Introduction to Enterprise Architecture and Enterprise Modelling

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Are we speaking about buildings?

In the literature and community of practices, there are various **perspectives** in regards to the meaning of the term enterprise architecture

From a terminological point of view

- The term **enterprise** can be defined as describing an **organizational unit, organization, or collection of organizations** that share a set of **common goals** and **collaborate** to provide specific products or services to customers
  - The term enterprise covers **various types of organizations**, regardless of their size, ownership model, operational model, or geographical distribution
  - It includes those organizations' **complete socio-technical systems**, including people, information, processes, and technologies

- The term **architecture** refers to fundamental **concepts or properties of a system in its environment**, embodied in its elements, relationships, and in the principles of its design and evolution

Enterprise Architecture Definitions

- The **MIT Center for Information Systems Research** defined enterprise architecture as the specific aspects of a business that are under examination:
  - Enterprise architecture is the organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the company's operating model for delivering goods and services to customers

- The **Enterprise Architecture Body of Knowledge** defines enterprise architecture as a practice, which analyzes areas of common activity within or between organizations, where information and other resources are exchanged to guide future states from an integrated viewpoint of strategy, business, and technology

- **IT analysis firm Gartner** defines the term as a discipline where an enterprise is led through change
  - Enterprise architecture (EA) is a discipline for proactively and holistically leading enterprise responses to disruptive forces by identifying and analyzing the execution of change toward desired business vision and outcomes
  - Enterprise architecture is used to steer decision making toward the evolution of the future state architecture

ISO Definition

"Architecture" names that which is fundamental about a **system**; the set of essential **properties** of a system which determine its form, **function**, **value**, **cost**, and **risk**

That which is fundamental to a system takes several forms

- its **elements**: the constituents that make up the system
- the **relationships**: both internal and external to the system
- the **principles** of its design and evolution

ISO/IEC/IEEE 42010 - http://www.iso-architecture.org/ieee-1471/cm

Enterprise Architecture: Overall View

Enterprise Strategies & Direction

Project & initiatives

Business Process and Services

Applications

Data

IT infrastructure and services

Organization & People

WHY ENTERPRISE ARCHITECTURE?

Architecture and Architecture Description

- An **architecture is a conception of a system** – i.e., it is in the human mind. An architecture may exist without ever being written down

- An **Architecture Description** is an artifact that expresses an Architecture to share with others

- An **Architecture Description** consists of one or several Architecture Models

- A **Model** is a reproduction of a relevant part of reality which contains the essential aspects to be investigated

Enterprise Architecture (Description)

- An "**Architecture**" (for anything) would be the total **set of descriptive representations (models)** relevant for describing a complex object such that it can be created and that constitute a baseline for changing the object after it has been instantiated

- Therefore "**Enterprise Architecture**" would be the **total set of models relevant for describing an Enterprise**, that is, the descriptive representations required
    - to **create** a (coherent, optimal) enterprise
    - to **serve as a baseline for changing** the Enterprise once it is created
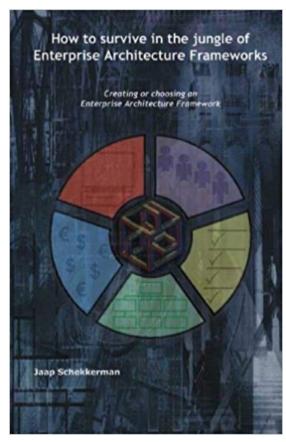
Architecture Framework

- An Architecture Framework establishes a common practice for **creating, interpreting, analyzing** and **using architecture descriptions**

- It is a **logical structure** for <u>classifying</u> and <u>organizing</u> the descriptive representations of a system

The Jungle of Enterprise Architecture Framework

A wide list of frameworks

- **Consortia-developed frameworks**
    - Generalised Enterprise Reference Architecture and Methodology
    - IDEAS Group – a four-nation effort to develop a common ontology for architecture interoperability
    - ISO 19439 Framework for enterprise modelling
    - TOGAF – The Open Group Architecture Framework – a widely used framework including an architectural Development Method and standards for describing various types of architecture
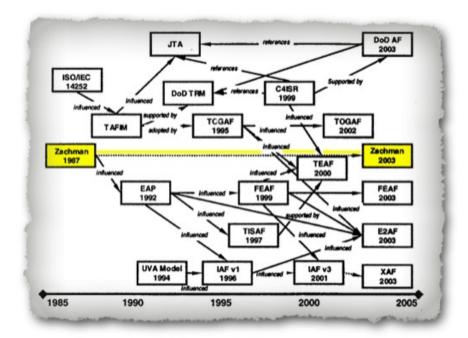
- **Defense industry frameworks**
    - AGATE – the France DGA Architecture Framework
    - DoDAF – the US Department of Defense Architecture Framework
    - MODAF – the UK Ministry of Defence Architecture Framework
    - NAF – the NATO Architecture Framework

- **Government frameworks**
    - European Space Agency Architectural Framework (ESAAF) - a framework for European space-based Systems of Systems
    - Government Enterprise Architecture (GEA) – a common framework legislated for use by departments of the Queensland Government
    - Treasury Enterprise Architecture Framework (TEAF) – a framework for treasury, published by the US Department of the Treasury in July 2000

- **Open-source framework**
    - MEGAF is an infrastructure for realizing architecture frameworks that conform to the definition of architecture framework provided in ISO/IEC/IEEE 42010
    - Praxeme, an open enterprise methodology, contains an enterprise architecture framework called the Enterprise System Topology
    - TRAK – a general systems-oriented framework based on MODAF 1.2 and released under GPL/GFDL
    - SABSA is an open framework and methodology for Enterprise Security Architecture and Service Management, that is risk based and focuses on integrating security into business and IT management
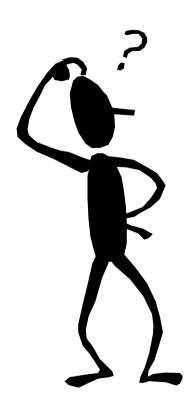
Enterprise Architecture Frameworks

- We can distinguish two main types of structures for Enterprise Architecture Frameworks

    - **Matrix of aspects and perspectives**
        - e.g. -- Zachmann Enterprise Architecture Framework

    - **Layer architecture** with business, applications and technology
        - e.g. -- ArchiMate – A modeling language for EA

Questions?