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DSMLs for Enterprise Architecture Management - An Analysis of Selected Approaches

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Open-Minded

Motivation
– Current Situation

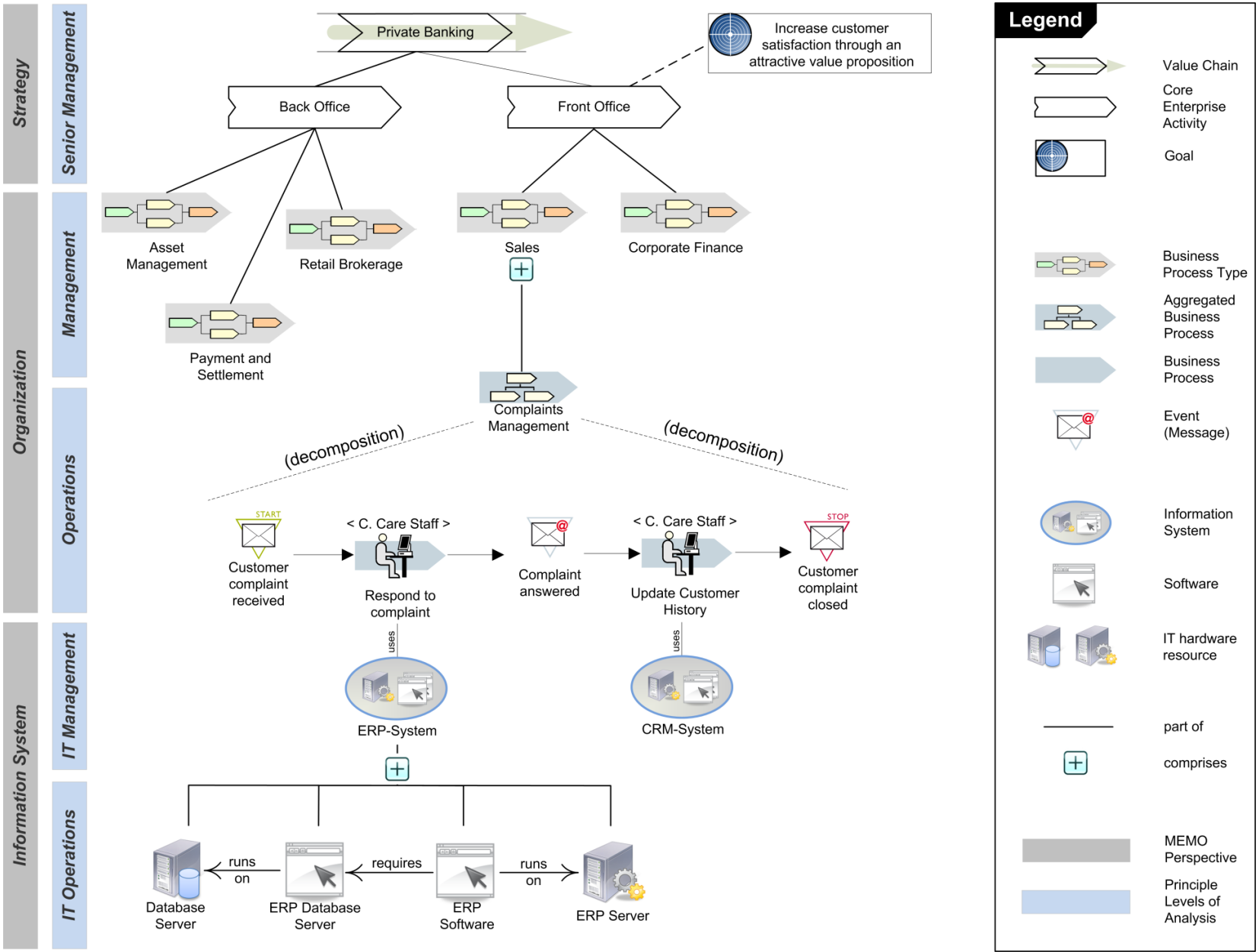
- IT management – a task of remarkable complexity
- "IT strategic planning" and "IT/Business Alignment" are (still) two of the major issues for IT executives
- Analysis and assessment of IT requires knowledge:
  - about IT artifacts, heterogeneous IT infrastructures, ever changing technologies, manifold interdependencies
  - … and about the business!
- Requires people with different professional backgrounds

Need to reduce complexity, increase transparency, foster communication and thereby support IT management

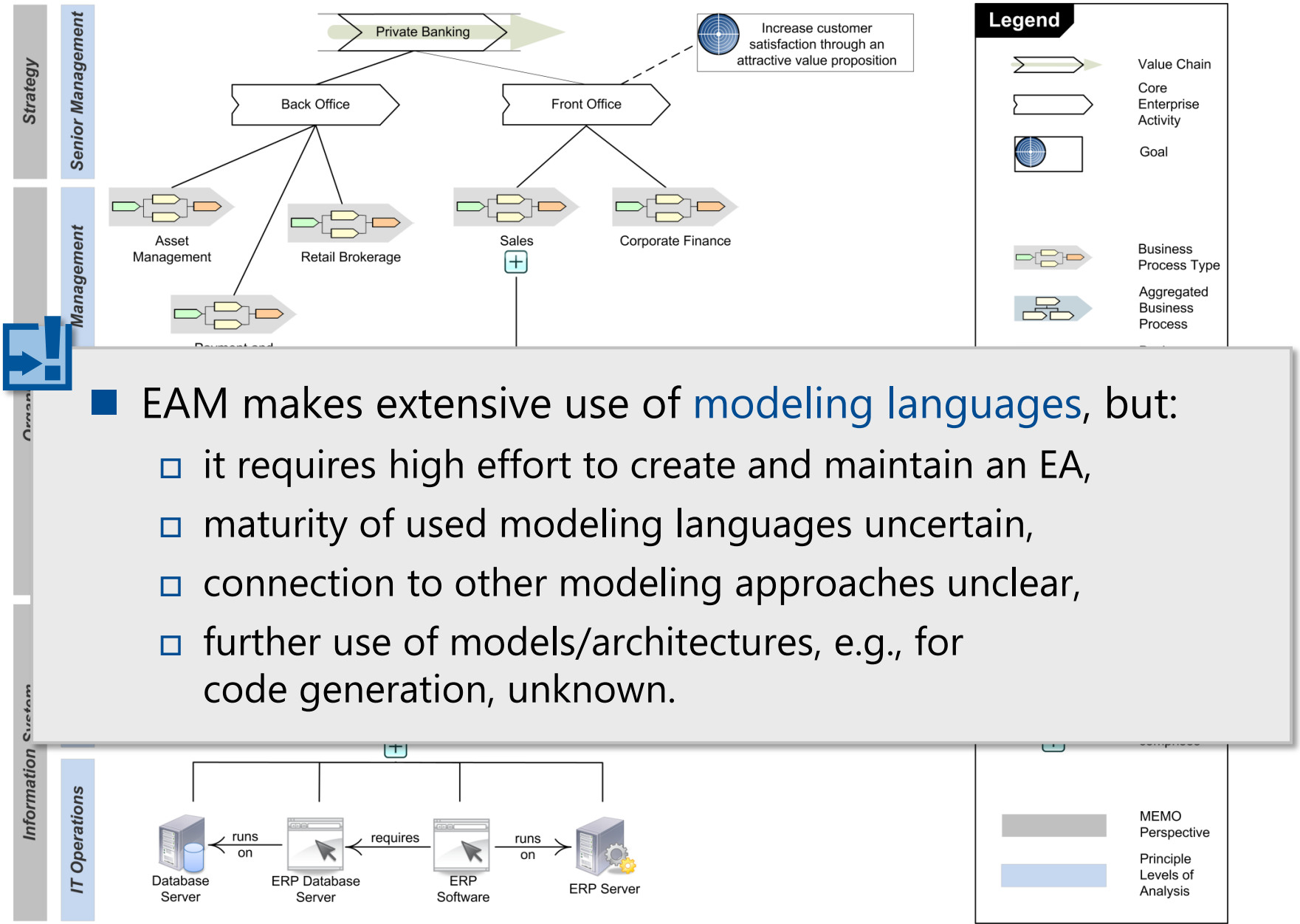
Motivation
– Problem

- Enterprise Architecture Management (EAM) provides a promising foundation:
  - aims at capturing the essential organization of a system,
  - provides purposeful abstractions of IT and the surrounding action system,
  - captures as-is and to-be states to guide transformations,
  - and supports various visualizations for analyses.

Motivation
– Example



Motivation
– Example & Current Situation



- EAM makes extensive use of modeling languages, but:
  - it requires high effort to create and maintain an EA,
  - maturity of used modeling languages uncertain,
  - connection to other modeling approaches unclear,
  - further use of models/architectures, e.g., for code generation, unknown.

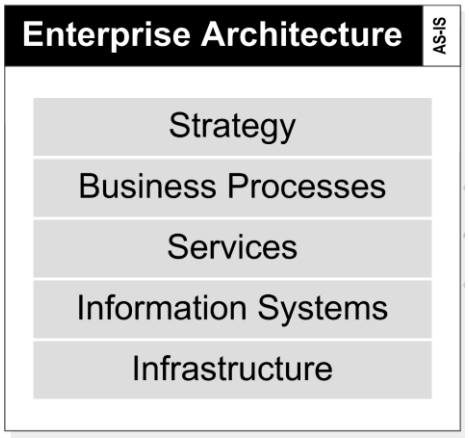
Motivation
– Objectives

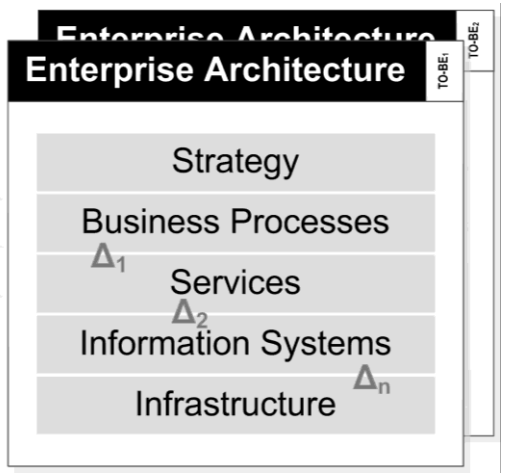
- Underlying hypothesis: EAM could benefit from a (more) comprehensive use of DSMLs
- Objectives:
  - What are requirements of the EAM domain?
  - How do selected approaches for EAM fulfill these requirements?
  - What are promising directions for future research?

Goals of this presentation:

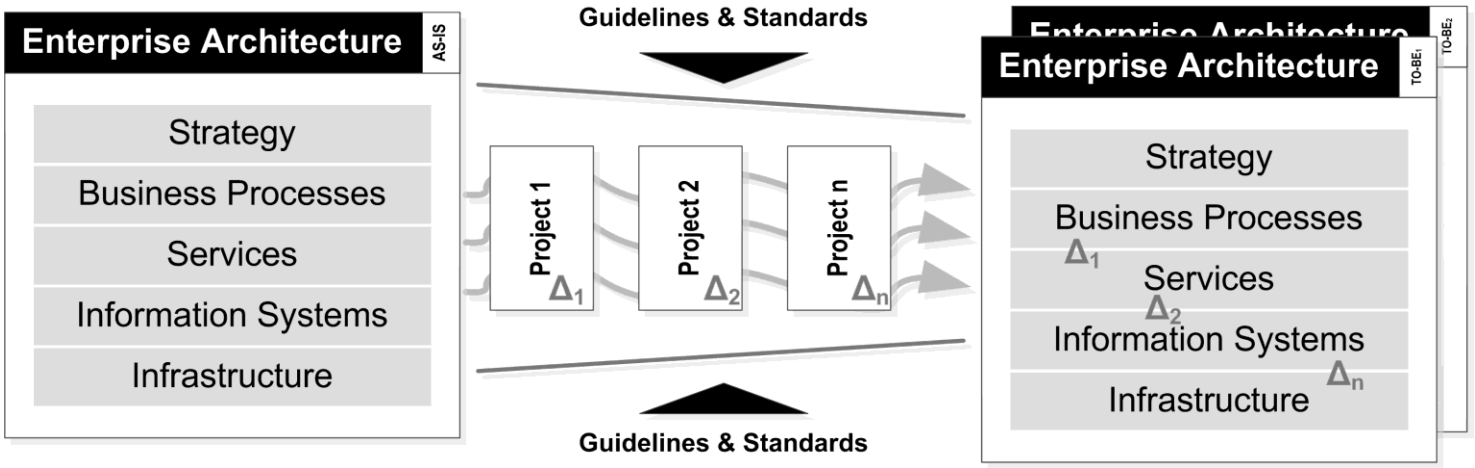
1. Present preliminary results of the analysis
2. Foster discussion about potentials and limits of DSMLs in the context of EAM – What are the boundaries of DSML applicability?

Design of the Analysis
– Basic Requirements



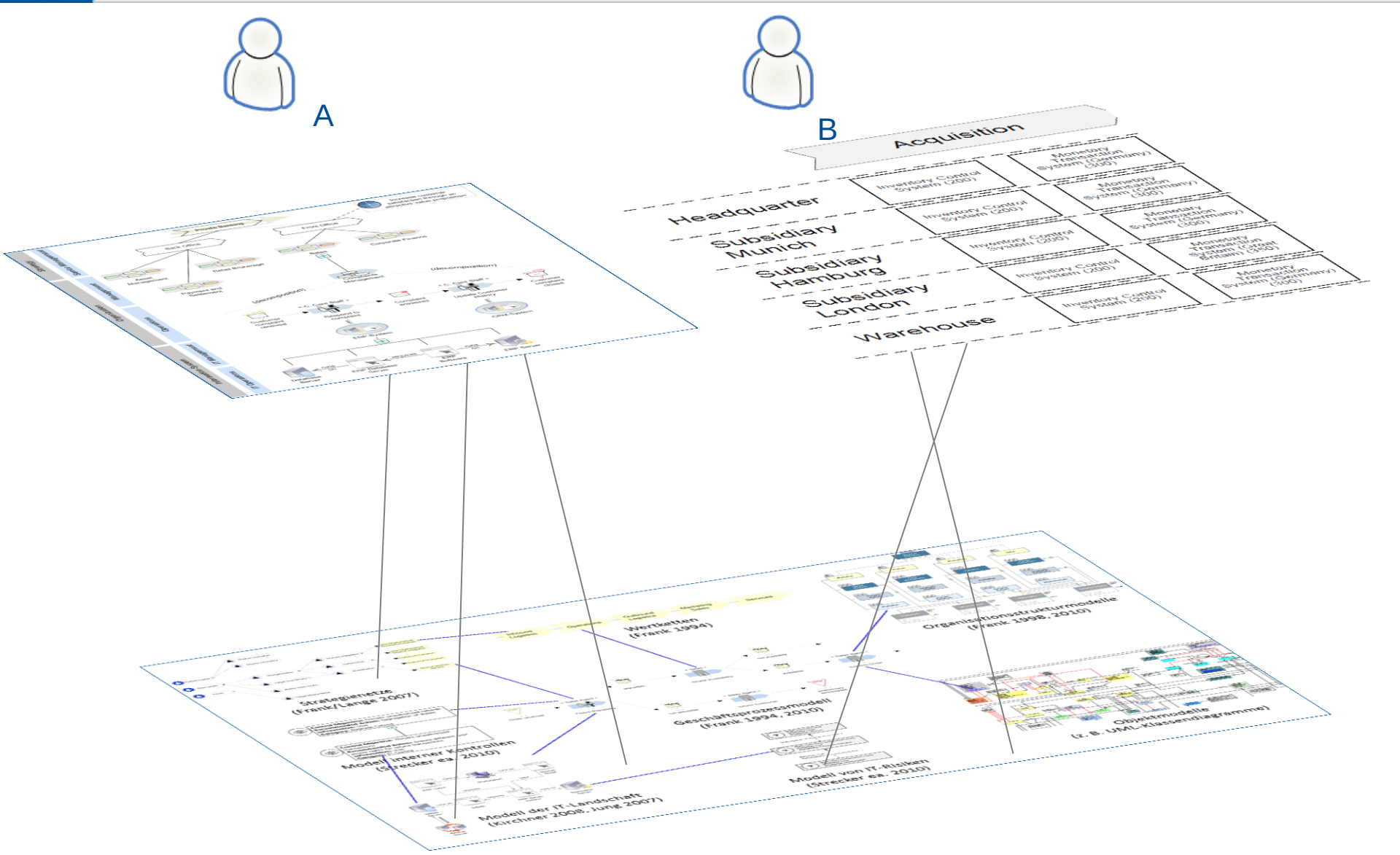


Design of the Analysis
– Basic Requirements



1. Manage transformation projects
2. Support for architecture governance
3. Support flexible visualizations
4. Enable cross-disciplinary analyses
5. Account for different perspectives

Design of the Analysis
– Basic Requirements



Design of the Analysis
– Basic Requirements

A

B

1. Manage transformation projects
2. Support for architecture governance
3. Support flexible visualizations
4. Enable cross-disciplinary analyses
5. Account for different perspectives

Design of the Analysis
– Modeling Specific Requirements

1. Model usage in addition to documentation
2. Integration & reuse of existing models and modeling languages
3. Adapt complexity to different professional backgrounds and interests of the users
4. Enterprise-specific adaptations to handle different structures and needs
5. Meta model evolution to support changes over time
6. Integration with instance data to bridge the gap between build-time and run-time

Design of the Analysis
– Framework Selection

- Selection criteria:
  - meta-modeling approach
  - published meta models
  - cover several layers of an EA
  - popular in academia & practice
- Results:
  - The Open Group Architecture Framework (TOGAF)
  - ArchiMate
  - Multi-Perspective Enterprise Modeling (MEMO)
  - *(analysis will be extended)*

Analysis
– Preliminary Results

Specific Requirements	TOGAF	Archimate	MEMO
(1) Model usage	o	o	o
(2) Integration & reuse	-	+	+
(3) Adaptable complexity	o	o	o
(4) Enterprise-specific adaptations	o	+	o
(5) Meta model evolution	-	-	-
(7) Integration with instance data	-	-	o

See paper for a more detailed assessment!

Analysis
– Preliminary Conclusions

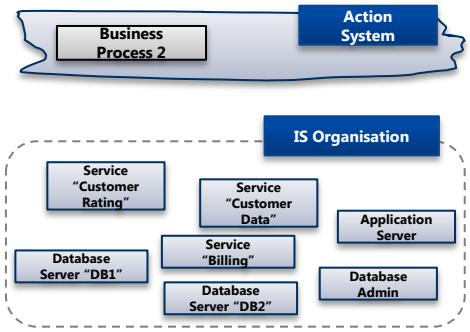
- Overall impression:
  - Organizational issues are of pivotal relevance
  - Graphical representations primarily used for analyses
  - Focus on documentation and guiding transformations of the enterprise
  - Modeling languages remain on a rather generic level
  - Lack of integration with other approaches and tools
  - No code generation
- Most requirements are not fulfilled – room for improvement(?)

Future Work

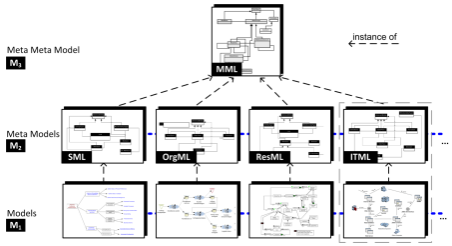
- Improve Analysis:
  - refine requirements,
  - increase number of frameworks,
  - and include modeling tools.
- Use of DSMLs for EAM:
  - foster closer collaboration,
  - establish common terminology,
  - identify promising scenarios for code generation,
  - and develop / improve DSMLs.

Questions, Answers & Discussion
– Thank you for your attention!

Enterprises and their professional languages



Family of integrated DSMLs



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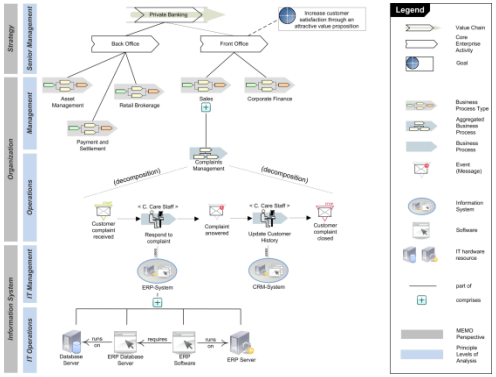
Enterprise Model / Architecture



Generated Code / Software (?)

- ERP Configuration
- Access Control
- Process Automatization
- CMDB
- … ?

Questions, Answers & Discussion
– Thank you for your attention!

- What are the boundaries of DSML applicability?
- What should / could be generated?
- How practicable is (full) code generation for a moving and ever changing domain (= enterprise)?

Generated Code / Software (?)

ERP Configuration

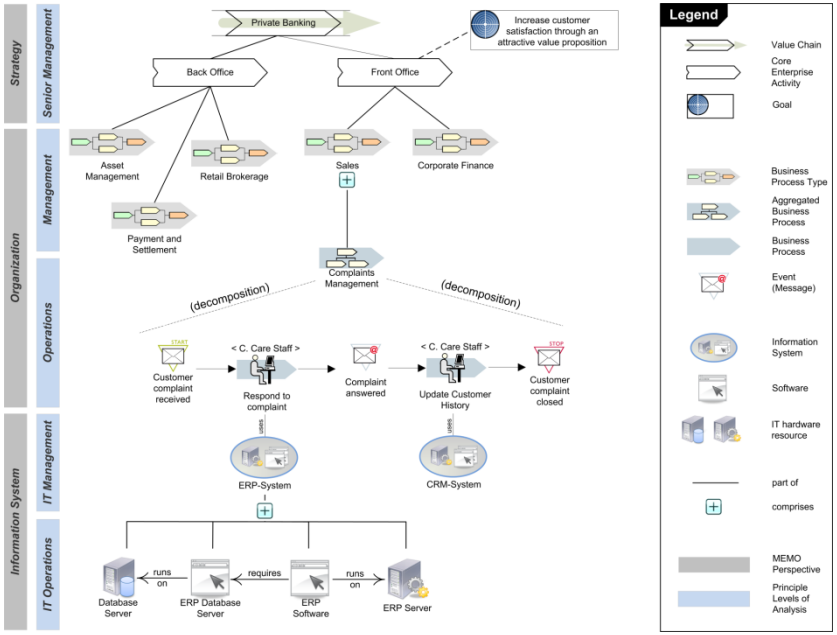
Access Control

Process Automatization

CMDB

… ?

Enterprise Model / Architecture



QUESTIONS & ANSWERS