Patterns in Enterprise Architecture Management

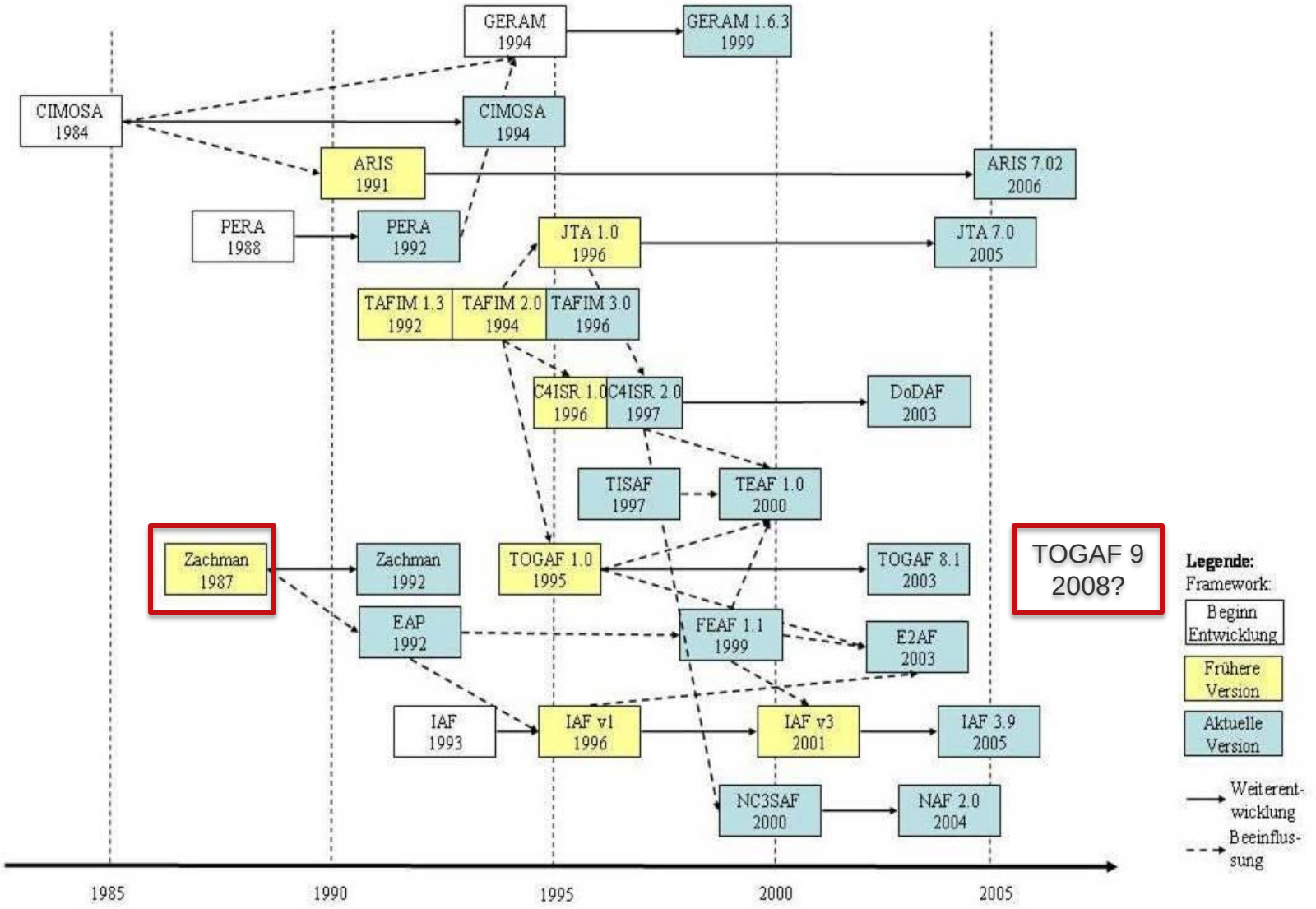
8. EAM Tag, act! Consulting, Commerzbank, Frankfurt, 9.11.2008

Prof. Florian Matthes, Alexander Ernst
Software Engineering for Business Information Systems (sebis)
wwwmatthes.in.tum.de

Outline

1. Introducing EAM in an enterprise is a challenge
   - models, viewpoints, management processes
2. The EAM pattern catalog 1.0
   - approach, contents, contributors
3. Towards an EAM pattern community

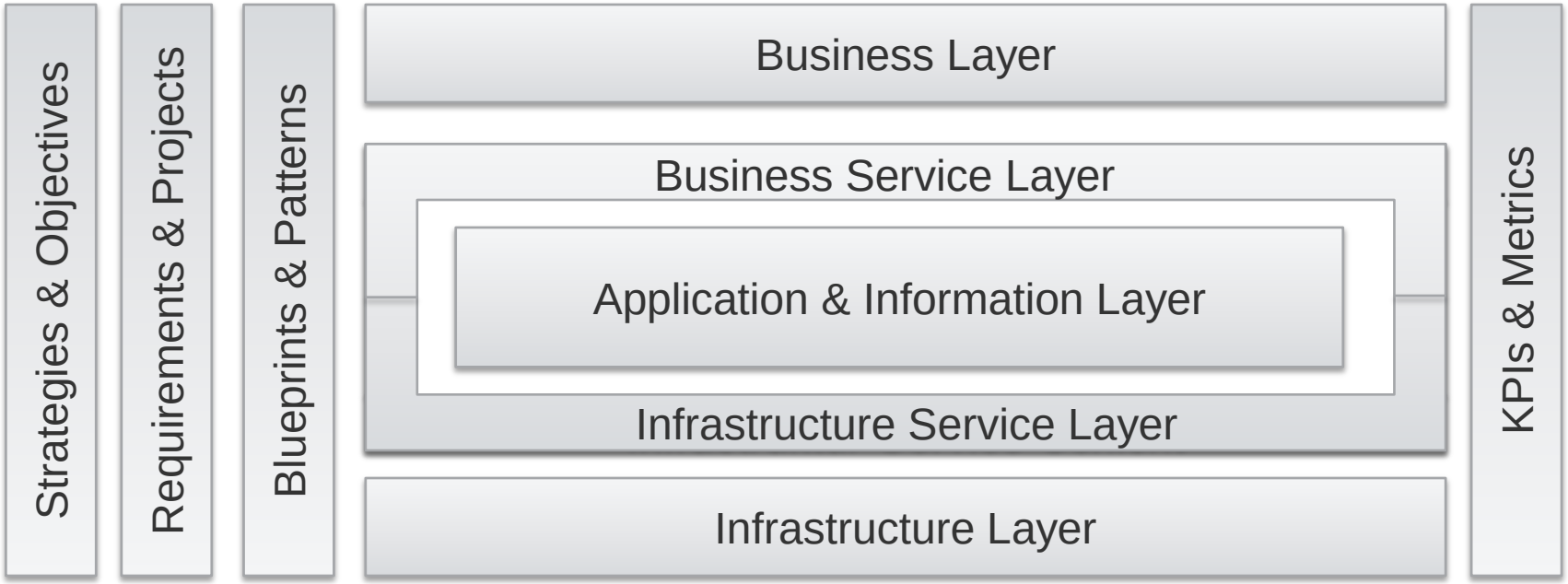
Introducing EAM in an enterprise is a challenge: EA frameworks provide only limited support



Application landscape management requires a holistic view

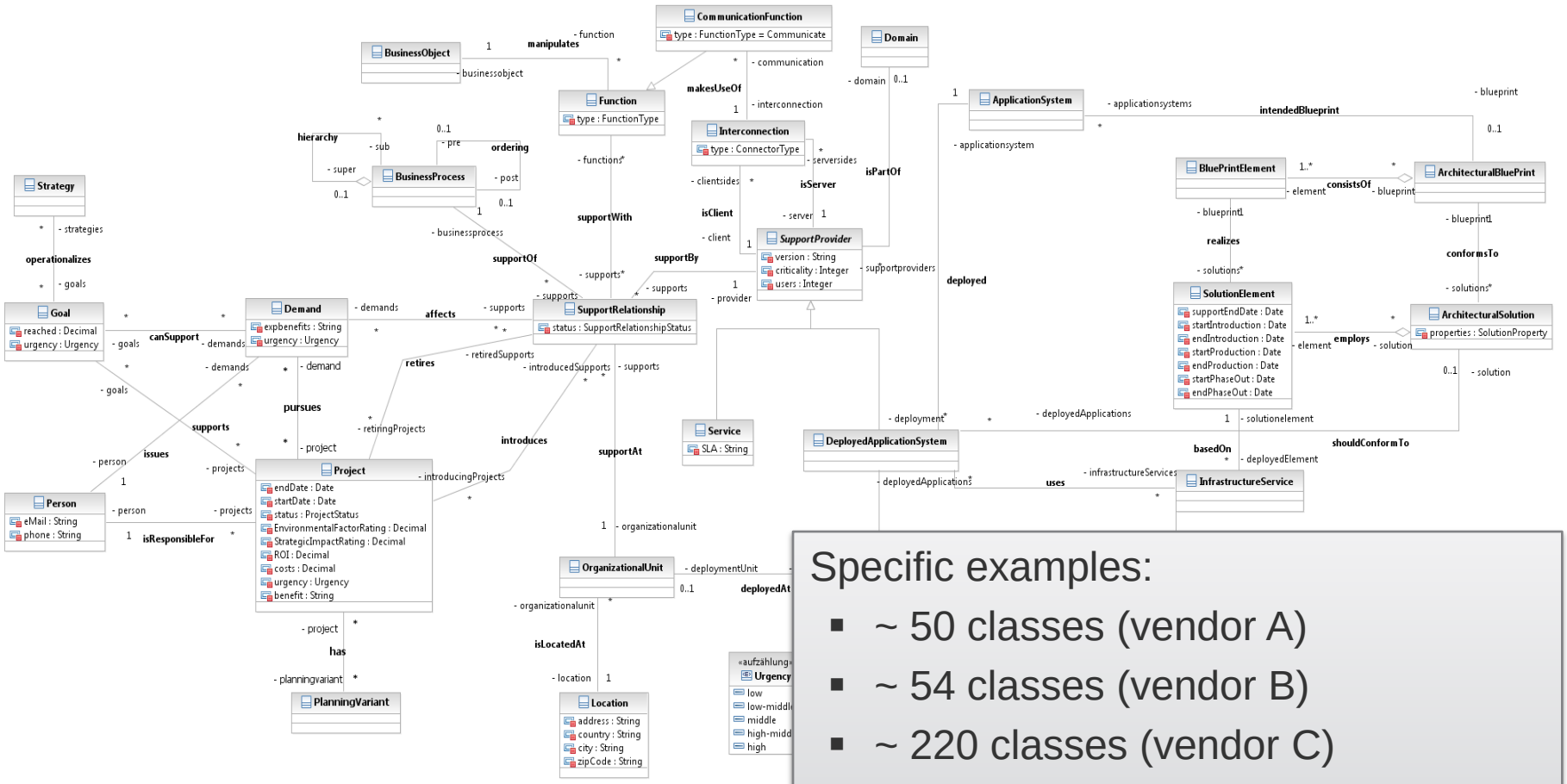
- Technical, social and economic aspects
- Layers and crosscutting concerns
- Relationships are more important than element details
  has, consists of, depends on, uses, controls, owns, produces, consumes,…

➔ Enterprise Architecture



Where to start? Which level of detail? Best practices?

Introducing EAM in an enterprise is a challenge: Information models are too complex



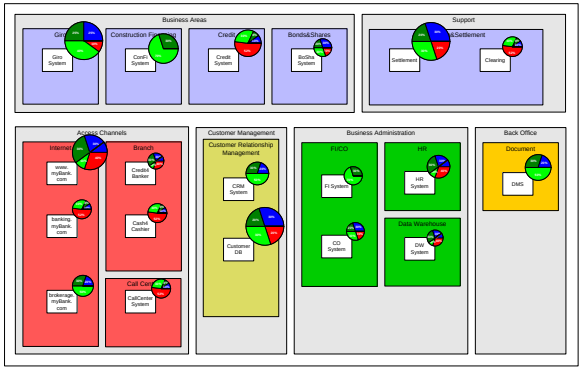
Specific examples:

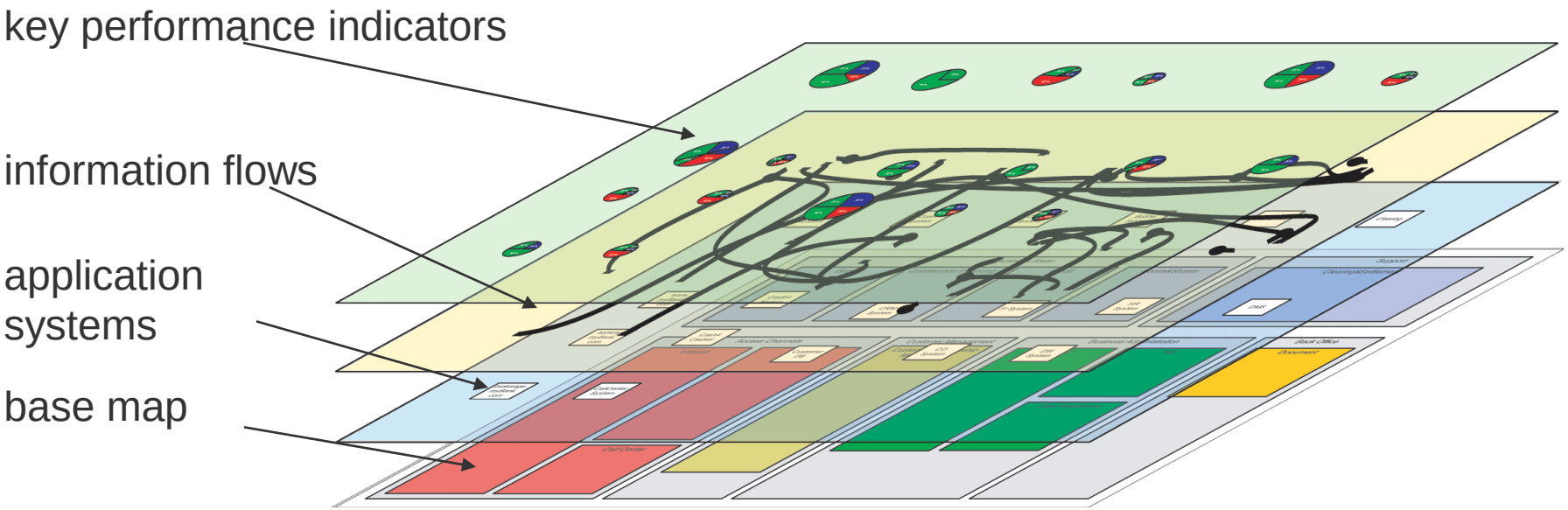
- ~ 50 classes (vendor A)
- ~ 54 classes (vendor B)
- ~ 220 classes (vendor C)
- ~ 470 classes (vendor D)
- At least twice as many associations
- Numerous attributes per instance

Software Cartography provides a visual language to communicate an enterprise architecture

Multiple viewpoints

- Shared problem-specific map types (base maps)
- Rule-based layout of visual elements
- Hide / show details based on layers





More than 90 different viewpoints found in practice!

Introducing EAM in an enterprise is a challenge: Lack of standardized EAM viewpoints

Software Engineering: Established viewpoints for recurring and known problems

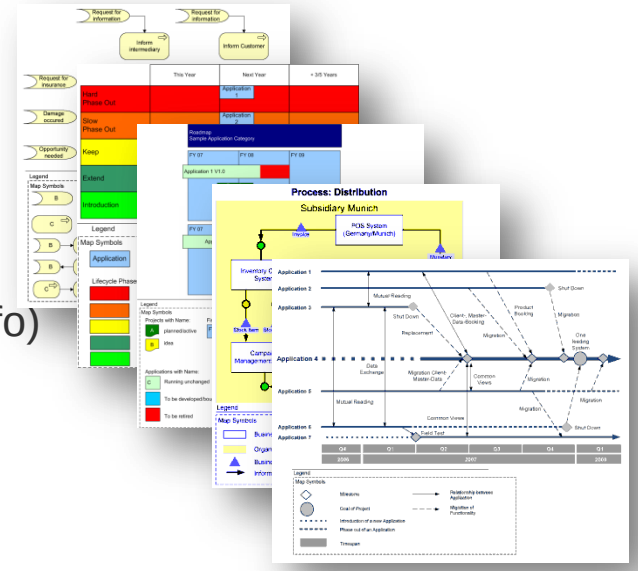
- modularity, deployment, interaction, …

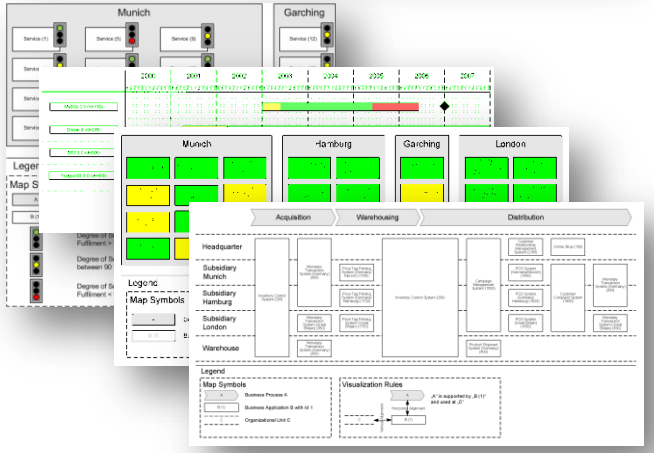
Enterprise Architectures: Emerging modeling languages and viewpoints, e.g.

- ArchiMate (http://www.archimate.com)
- Software Cartography (http://www.systemcartography.info)

Many organization-specific viewpoints:

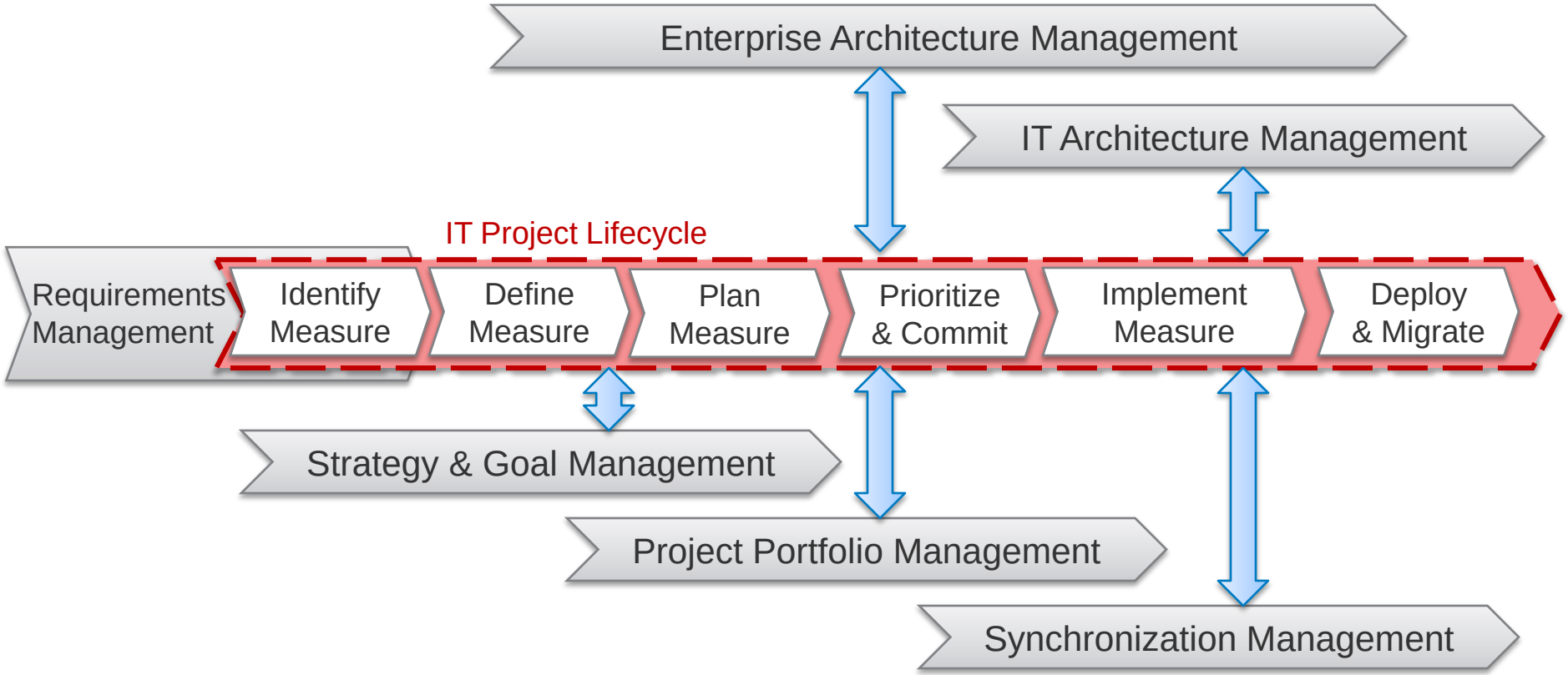
- rarely documented
- visibility limited to a single organization





The evolution of an application landscape can be improved by supporting management processes

IT-Governance Processes



What are successful governance structures & management practices? (2008)

Peer knowledge exchange pushes EAM forward

- EUROFORUM, IIR conferences and seminars
- EAM Tage, act consulting
- SOA Innovation Lab, Deutsche Post
- CEISAR, Paris
- Systemkartographie Stammtisch, sebis
- IT Management Days, iteratec
- Cap Gemini sd&m EAM events
- EAM Think Tank, Syracom
- …

How to capture, disseminate and apply this knowledge?

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Enterprise architecture management patterns

An enterprise architecture management pattern (**EAM pattern**) is

- a general, reusable solution to a common problem
- in a given context
- identifies driving forces,
- known usages and
- consequences.

- It can be specified on different levels of abstraction and detail, e.g. as a framework for enterprise architectures, as a method for enterprise modeling, or as a reference model.

- EAM patterns address social, technical and economic issues in a balanced manner

A Patterns is a general, reusable solution to a common problem in a given context

Analogy to other disciplines: Address recurring problems with patterns.

Alexander et al. [Al77] (**Architecture**)

- Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice.
- Each pattern is a three-part rule, which expresses a relation between a certain context, a problem and a solution

Buschmann et al. [Bu96] (**Software Architecture**)

- A pattern for software architecture describes a particular recurring design problem that arises in specific design contexts, and presents a well-proven generic scheme for its solution. The solution scheme is specified by describing its constituent components, their responsibilities and relationships, and the ways in which they collaborate

Gamma et al. [Ga94] (**Software Engineering**)

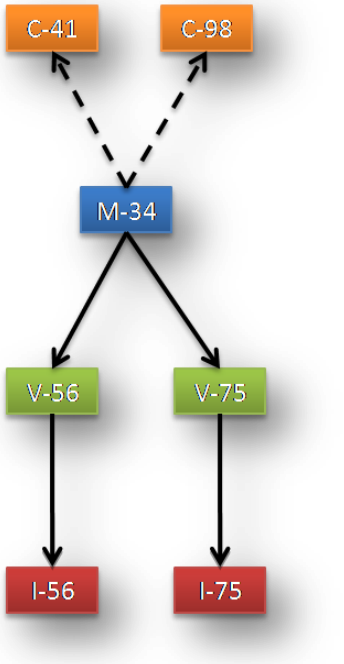
- Descriptions of communicating objects and classes that are customized to solve a general design problem in a particular context.

The idea behind the EAM pattern catalog 1.0

Tailor the EAM to the specific situation (*pains*) of the enterprise and follow an incremental strategy based on **EAM patterns** representing proven practices.

Systematically document the dependencies between

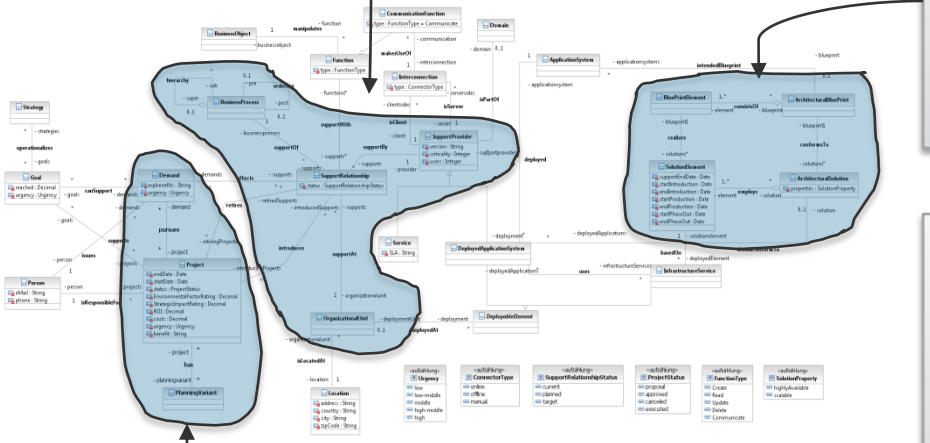
- Individual management concerns,
  Which concern is relevant for which stakeholder?
- Methodology patterns (M-Pattern),
  Which activities are required to address a concern?
- Viewpoint patterns (V-Pattern) and
  Which viewpoints help stakeholders to collaboratively perform the activities?
- Information model patterns (I-Pattern)
  Which information has to be available to generate a view?



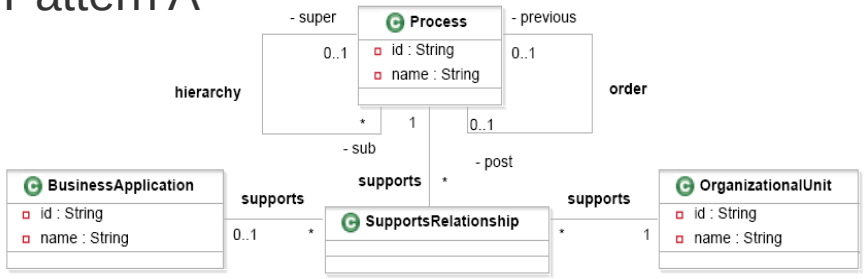
Draw attention to the consequences implied by a pattern (labor, required information, …)

Using patterns: Constructing EAM information models based on I-Patterns

I-Pattern as manageable, concern-specific units, of which an information model can be composed



Pattern A

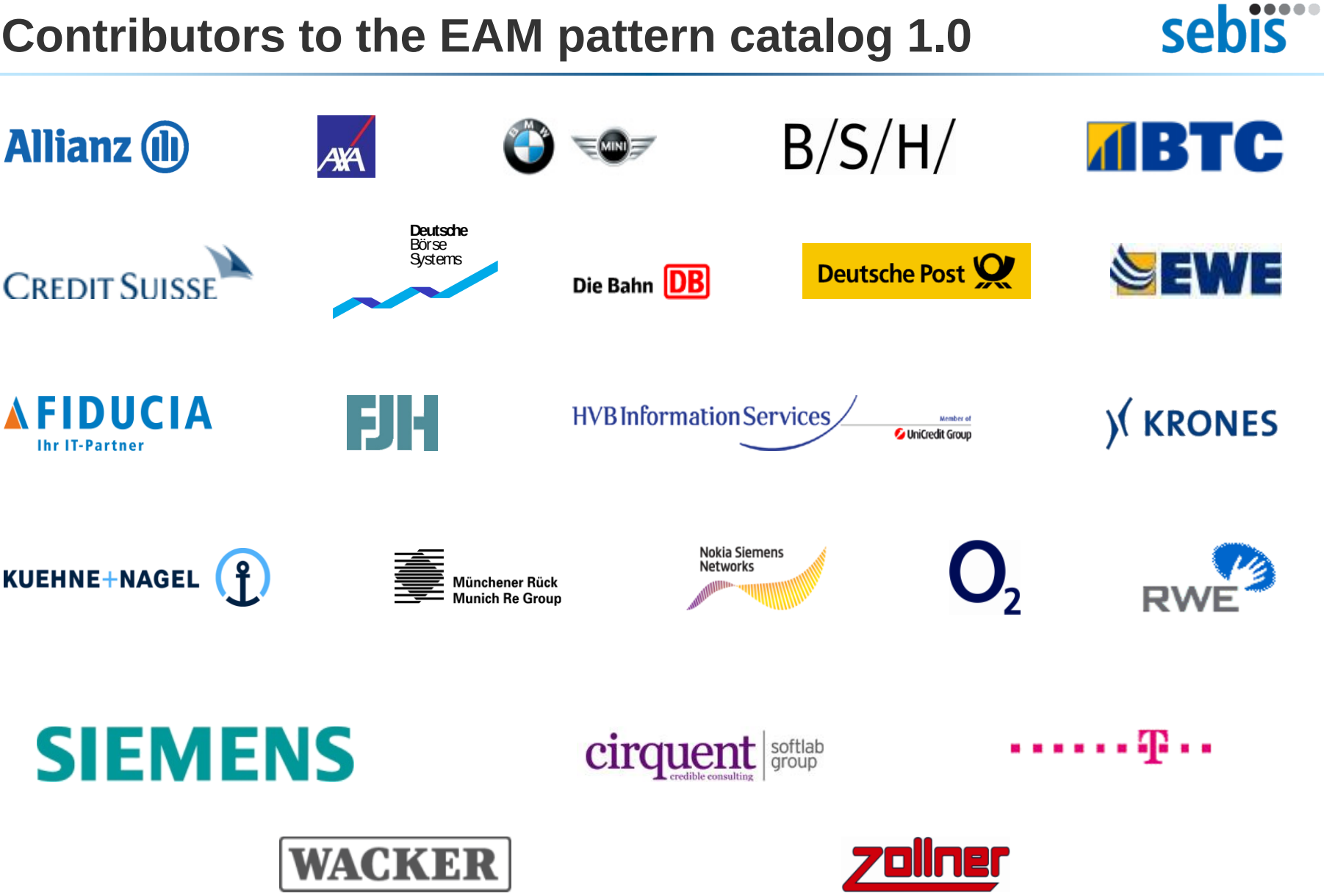


Pattern B

...

Pattern X

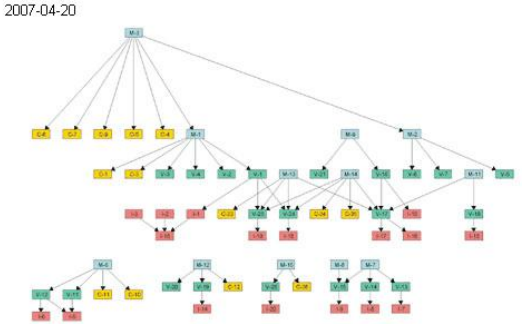
Contributors to the EAM pattern catalog 1.0

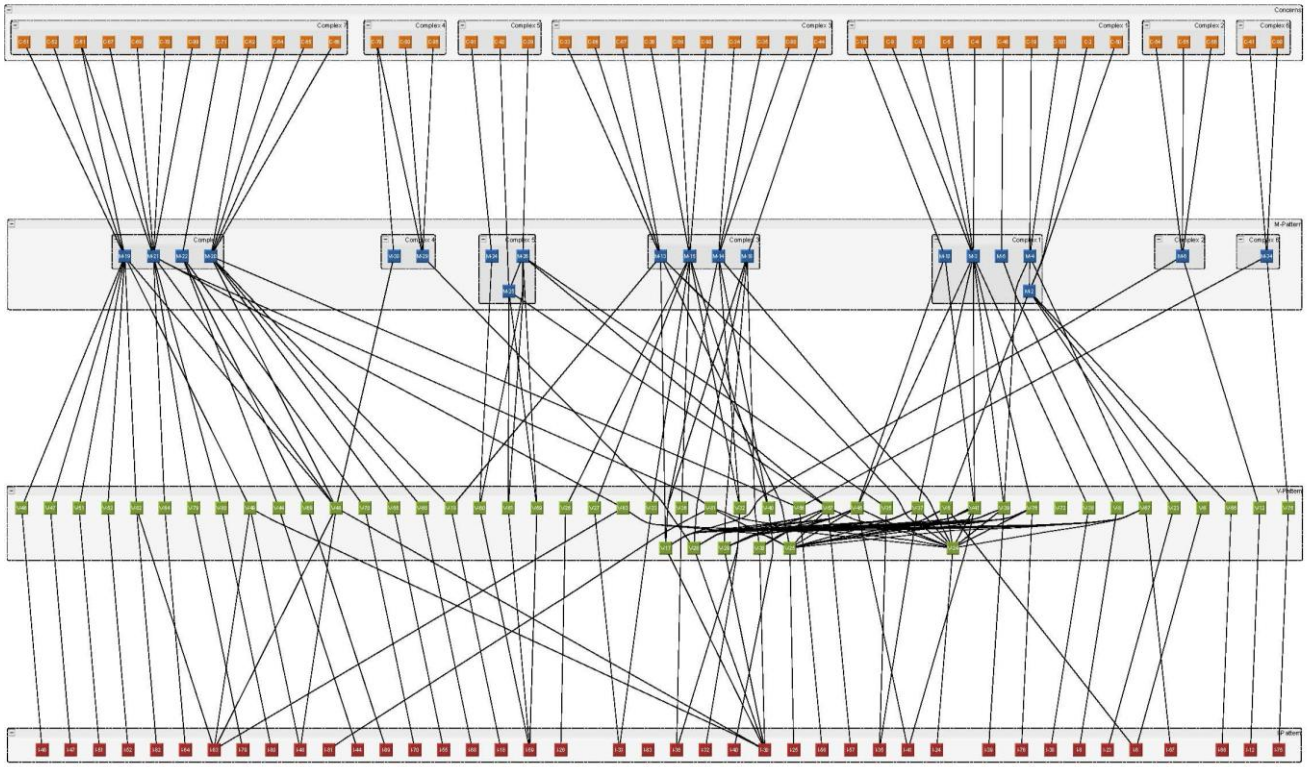


Overview of the pattern catalog version 1.0

- Basis: literature, experience from *sebis* research projects, structured interviews of 25 enterprise architects
- Selection based on relevance and adoption by an extensive online questionnaire

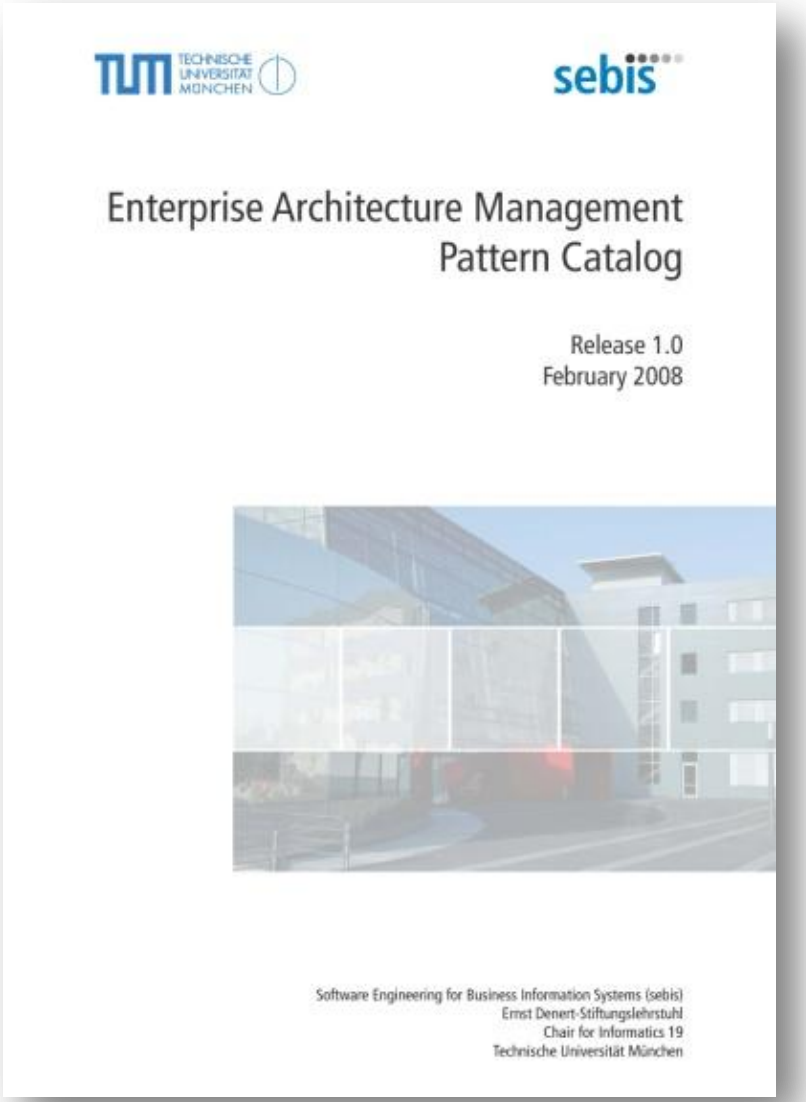
➔ 43 concerns, 20 M-Patterns, 53 V-Patterns, and 47 I-Patterns





Using the EAM pattern catalog

1. Develop enterprise-specific EA management processes, governance structures, and meta models
2. Evolve and assess existing EA management approaches in an enterprise
3. Conduct scientific research
   - Evolve and validate individual patterns
   - Develop domain-specific patterns (financial sector, health care, …)
   - Analyze relationships between management patterns, maturity models, …



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EAM pattern catalog wiki
http://www.systemcartography.info/eampc-wiki

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EAM Pattern Catalog

The objective of the EAM Pattern Catalog is to complement existing Enterprise Architecture (EA) management frameworks, which provide a holistic and generic view on the problem of EA management, and to provide additional detail and guidance needed to systematically establish EA management in a step-wise fashion within an enterprise.

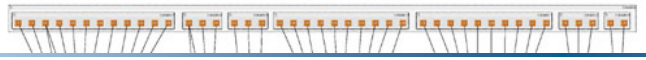
The EAM Pattern Catalog identifies the dependencies between

- individual management concerns (Which goal is to be achieved for which stakeholders?),
- management methodologies (Which activities are required to address a given concern?),
- supporting viewpoints (Which diagrams, figures, tables, listings, etc. help stakeholders to collaboratively perform these activities?), and
- information models (Which information is required to generate a particular viewpoint?).

Methodologies, viewpoints and information model fragments are called **EAM patterns**: They describe possible solutions for recurring problems that can and may have to be adapted to a specific enterprise context.

The EAM Pattern Catalog identifies **best practices** by focusing on concerns, methodology patterns (M-Patterns), viewpoint patterns (V-Patterns) and information model patterns (I-Patterns), which are considered relevant by experienced practitioners and are also supported by literature.

The EAM pattern graph shows the dependencies between Concerns, M-Patterns, V-Patterns, and I-Patterns. Its evolution can be seen by clicking the following image.



News

- 26.08.2008 A page has been introduced showing visualizations, which may be of interest for the future development of the EAM Pattern Catalog.
- 08.08.2008 EAM Patterns concerning metrics are now available in the EAM Pattern Catalog Wiki
- 10.07.2008 EAM Pattern Catalog Wiki is online
- 08.05.2008 Word-Templates for the submission of new EAM Patterns is available for download.
- 28.04.2008 EAM Pattern Catalog Glossary is available for download
- 02.04.2008 EAM Pattern Graph Poster is now available for download
- 15.02.2008 Version 1.0 of the EAM Pattern Catalog is online
- 15.02.2008 EAM Pattern Graph 1.0 is available

Downloads

- Word-Tempates for the submission of new EAM Patterns
  M-Pattern Template
  V-Pattern Template
  I-Pattern Template
  Please send new EAM Patterns to ernst@in.tum.de
- EAM Pattern Catalog Version 1.0 (15 MB)
- EAM Pattern Catalog Glossary Version 1.0
- EAM Pattern Pattern Graph 1.0 (PDF version, graphml version)
  The graphml version can be viewed using yEd.
  Use save as to download the files.
- EAM Pattern Graph Poster in DIN A0 format (PDF version)

Workshop as part of Software Engineering 2009
Patterns in Enterprise Architecture Management

sebis

Kaiserslautern, March 2-6 2009,
http://www.se2009.de/

The workshop addresses

- researchers in software engineering and information system
- IT managers, enterprise architects, software architects

We seek contributions in the following areas (non-exclusive)

- specific EAM patterns derived from case studies and research projects
- EAM patterns on a metamodel level and model level
- organization of pattern catalogs
- usage of EAM patterns in industry or in education
- empirical studies about pattern adoption

Program Committee Members

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Summary

Enterprise architecture management

- is driven by experienced practitioners in large organizations
- expands the scope of software architectures and software engineering,
- raises challenging research questions,
- might benefit from contributions from the software engineering community **and** the Wirtschftsinformatik / management sciences community.

➔ Patterns are a promising approach to capture, disseminate and apply EAM knowledge

Thank you for your attention!

More information: www.systemcartography.info