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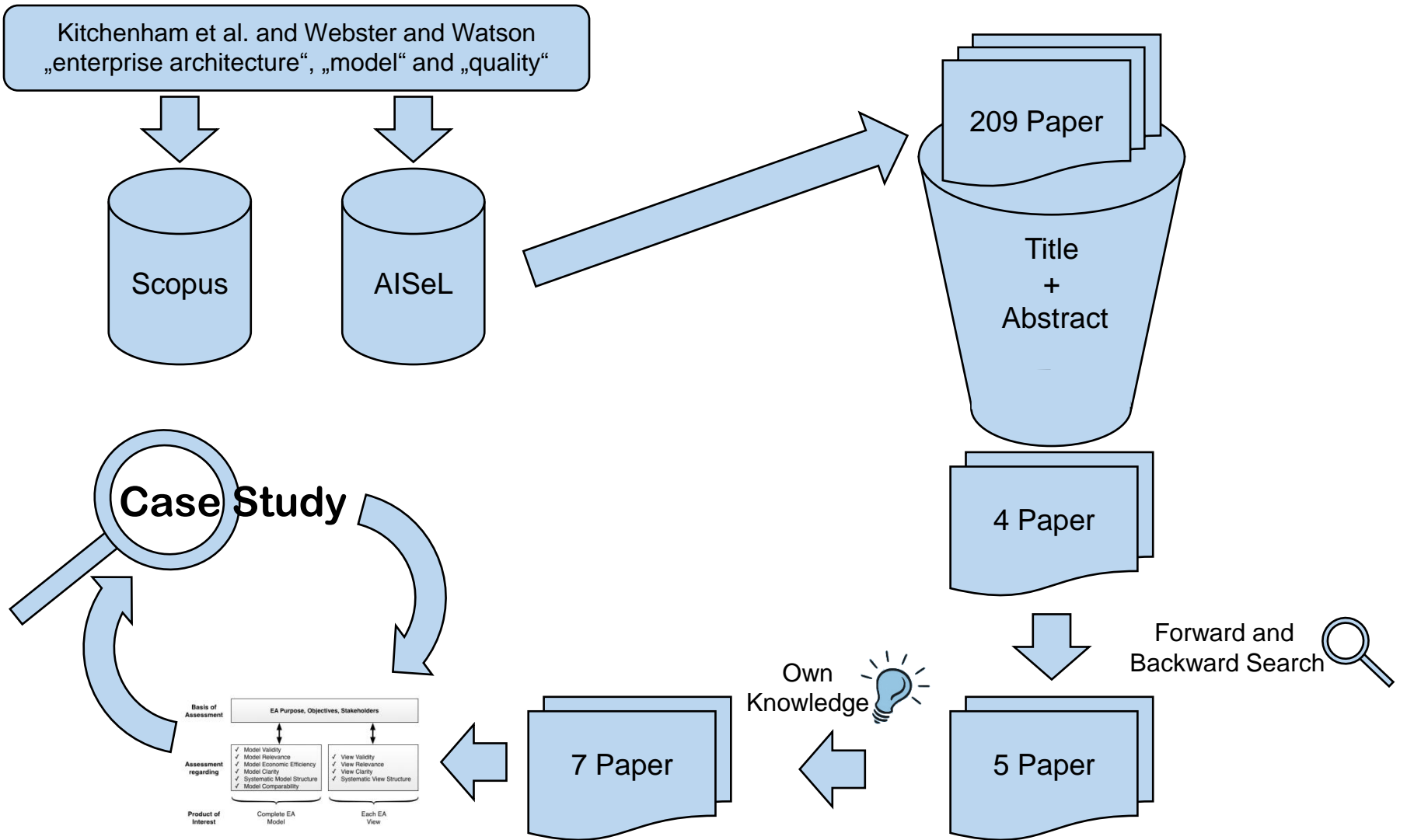
Towards a Quality Framework for Enterprise Architecture Models

Research Gap

- EAM is widely discussed
  - EA methodologies
  - EA management
  - EA lifecycle processes
- EAM benefits rely on EA model quality
- No approach which accesses EA models quality holistically

> **Research Question:** *What aspects does a framework for assessing the quality of EA models have to contain?*

Research Design

Kitchenham et al. and Webster and Watson
„enterprise architecture", „model" and „quality"

Scopus

AISeL

209 Paper

Title
+
Abstract

4 Paper

Forward and
Backward Search

5 Paper

Own
Knowledge

7 Paper

Basis of Assessment	EA Purpose, Objectives, Stakeholders	
Assessment regarding	✓ Model Validity ✓ Model Relevance ✓ Model Economic Efficiency ✓ Model Clarity ✓ Systematic Model Structure ✓ Model Comparability	✓ View Validity ✓ View Relevance ✓ View Clarity ✓ Systematic View Structure
Product of Interest	Complete EA Model	Each EA View

Case Study

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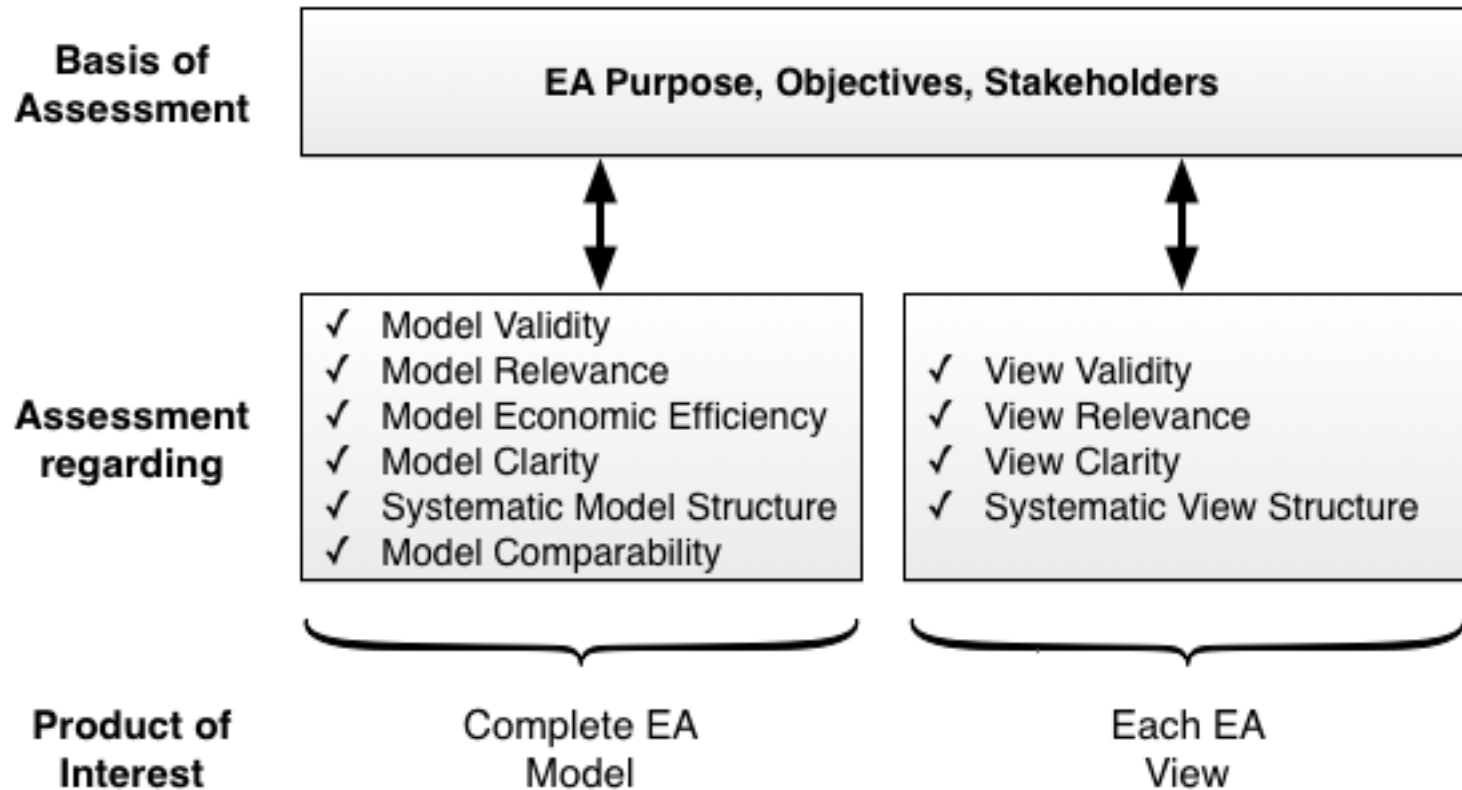## Principles of:

- Validity   *(Syntax, Semantik)*
- Relevance   *(Stakeholder, Detail)*
- Clarity   *(Comprehensibility)*
- Economic Efficiency   *(Costs, Reuse)*
- Systematic Model Construction   *(Consistency)*
- Comparability   *(Interoperability)*

EAQF Quality Attributes

PRINCIPLE	QUALITY ATTRIBUTE
VALIDITY	Syntactical Properness
	Semantical Properness
	Up-To-Dateness
	Quality of Information Sources
	Uniformity and Cohesion
	Model Reliability
	Reduction of Redundancy
RELEVANCE	EA Purpose and Objectives
	EA Stakeholders Concerns
	Usefulness
	Level of Detail
	Completeness vs. Conciseness
ECONOMIC EFFICIENCY	Reusability
	Flexibility
	Model Maintenance

PRINCIPLE	QUALITY ATTRIBUTE
CLARITY	Comprehensibility
	Layout Design
	Complexity
	Documentation
	Communication
SYSTEMATIC MODEL STRUCTURE	EA Model Structure
	Model View Specification
	Model View Linkage
COMPARABILITY	Model Interoperability
	Inter-Model Relations

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Example: EAQF Attributes addressing certain EA View (excerpt)

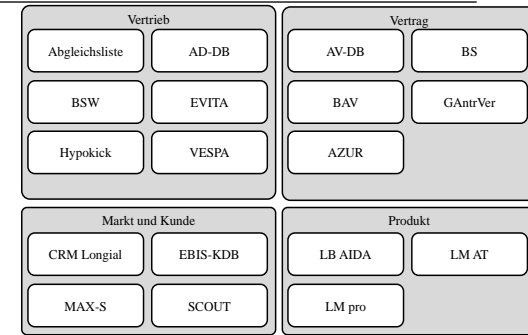| PRINCIPLE	QUALITY ATTRIBUTE	ATTRIBUTE ASSESSMENT	METRIC TYPE
VALIDITY	Semantical Properness	Conduct Expert Interviews	qualitative
		Conduct Validation Workshops with relevant Stakeholders	qualitative
	Up-To-Dateness	Date of Last Change	quantitative
		Frequency of Change	quantitative
	Quality of Information Sources	Conduct Expert Interviews	qualitative
		Conduct Validation Workshops with relevant Stakeholders	qualitative
	Reduction of Redundancy	Is the EA model repository free from duplicates?	Tool Support
		Conduct Expert Interviews for EA model to identify implicit duplicates	qualitative
RELEVANCE	Usefulness	Are the goals of the EA model view clearly defined?	Yes/No
		Is there a "EA supply chain" present?	Yes/No
	Level of Detail	How many levels of detail are used by the model view?	quantitative
		Are the different levels of detail made transparent?	Yes/No
CLARITY	Comprehensibility	How many elements are documented/explained in ratio to all elements.	quantitative
		Does the EA model vocabulary follow a clear taxonomy (e.g. of a certain domain)?	Yes/No
	Layout Design	Does each model view follow a clear layout?	Yes/No
		Do view templates exist that can be used for certain views?	Yes/No
	Complexity	Show number of model view elements.	quantitative
		Depending on the view's purpose, is the amount of elements reasonable?	Yes/No
	Documentation	Is the structure of the EA model made transparent?	Yes/No
		Is further material attached that explains ambiguous elements?	Yes/No
		Is external material referenced?	Yes/No

Case Environment

- Leading insurance provider in the German-speaking market
  - 30,000 employees
  - 16,000 associated agents
  - Revenues over 16 billion Euro
  - Investments of 135 billion Euro

- IT service provider
  - 1,400 employees
  - Responsible for operations and development
  - EAM initiatives since 2008
  - Two EAM units, responsible for EA-related questions
    - EA development
    - EA implementation
    - EA maintenance

Case Study

- Open-ended interviews with EAM stakeholders
  - Fixed set of questions
- Expert interviews with EAM members

Vertrieb		Vertrag	
Abgleichsliste	AD-DB	AV-DB	BS
BSW	EVITA	BAV	GAntrVer
Hypokick	VESPA	AZUR	

Markt und Kunde		Produkt	
CRM Longial	EBIS-KDB	LB AIDA	LM AT
MAX-S	SCOUT	LM pro	

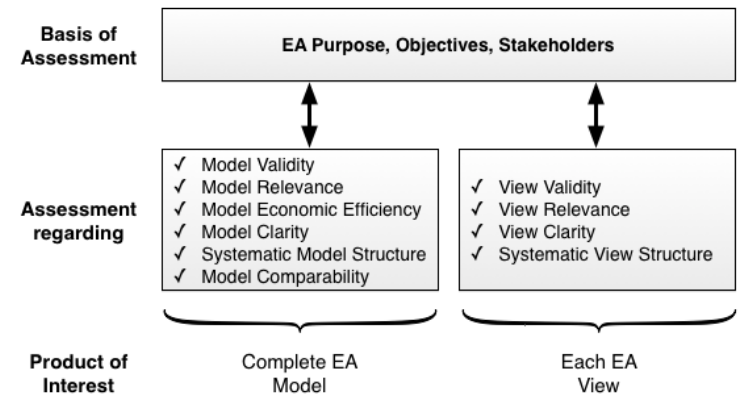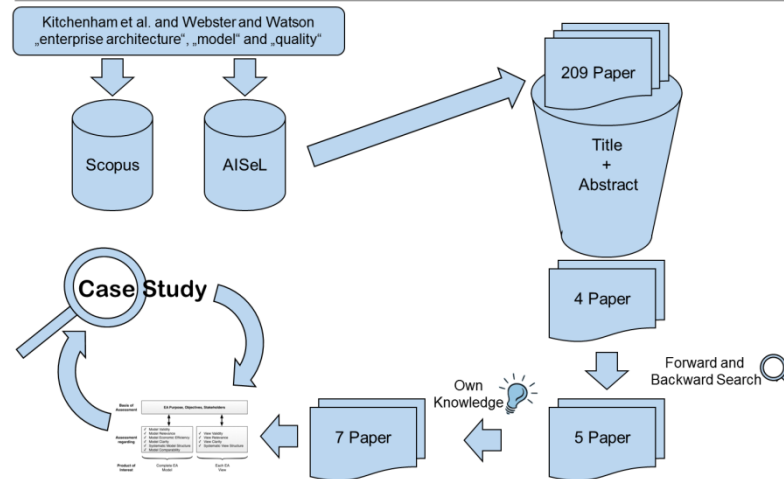| EA Model's Purpose	Whole EA Model	A specific EA Model View

• Guided lifecycle management
• Information and decision demands
• Not regularly revised
	• ArchiMate 2.1 with slight changes
	• Validity is not perfect
	  • Half of the elements of ArchiMate 2.1 is not used
	  • One third of the contained element types is not actively used
		• Relevance and Clarity evoke no issues
		  • EAQF: References to external material are needed
		  • Stakeholder: Information is sufficient and external references are not necessary

Next Activities

Basis of Assessment	EA Purpose, Objectives, Stakeholders	
Assessment regarding	✓ Model Validity ✓ Model Relevance ✓ Model Economic Efficiency ✓ Model Clarity ✓ Systematic Model Structure ✓ Model Comparability	✓ View Validity ✓ View Relevance ✓ View Clarity ✓ Systematic View Structure
Product of Interest	Complete EA Model	Each EA View

- Expand literature search
- Further application of EAQF for validation
- Configurability of the EAQF
- Include maturity levels in framework
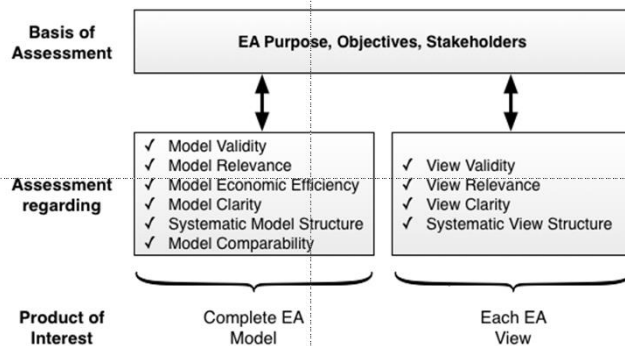- Identify interrelated quality attributes

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Conclusion

Research Design

Framework

Basis of Assessment	EA Purpose, Objectives, Stakeholders	
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