Enterprise Architectures
Summary

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Contents

- Enterprise Architecture: An Integrated view of the Enterprise
- Integration stack
- Integration scenarios
- EA Frameworks
- Characteristics of architectures
Why do we use computers in enterprises?

- Cost savings
- Competitive advantage
- Infrastructure
- Business Intelligence
- Enterprise Applications
- Technology is shaping the enterprise
- The Enterprise = The Information Systems

The Goal: An integrated view of the enterprise

- Functions
  - Administration
  - Production
  - Shipments management
  - Sales/shipments
  - Customer
  - Core business processes
  - Sales forecasting and budgeting
  - Order entry and delivery
  - Integration within the enterprise and between enterprises?

Legacy: Silo Systems
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The integration stack

- Transport Layer: Physical and logical connections
- Content Layer: Syntax and semantics
- Process Layer: Participants and roles

Adaptation: Internal - External

Example: Persons from different countries with different native languages need to do business with each other.
Who does the adaptation?

- I talk Your language
  - The sender does the adaptation
- You talk my language
  - The receiver does the adaptation
- I talk my language, You talk your language, He does the translation
  - The middleman does the adaptation
- I talk Esperanto, You talk Esperanto
  - The sender and the receiver do the adaptation

Integration topology options

- Point-to-point
  - Adaptation: Sender or Receiver
- Hub and spoke
  - Adaptation: Middleman
- Point-to-everyone
  - Adaptation: Everyone
The adaptation stack

- **Process Layer**: Choreography, orchestration
- **Content Layer**: Format conversions (EDI->XML), code mapping,...
- **Transport Layer**: Protocol conversions, character conversions, address conversions...

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- **Integration scenarios**
- EA Frameworks
- Characteristics of architectures
ERP is an integrated solution to the problem of how to control all major business processes with a single software architecture in real time. It is a process of planning and managing all resources and their use in the entire organization.

- Processes
- ERP system
- Content
- ERP database
- Transportation
- ERP system

Adaptation:
Enterprise - ERP application

PDM: A representation of facts, concepts, or instructions about one or more products in a formal manner suitable for communication, interpretation or processing by human beings or by automatic means

- Processes
  - PDM, PLM
- Content
  - PDM
- Transportation
  - Open

Adaptation:
Enterprise - PDM application
EAI (enterprise application integration) is aimed at modernizing, consolidating, and coordinating the computer applications in an enterprise.

**Processes**
- Choreography: Collaborative protocols

**Content**
- EAI services

**Transportation**
- EAI system + adapters

**Adaptation:**
- The Middleman
- Adapters

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A Data Warehouse is
- Integrated
- Subject-Oriented
- Time-Variant
- Nonvolatile
- Database that provides support for decision making

**Processes**
- Open

**Content**
- Integrated

**Transportation**
- ETL Tools
Enterprise Content Management (ECM) is the technologies used to capture, manage, store, preserve and deliver content and documents related to organizational processes.

ECM tools and strategies allow the management of an organization’s unstructured information, wherever that information exists.

- Processes
  - Content management processes
- Content
  - Integrated or open
  - Metadata integrated
- Transportation
  - Open

Adaptation:
Sender

SOA & BPM

Parties
- Client
- Service

- Processes
  - Orchestration
- Content
  - Integrated or open
- Transportation
  - ESB

Adaptation:
Process: Services
Content: Client
BPM & SOA, business meets technology

- Business processes
- Business services
- Composite services
- Atomic services
- Applications

Business to business integration (B2Bi)

- Different requirements and approaches within enterprises and between enterprises
- Examples: Rosettanet, ebXML, HL7

- Processes
  - Common choreography
- Content
  - Common specs for messages
- Transportation
  - Common specs for transportation

Adaptation:
Sender and Receiver
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From information systems to an enterprise

- Why should we make a distinction between an enterprise and the processes, data and infrastructure of which it is composed?
- Focus on the abstraction of the enterprise architecture
- Is an enterprise a house or a city, which is a collection of houses, roads and other infrastructure
- How do you integrate?
- How do you manage change?
- Enterprise today = Information systems
Enterprise Architecture

**IFEAD:**
- Enterprise Architecture is a complete expression of the enterprise; a master plan which "acts as a collaboration force" between aspects of business planning such as goals, visions, strategies and governance principles; aspects of business operations such as business terms, organisation structures, processes and data; aspects of automation such as information systems and databases; and the enabling technological infrastructure of the business such as computers, operating systems and networks.

**Wikipedia:**
- Enterprise Architecture is the practice of applying a comprehensive and rigorous method for describing a current or future structure for an organization's processes, information systems, personnel and organizational sub-units, so that they align with the organization's core goals and strategic direction.

![ENTERPRISE ARCHITECTURE - A FRAMEWORK™](image)
Zachman Framework

- The Framework is a classification scheme for descriptive representations of a complex object, in this case the Enterprise.
- Some set of the models identified in the Framework may be produced in some sequence by some application development methodology, but the Framework itself is neutral relative to the methodology or tool or to a manual process for creating the Enterprise.
- The selected subset of Cells, or the composites of Cells, or the sequence of producing the Cells for application development (or for manual systems development, for that matter) is a function of the value system inherent in the methodology (or tool).
- The Framework implies nothing about the sequence in which the models may (or may not) be produced methodologically nor does it imply anything about who produces or contributes to the production of the models.
The Open Group Architecture Framework (TOGAF)

- Business Architecture
- Data Architecture
- Applications Architecture
- Technical Architecture

- ADM Architecture Development Method
- Principles: How to develop good principles

Architecture Development Cycle

- ADM is iterative
  - Whole process
  - Between phases
  - Within phases

- For each iteration:
  - The breadth of coverage
  - The level of detail
  - Time horizon
  - The architectural assets
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Types of architectures

- Enterprise
- System
- Software

Source: Jaap Schekkerman 2004
EA Critical success factors

- Create and maintain a common vision of the future shared by both the business and IT, driving continuous business/IT alignment
- Create a holistic end-to-end future-state enterprise architecture process that accurately reflects the business strategy of the enterprise
- Create, unify and integrate business processes across the enterprise
- Develop a proactive organisation capable of meeting customer demands, outpacing the competition and driving innovation
- Eliminate duplicate and overlapping technologies, decreasing support costs

Enterprise Architecture characteristics

- Holistic in scope
  - Extended enterprise, B2B
- Collaboration based
  - All key stakeholders
- Alignment driven
  - Align extended business and technology drivers
- Value driven
  - Business value of EA solutions
- Dynamic environments
  - Flexible and dynamic to changing business drivers
- Normative results
  - Measured, validated solution sets
- Non-prescriptive
  - Not an implementation approach
Creating your EA Framework

1. Evaluate and understand your enterprise business environment
2. Define the goals and objectives of the framework to serve
3. Check which existing framework fits best to 1&2
4. Customize the framework and choose modelling techniques and working methods
5. Testrun your framework
6. Refine your framework and your methods

Questions?

All the best for your EA journey!