example 1
- Stakeholder: city council
- Concern: development plan
- Viewpoint: photo of district from the air
- View: Aerial

Example 2
- Stakeholder: house owner
- Concern: building permit
- Viewpoint: Corner of the street, scope is one house
- View: Ground photo
IEEE 1471 (summary)
Ingredients of an EA Approach

Process

Viewpoints

Language

Enterprise Continuum, Repository, Reference Models

TOGAF

ArchiMate
Why one language?

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

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ArchiMate

- A *language* for describing architectures
- Covers business, application and technology layers
  - 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](http://www.opengroup.org/archimate) or [www.archimate.org](http://www.archimate.org)
The ArchiMate Language

- High-level modelling within a domain
- Modelling relations between domains
- Relate to standards
- Basis for visualisations
- Basis for analyses
Layers, Aspects, and Domains

Environment

Business

Application

Technology

Product domain

Information domain

Process domain

Organization domain

Data domain

Application domain

Technical infrastructure domain

Passive “object”

Behaviour “verb”

Active “subject”
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
Processes and roles

Event

Damage notification

Accept and Register claim

Assess claim

Pay claim

Event

:-) customer

Process

Administrative employee

Taxateur

Employee Finance

Role

Specialist Car damage

Triggering Assignment
Business objects

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

Business object

Aggregation
Specialization
Realization
Applications and application services

- Business process
- Application service
- Application component
- Application interface

Used-by Realization Composition
Derived relations
Generic meta model ArchiMate

[Diagram of ArchiMate meta model]

- **External**
  - Object
  - Service

- **Internal**
  - Behaviour element
  - Interface
  - Structure element

- **Passive structure**
- **Behaviour**
- **Active structure**

[Logo and website link: BiZZdesign www.bizzdesign.com]
Business layer meta model
Application layer meta model
Technology layer meta model

- **Artifact**
- **Infrastructure service**
- **Infrastructure interface**
- **Node**
- **System software**
- **Device**
- **Communication path**
- **Network**

Diagram showing relationships among technology layer components.
Some examples from daily practice
Example: City of Enschede - 1

Product

Application with functions

Application data objects

Database

BiZZdesign www.bizzdesign.com
Example: City of Enschede - 2
Example: City of Enschede - 3

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
Less is more...

“let’s ask the architect to leave out this rubbish, then we will get a nice result!”
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
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
Modelling and Views
Roadmapping: differences as-is/to-be
ArchiMate and… other languages

- ArchiMate: perfect starting point for MDA and software development
  - ArchiMate incorporates the service paradigm
  - ArchiMate has implementation relationships to process modelling 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
ArchiMate and... the ADM

BiZZdesign

www.bizzdesign.com
ArchiMate and… support

- ArchiMate is commercially supported
  - By (certified) tool vendors
    - 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, healthcare, health insurance, industry, public sector, …
ArchiMate in HE
ArchiMate and... Service providers
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)
Modelling.....YES WE CAN!

- The *language* for describing enterprise 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
- Widely supported
- Open *standard* maintained by *The Open Group*
Question?