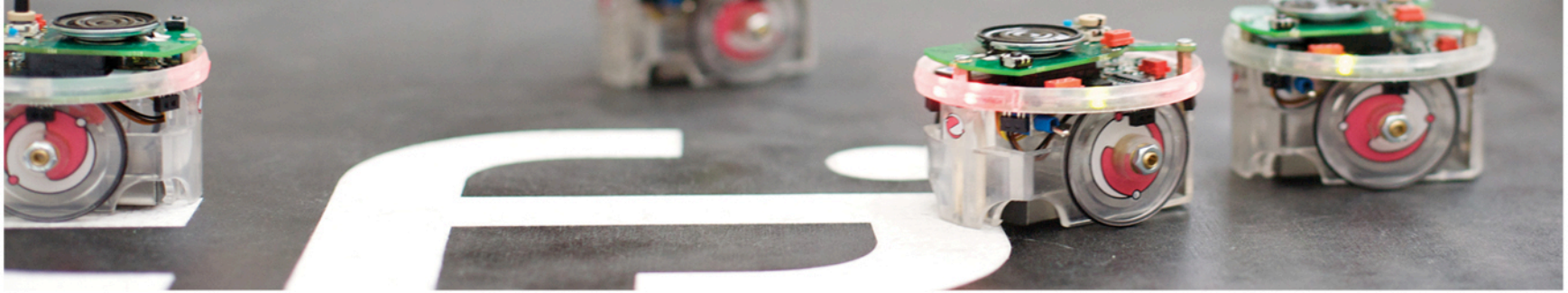


UiO : Institutt for informatikk
Det matematisk-naturvitenskapelige fakultet

IN5430 IT and Management

Enterprise Architecture

Feb 6th 2019

Bendik Bygstad

Learning outcomes

- Understand the concept and purpose of enterprise architecture and business process.
- Can use the Ross/Weill model to analyse an operating model (Exercise1)
- Can model a core diagram (Exercise 2)
- Can reflect critically on strategy and enterprise architecture

Enterprise Architecture: Definition

"Enterprise architecture (EA) is

- the definition and representation of a high-level view of an enterprise's business processes and IT systems,
- their interrelationships,
- and the extent to which these processes and systems are shared by different parts of the enterprise."

Tamm et al, 2011

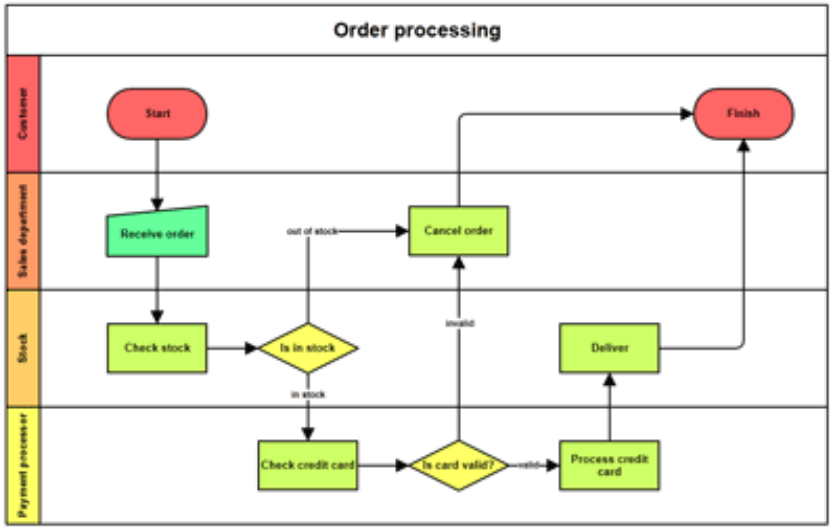
"EA is the organising logic for business processes and IT infrastructure reflecting the integration and standardisation requirements for the company´s operating model"

Ross et al., 2006

Business Process

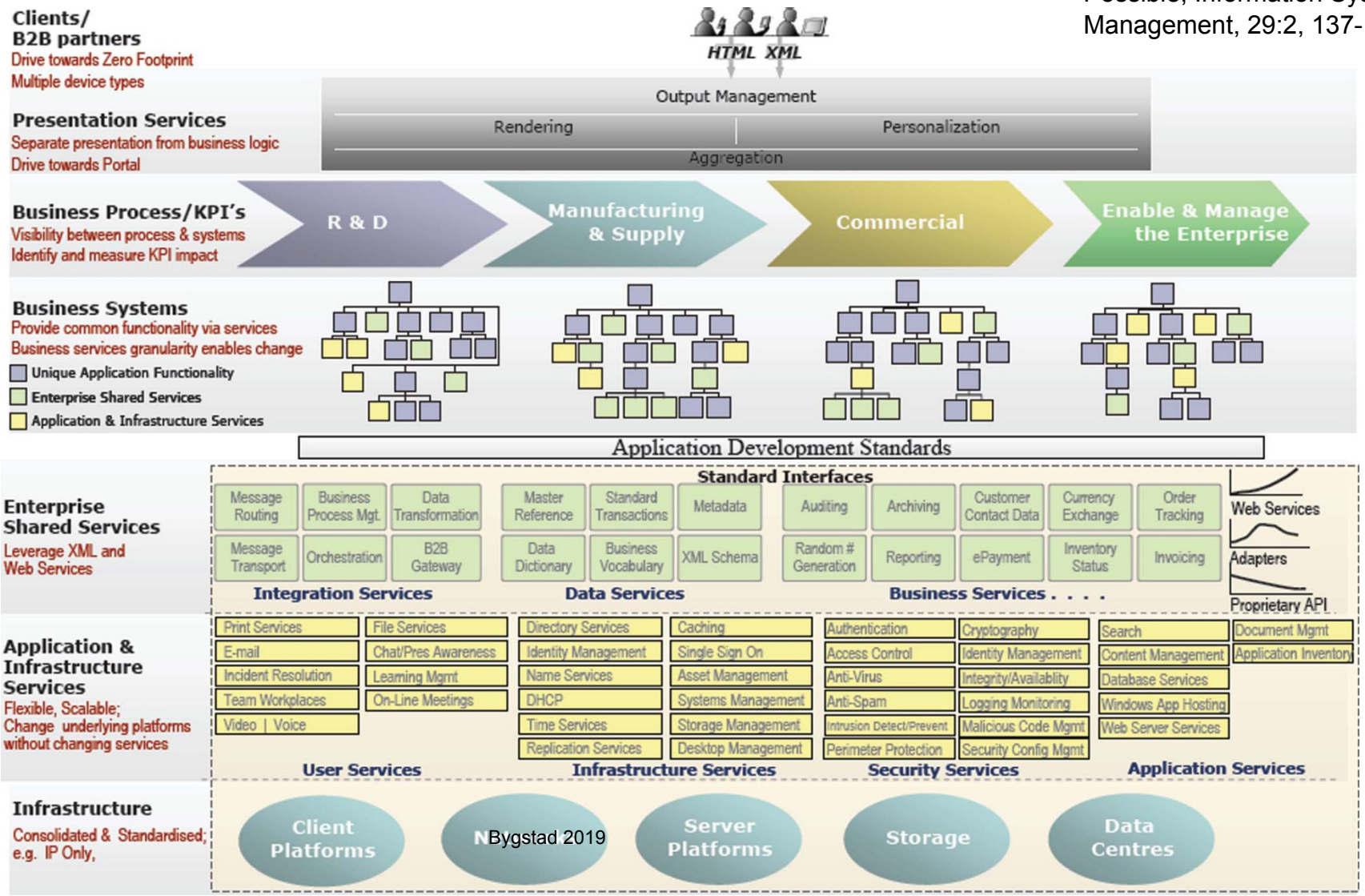
"A sequence of tasks that create value for a customer."

Davenport



Eksempel: Pharma Ltd

Andrew Martin (2012): Enterprise IT Architecture in Large Federated Organizations: The Art of the Possible, Information Systems Management, 29:2, 137-147

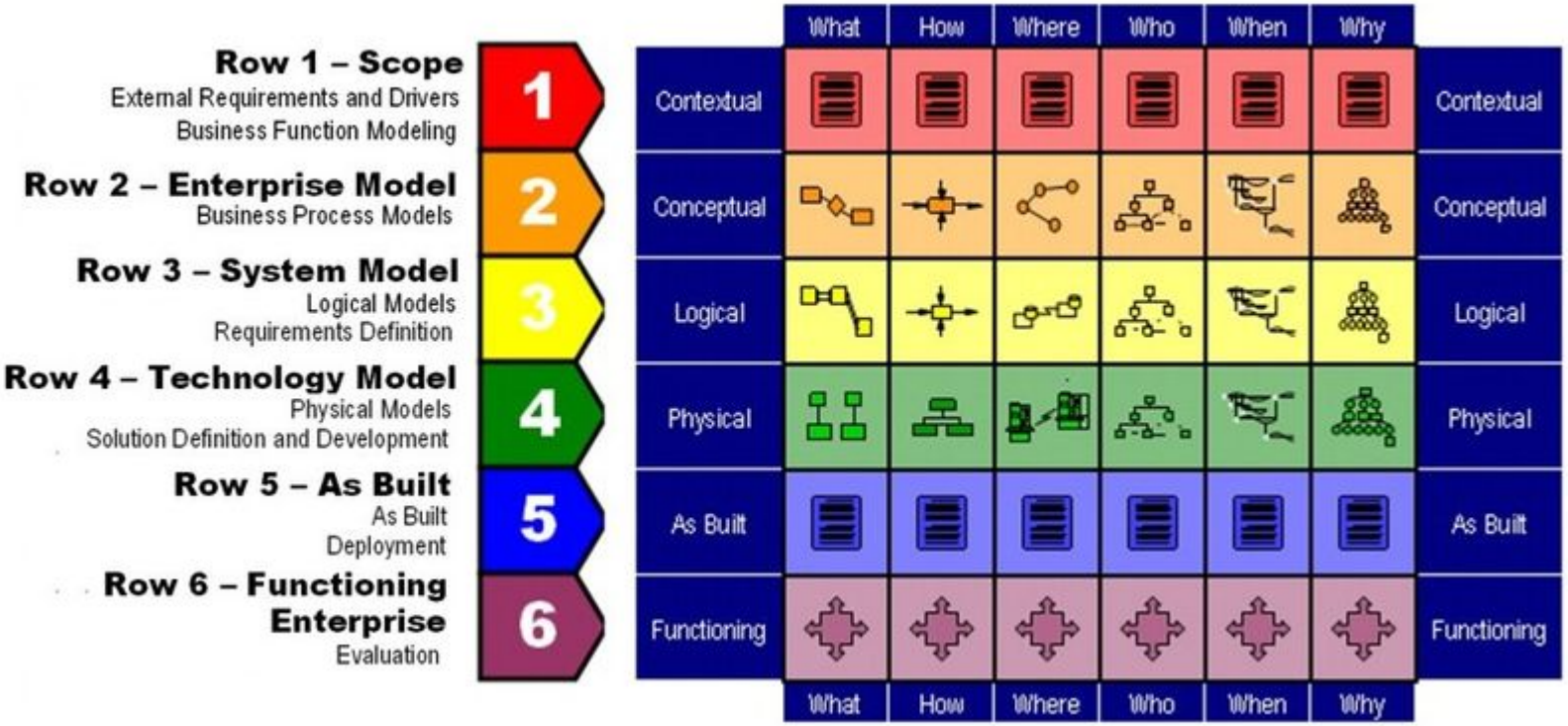


Enterprise Architecture

1987: Zachman´s article in IBM Journal
1992: Zachmans Framework
1995: TOGAF 1 (with Department of Defence)
2004: Weill/Ross: IT Governance
2006: Ross/Weill/Robertson: AE as Strategy
2011: TOGAF 9
2014: Agile Enterprise Architecture (Bloomberg)

Today there are 15-20 different frameworks

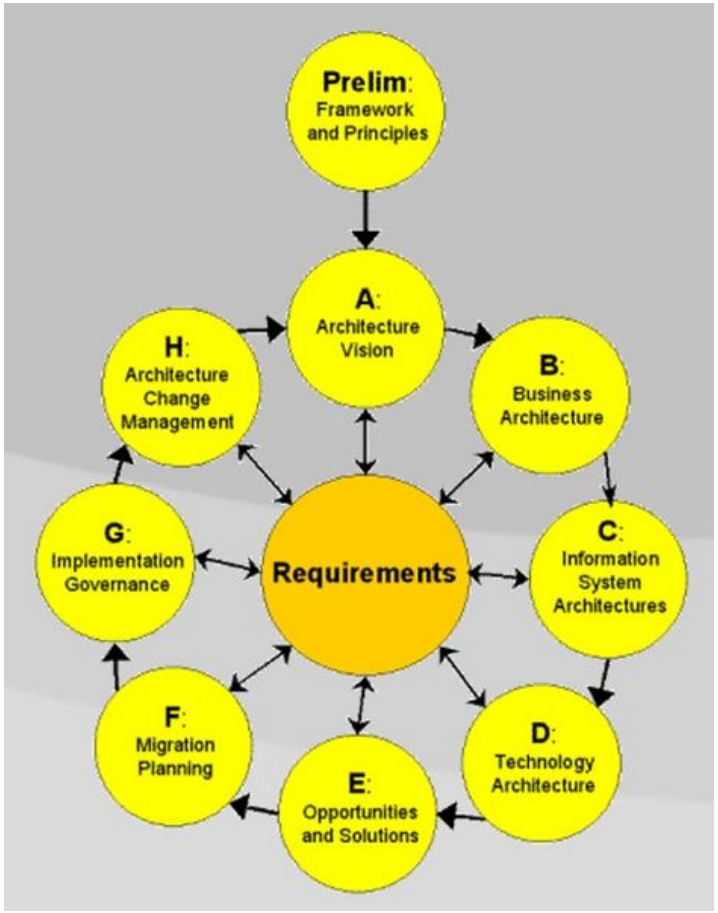
Zachman´s framework



TOGAF: The Open Group Architectural Framework

Four layers:

- **A Business (or Business Process) Architecture** - this defines the business strategy, governance, organization, and key business processes.
- **A Data Architecture** - this describes the structure of an organization's logical and physical data assets and data management resources.
- **An Applications Architecture** - this kind of architecture provides a blueprint for the individual application systems to be deployed, their interactions, and their relationships to the core business processes of the organization.
- **A Technology Architecture** - this describes the logical software and hardware capabilities that are required to support the deployment of business, data, and application services. This includes IT infrastructure, middleware, networks, communications, processing, standards, etc

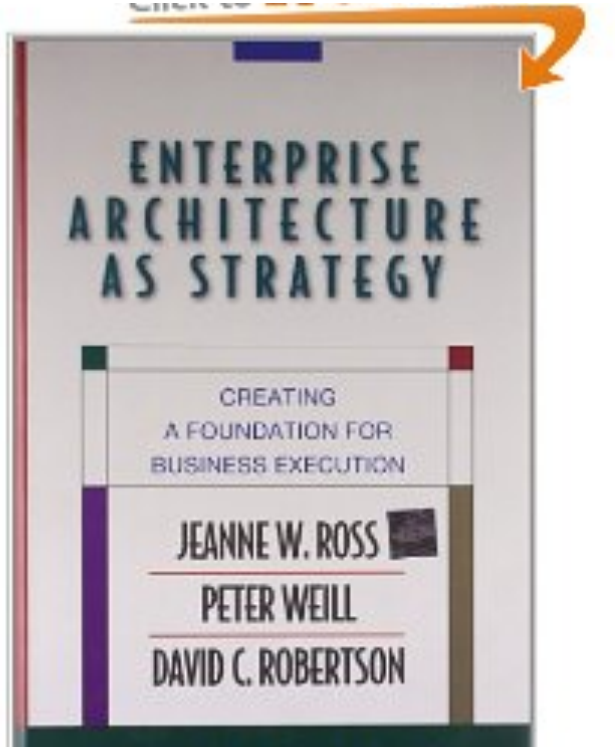


Enterprise Architecture as Strategy Creating a Foundation for Business Execution

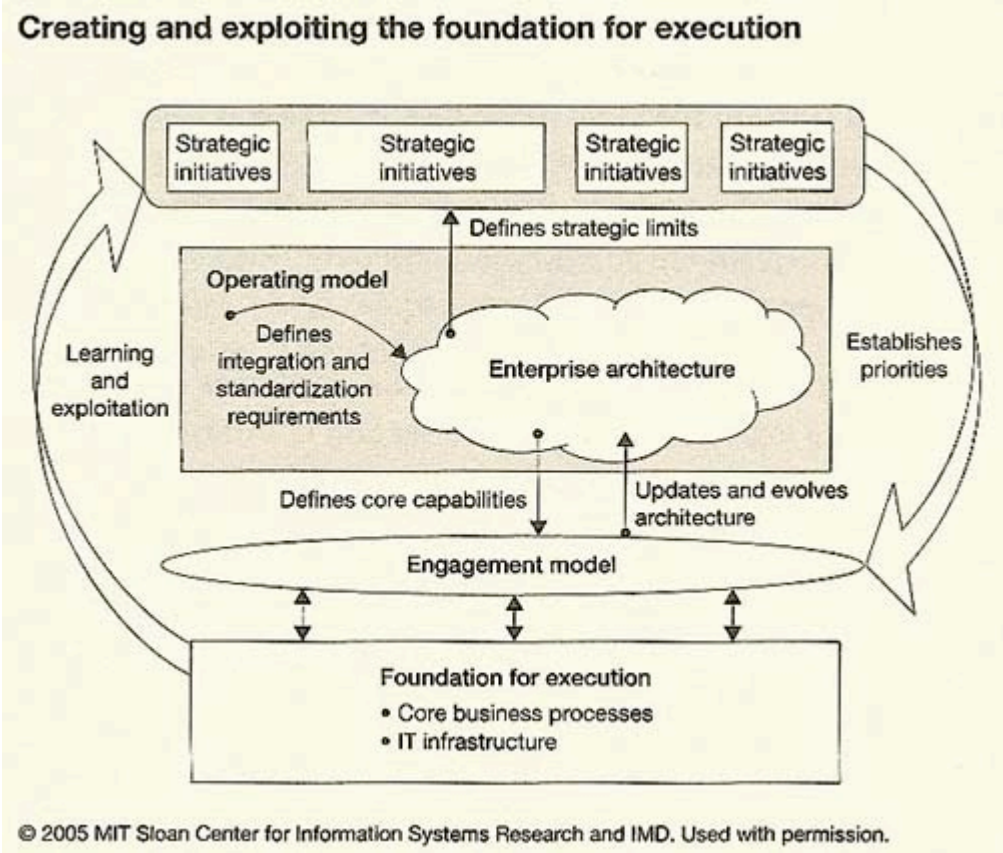
- Ross, Weill, Robertson 2006
- MIT, Sloan School, Center for Information Systems Research
- Builds on case studies from over 200 companies
- Contekst: Large companies
- Management oriented:
  - High-level analysis
  - Focuses on ROI and Business Agility

Ross, Weill, Robertson
Enterprise Architecture As Strategy

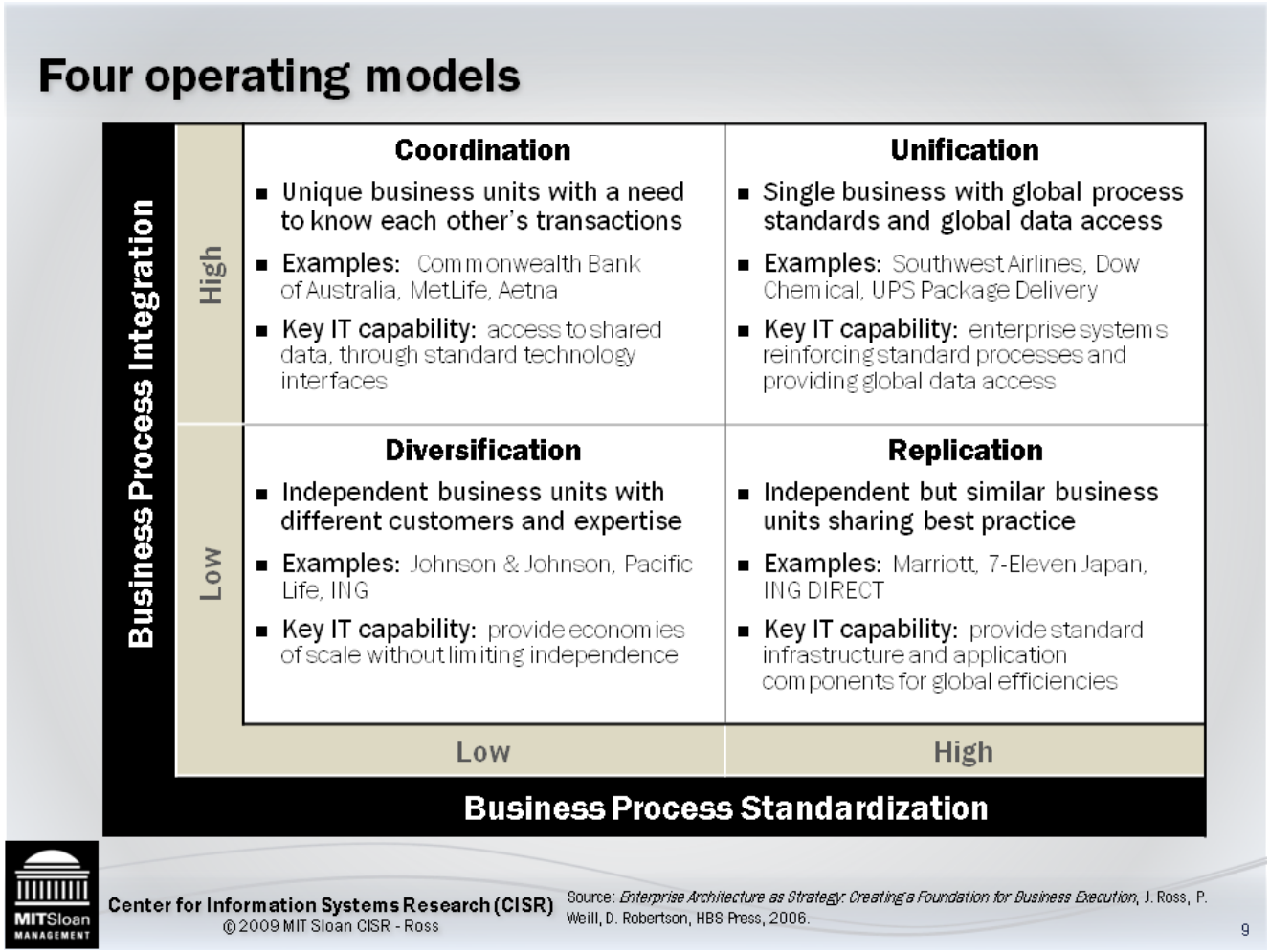
1. Definer din operative modell
2. Implementer operativ modell via Enterprise Architecture
3. Klatre opp modenhetsstigen
4. Lær!
5. Bygg infrastrukturen prosjekt for prosjekt
6. Bruk EA for outsourcing
7. Utnytt infrastrukturen for lønnsom vekst



1. Establish the foundation



2. Choose Operating Model



2b) Choose Operating Model

Coordination
- Shared customers, products and suppliers
- Impact on other business unit transactions
- Operationally unique business units or functions
- Autonomous business management
- Business unit control over business process design
- Shared customer/supplier/product data
- Consensus processes for designing IT infrastructure services; IT applications decisions made in business units

Unification
- Customers and suppliers may be local or global
- Globally integrated business processes often with support of enterprise systems
- Business units with similar or overlapping operations
- Centralized management often applying functional/ process/business unit matrices
- High-level process owners design standardized processes
- Centrally mandated databases
- IT decisions made centrally

Diversification
- Few, if any, shared customers or suppliers
- Independent transactions
- Operationally unique business units
- Autonomous business management
- Business unit control over business process design
- Few data standards across business units
- Most IT decisions made within business units

Replication
- Few, if any, shared customers
- Independent transactions aggregated at at high level
- Operationally similar business units
- Autonomous business unit leaders with limited discretion over processes
- Centralized (of federal) control over business process design
- Standardized data definitions but data locally owned with some aggregation at corporate level
- Centrally mandated IT services

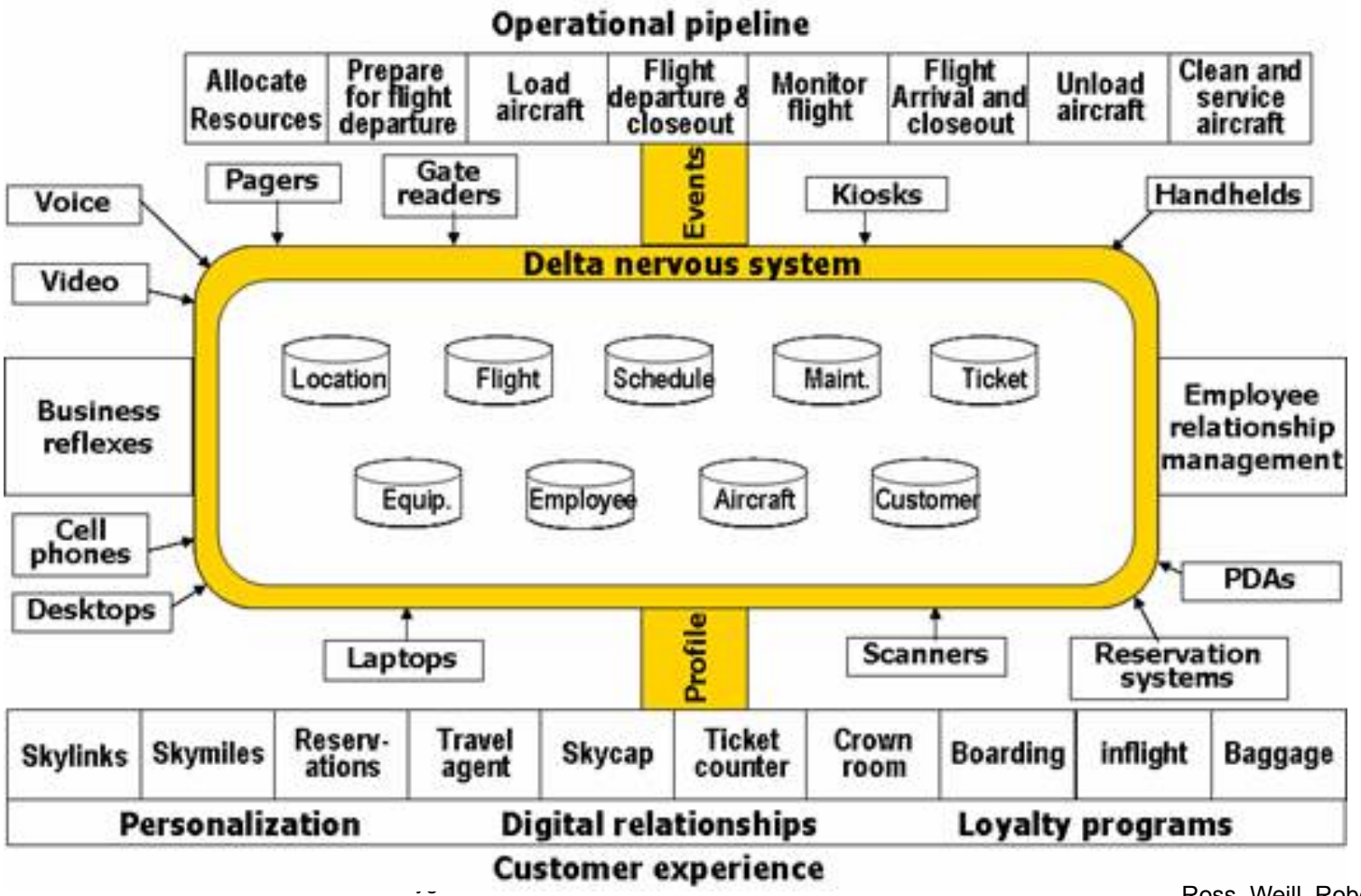
Exercise 1

- What is the operating model of University of Oslo
- Should it be changed?

2. Implement operative model with EA

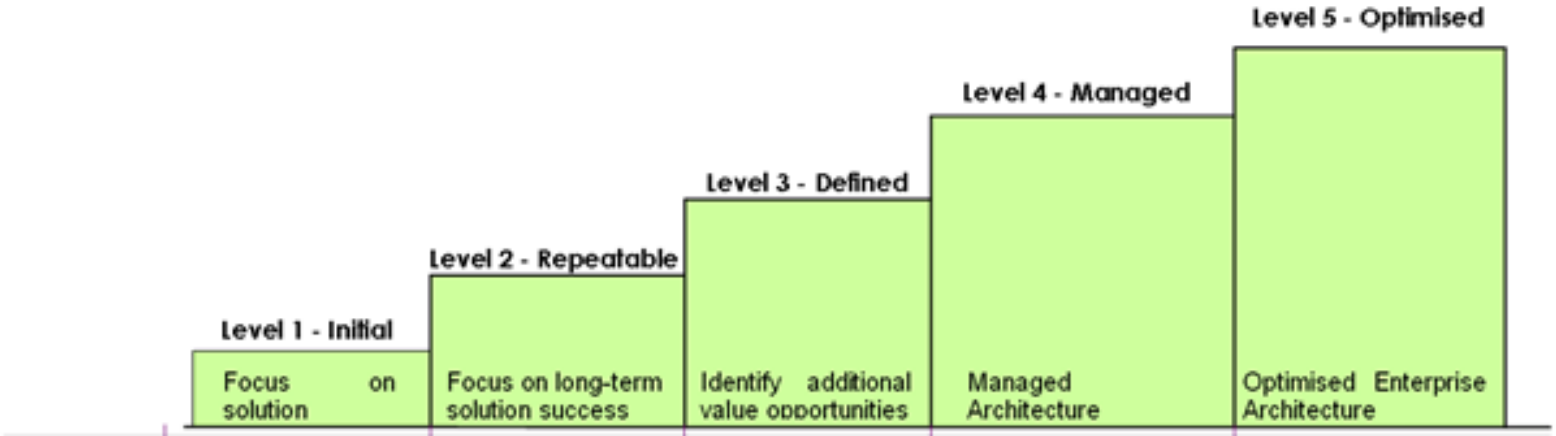
- Core diagram:
  - Core business processes
  - Shared data driving core processes
  - Key linking and automation technologies
  - Key customers

3. Core diagram



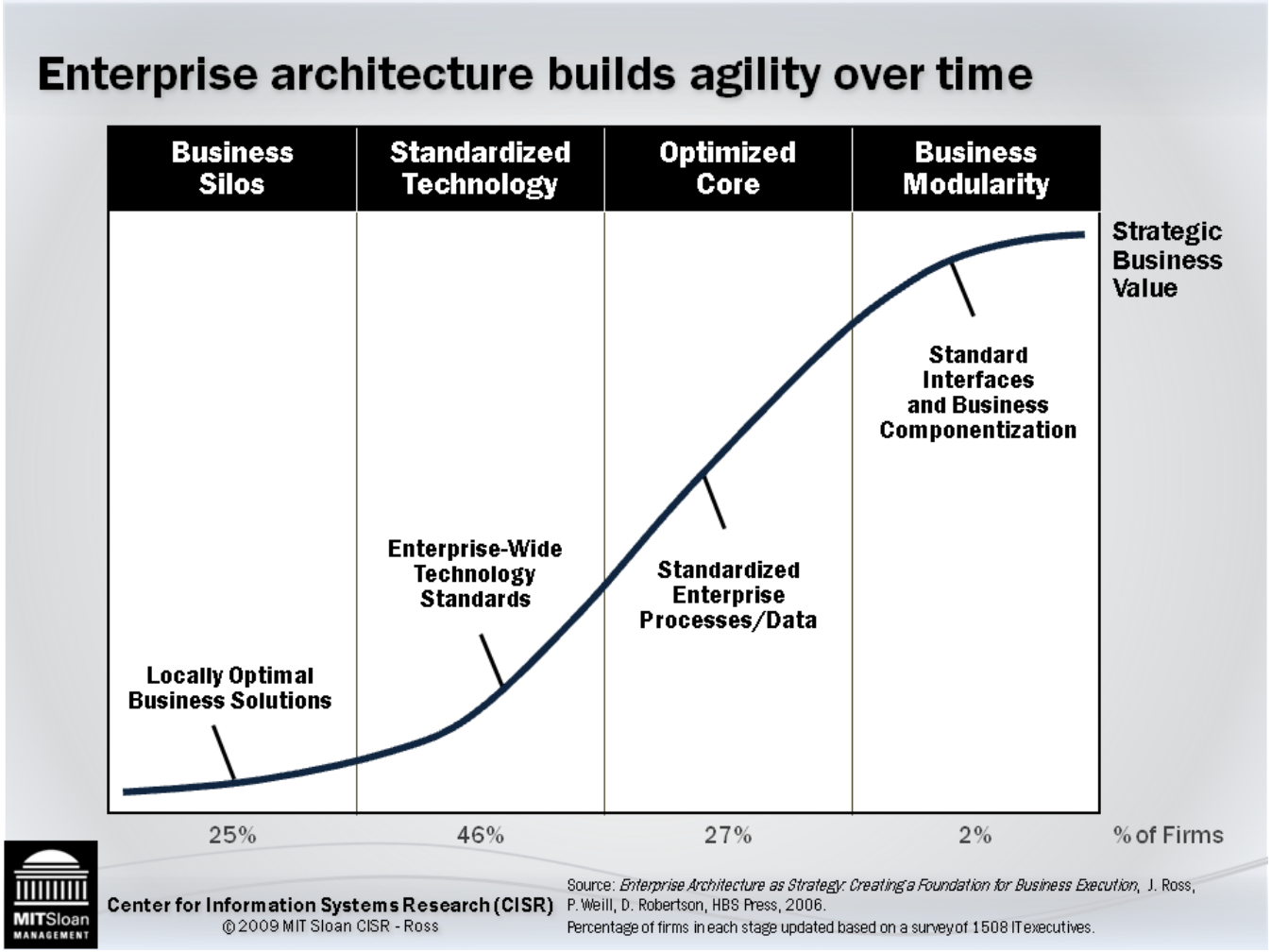
Ross, Weill, Robertson ,2006

4. Navigate the maturity stages



	Level 1 - Initial: Focus on solution	Level 2 - Repeatable: Focus on long-term solution success	Level 3 - Defined: Identify additional value opportunities	Level 4 - Managed: Managed Architecture	Level 5 - Optimised: Optimised Enterprise Architecture
Enterprise Architecture	Definitions are agreed	Definitions are available to those who know where to look.	Enterprise Architecture published, communicated and used	Improvements to enterprise architecture framework	Pervasive adoption of the enterprise architecture
Enterprise Architecture Repository	EA team only, while providing services to projects.	Accessed by key content contributors. EA repository first published on EA web site	Loosely connected community of users across the organisation units	Significant EA Assets are documented and modelled, regularly reviewed and updated.	EA assets used for architecture governance and compliance
Enterprise Architecture Development Process	Process only used by Enterprise Architecture	Some use by Solution Architects in Projects. EA Processes integrated with Euroclear	Used by all key projects	Used by all new projects	Continuous improvements to enterprise architecture development process
Target Enterprise Architecture	Some large granularity Service Domains defined. Principles identified.	Service Domains are mapped to existing applications and COTS applications. Business Process reference model establish for core processes.	Reference Architecture in general use for key	Re-use of common application services and Application components Fine granularity services identified	All Reference Architecture models are established and used for all new applications and some legacy

5. Learn…


Enterprise architecture builds agility over time
Business Silos
Standardized Technology
Optimized Core
Business Modularity
Strategic Business Value
Locally Optimal Business Solutions
Enterprise-Wide Technology Standards
Standardized Enterprise Processes/Data
Standard Interfaces and Business Componentization
25%
46%
27%
2%
% of Firms
MITSloan MANAGEMENT
Center for Information Systems Research (CISR)
© 2009 MIT Sloan CISR - Ross
Source: Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, J. Ross, P. Weill, D. Robertson, HBS Press, 2006.
Percentage of firms in each stage updated based on a survey of 1508 IT executives.

Maturity and Governance

	Business Silos	Standardised Technology	Optimised Core	Business Modularity
IT Capability	Local IT Applications	Shared Technical Platforms	Organisation-wide processes and data	Plug-and-Play business process modules
Business Objectives	ROI of Local Business Initiatives	Reduced IT Cost	Cost and Quality of Business Operations	Speed to market; strategic agility
Funding Priorities	Individual Applications	Shared Infrastructure Services	Enterprise Applications	Reusable Business Process Components
Key Management Capability	Technology enabled change management	Design and update of standards / funding shared services	Core enterprise process definition and measurement	Management of reusable business processes
Who Defines Applications	Local Business Leaders	IT and Business Unit Leaders	Senior Management and Process Leaders	IT, Business and Industry Leaders
Key IT Governance Issues	Measuring and Communicating Value	Establishing local, regional and global responsibilities	Aligning process priorities with architecture objectives	Defining, sourcing and funding business modules
Strategic Implications	Local / Functional Optimisation	IT Efficiency	Business operational efficiency	Strategic agility

Research on EA?

- Tamm, T., Seddon, P.B., Shanks, G., and Reynolds, P. (2011) "How Does Enterprise Architecture Add Value to Organisations?," *Communications of the Association for Information Systems*, Vol. 28, Article 10.
- Martin, A. (2012). "Enterprise IT Architecture in Large Federated Organizations: The Art of the Possible." *Information Systems Management*, 29(2), 137-147.

How Does Enterprise Architecture Add Value to Organisations?

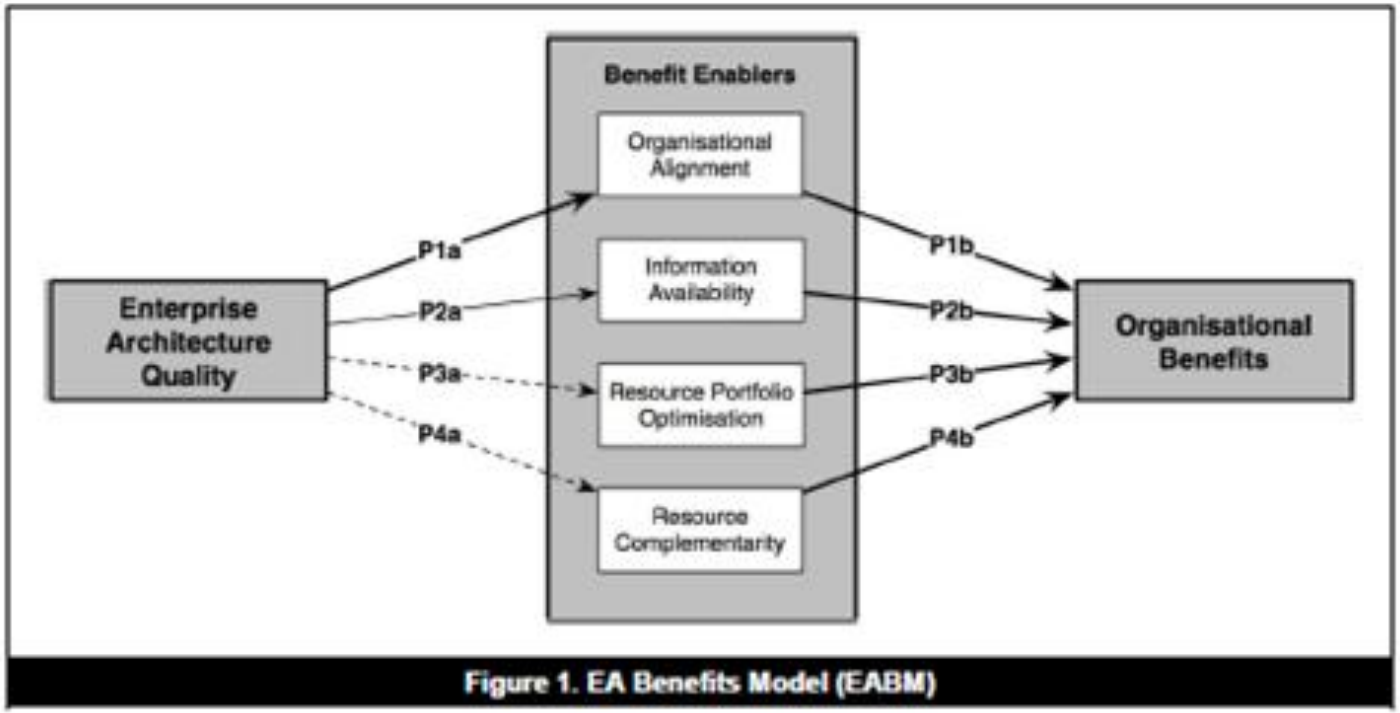


Figure 1. EA Benefits Model (EABM)

Tamm, T., Seddon, P.B., Shanks, G., and Reynolds, P. (2011) "How Does Enterprise Architecture Add Value to Organisations?," *Communications of the Association for Information Systems*, Vol. 28, Article 10.

Exercise 2

- Sketch the enterprise architecture of University of Oslo (Core diagram)