



# HL7 for semantic interoperability: What follows HDF and SAEAF?

**Bernd Blobel, PhD., Associate Professor**

Fellow ACMI

Past-Chair and Chair-Elect HL7 Germany

Chair CEN/ISSS eHealth Standardization Focus Group

Chair EFMI Working Groups “EHR” and “Security, Safety and Ethics

Chair of the German Health Informatics Standards Committee

Head of the German Delegation to ISO and CEN



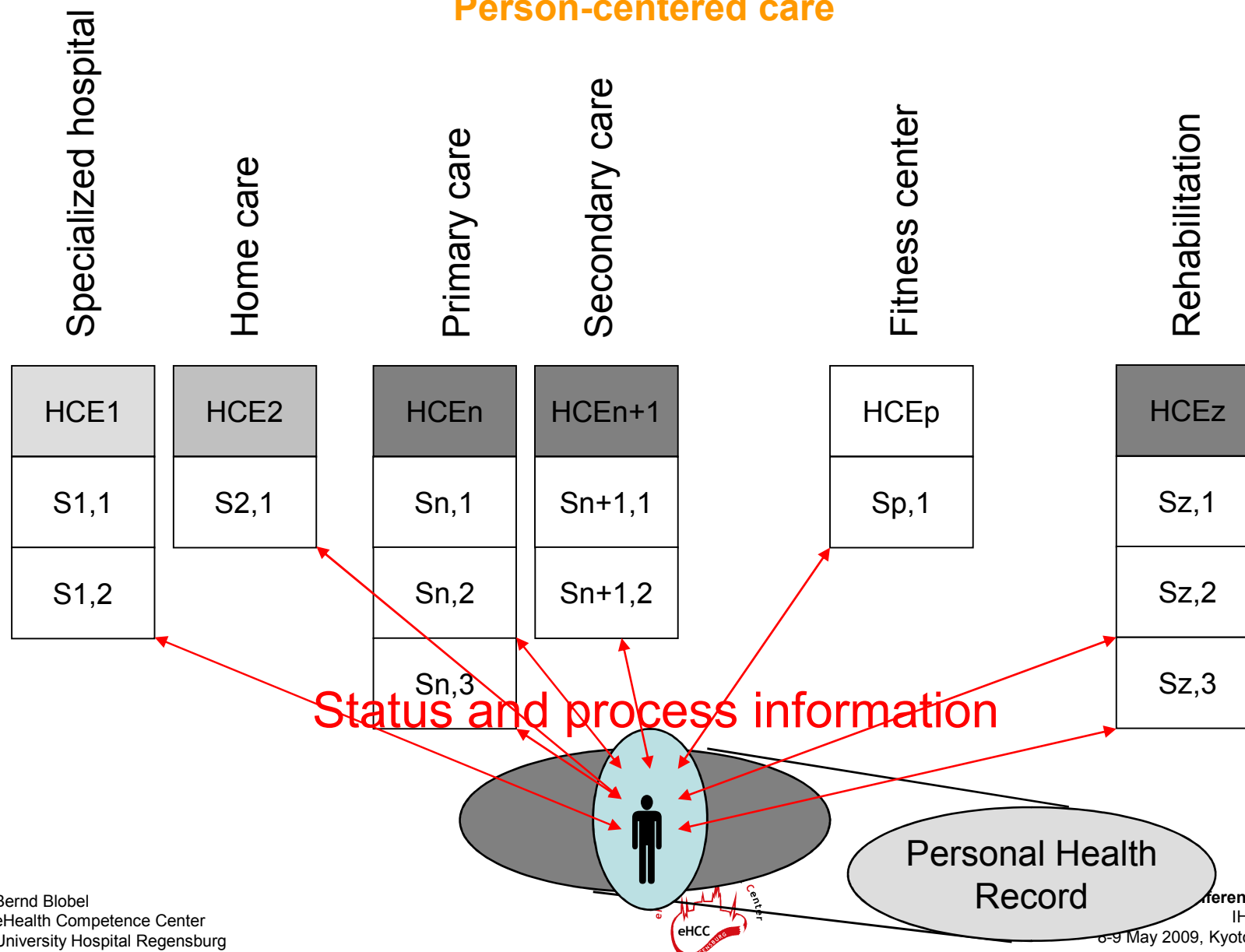
**eHealth Competence Center  
University Hospital Regensburg  
Regensburg, Germany**



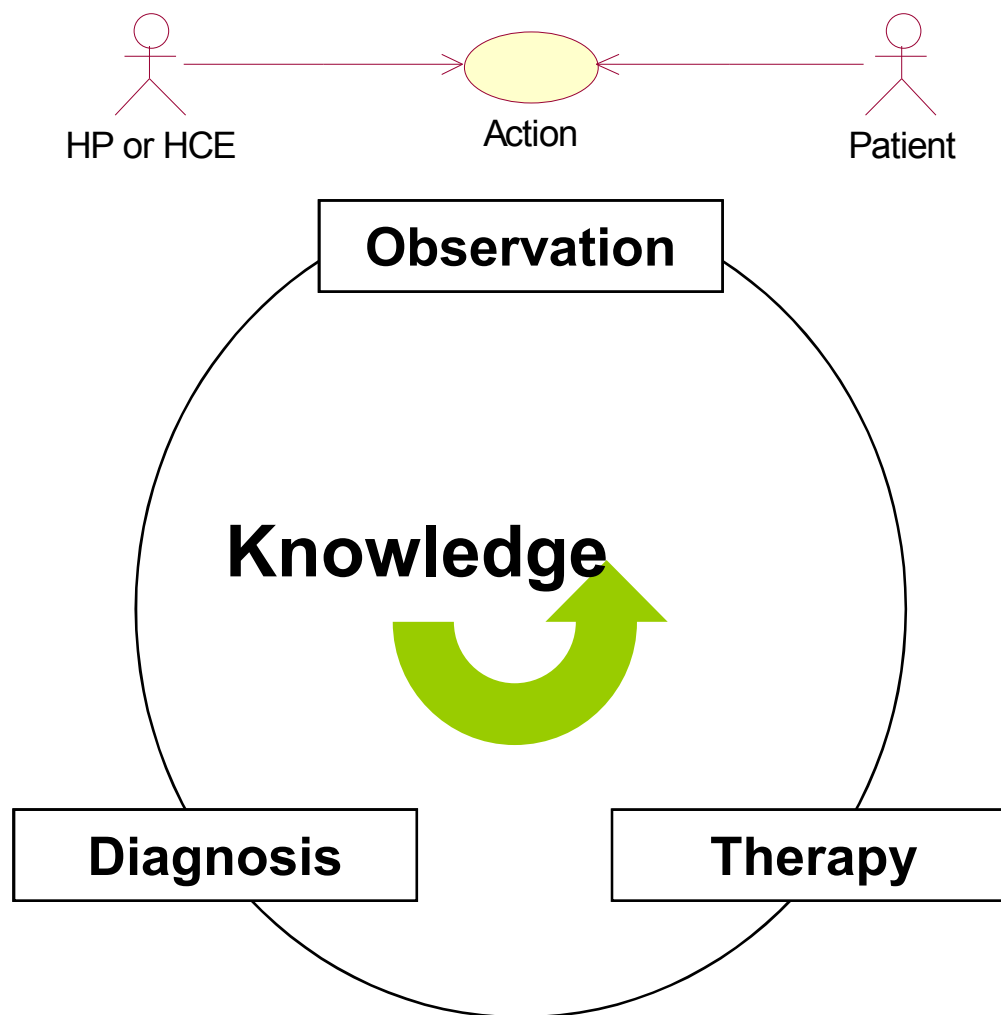
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## Paradigm Change towards Personal Health

### Person-centered care



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## Ontology Hierarchy

- Using a computation-independent approach, the domain knowledge for performing a specific business has to be represented defining Business Domain, Business Process, Location, Business Organization, Event, and Business Motivation regarding meta-models, concepts and relationships.

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# Ontology Hierarchy

- general ontologies
- upper level ontologies
- domain ontologies
- application ontologies
- ICT ontology

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## HL7 DEVELOPMENT FRAMEWORK (HDF)

- Chapter 1: Project Initiation and Management
- Chapter 2: Requirements Gathering and Analysis
- Chapter 3: Requirements Normalization and Harmonization
- Chapter 4: Specification Design and Packaging
- Chapter 5: Specification Publication and Balloting
- Chapter 6: Specification Refinement and Localization
- Chapter 7: Specification Implementation and Validation

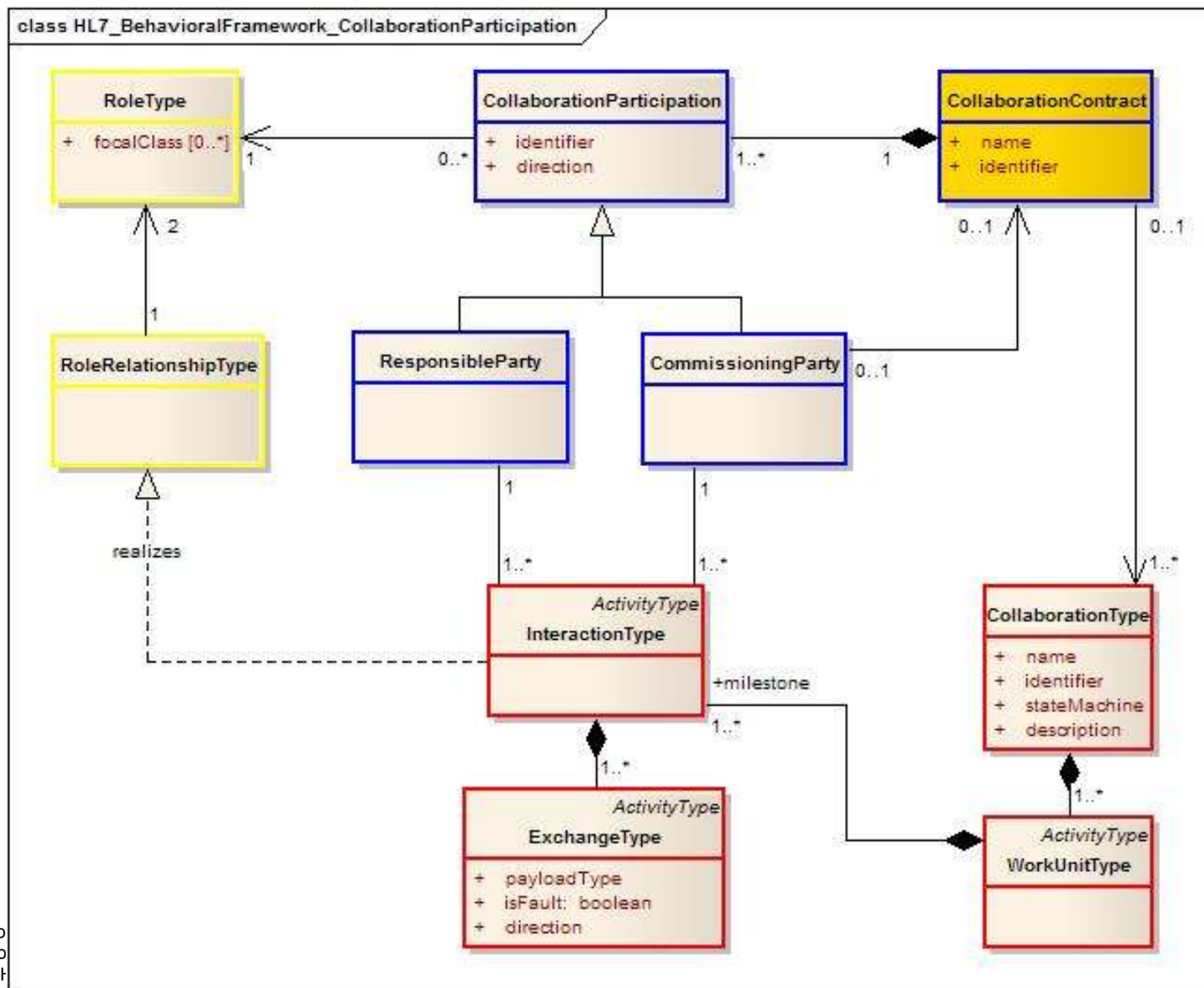
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## The SAEAF: *The HL7 Specification Stack – Detail of the Specification and Conformance Patterns*

<i>Specification</i>	<b>Enterprise / Business Viewpoint</b>	<b>Information Viewpoint</b>	<b>Computational Viewpoint</b>	<b>Engineering Viewpoint</b>	<i>Conformance Level</i>
<i>Reference</i>	EHR-FM, Clinical Statements	RIM, Structured Vocab, ADTs	EHR-FM	-	<i>Reference</i>
<i>Analysis</i>	Business Context, Reference Context	DIM	Dynamic Blueprint, Functional Profile(s)	N/A	<i>Blueprint</i>
<i>Conceptual Design</i>	Business Governance	CIM, LIM	Dynamic Model, Interface Specification	N/A	<i>Platform Independent</i>
<i>Implementable Design</i>	N/A	Transforms, Schema	Orchestration, Interface Realization	Execution Context, Specification Bindings, Deployment Model	<i>Platform Bound</i>

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# Collaboration Participation (Overview)



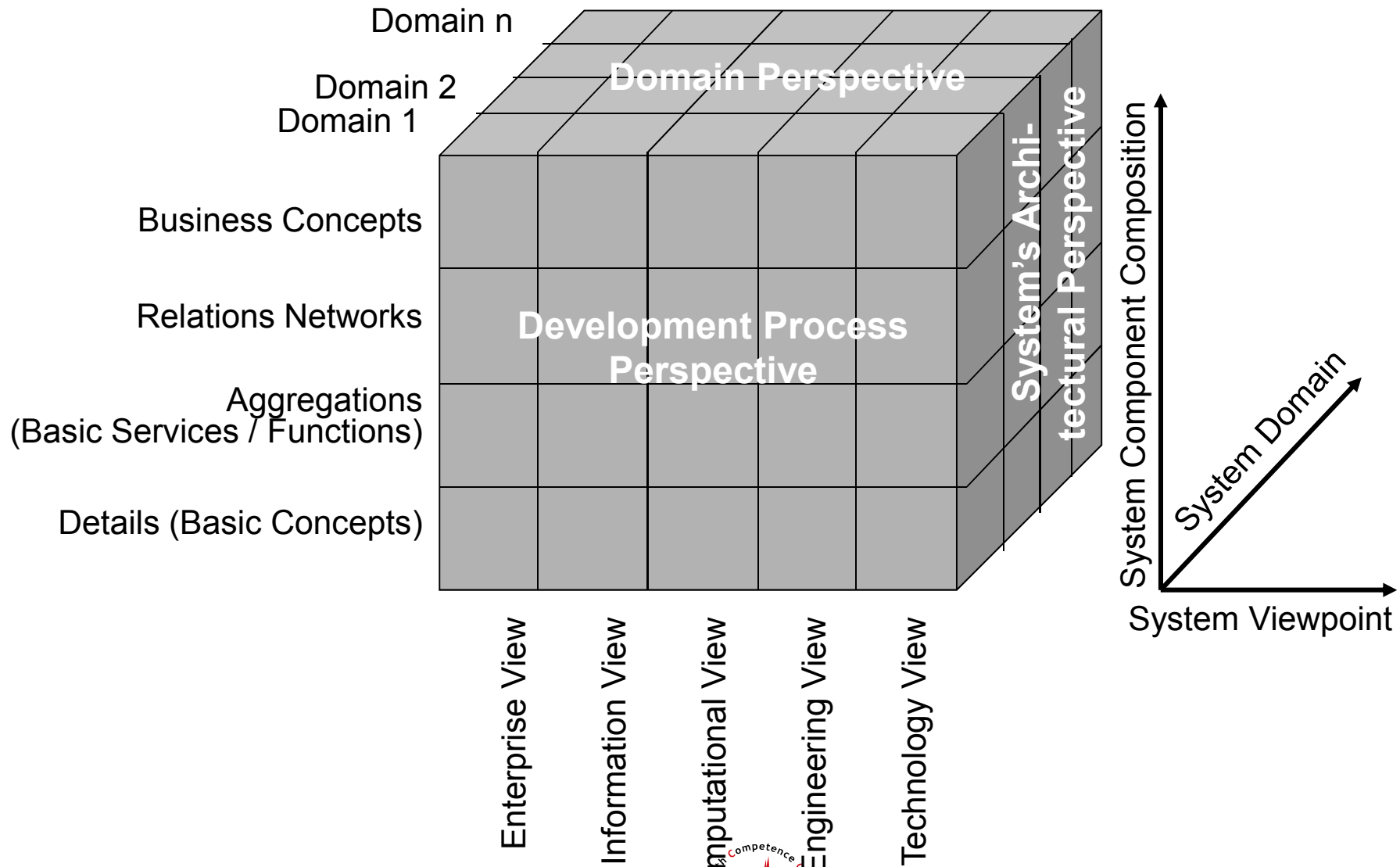


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# What's Still Missing

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# Generic Component Model (GCM)

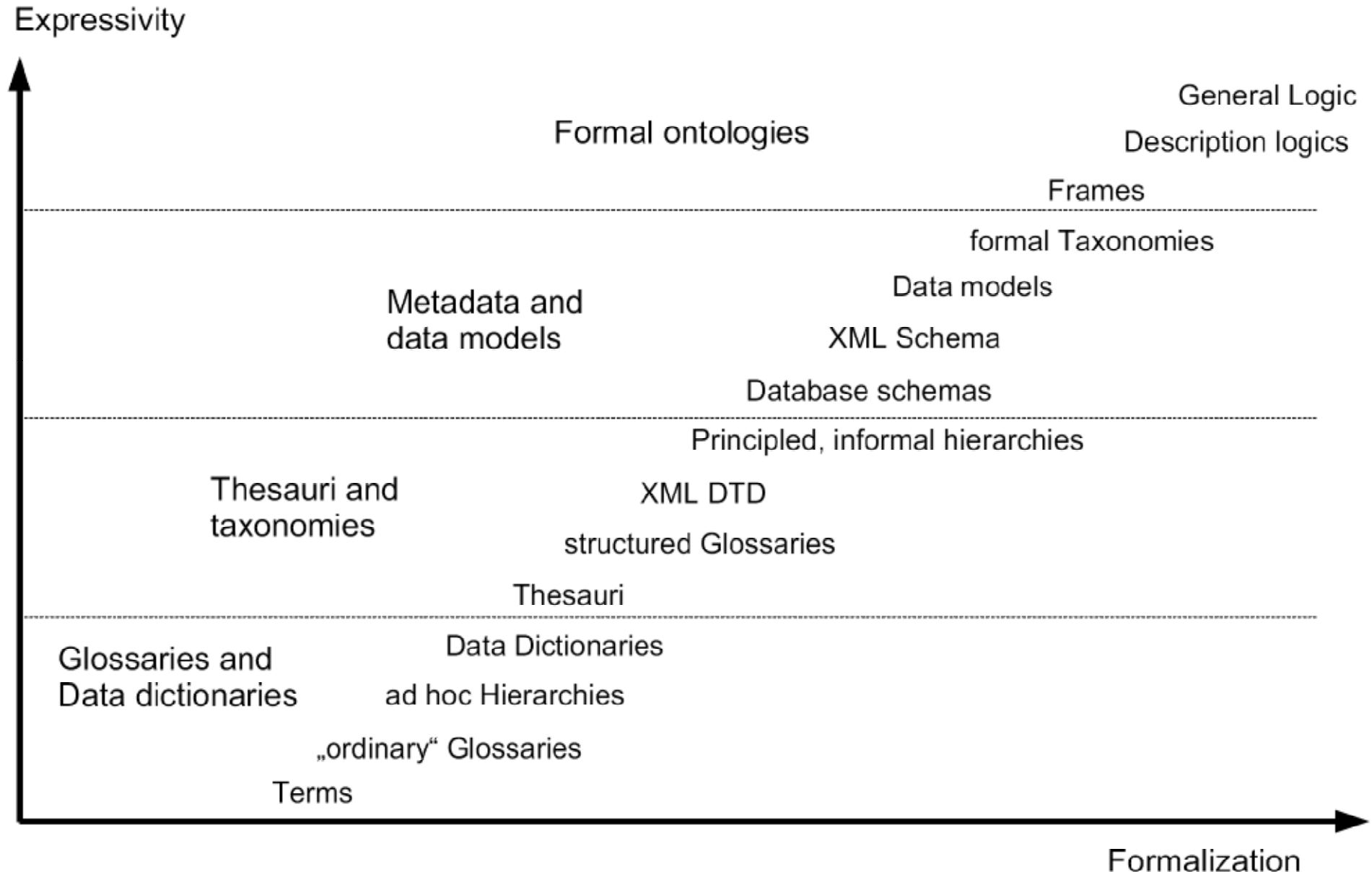


## Ontology Hierarchy

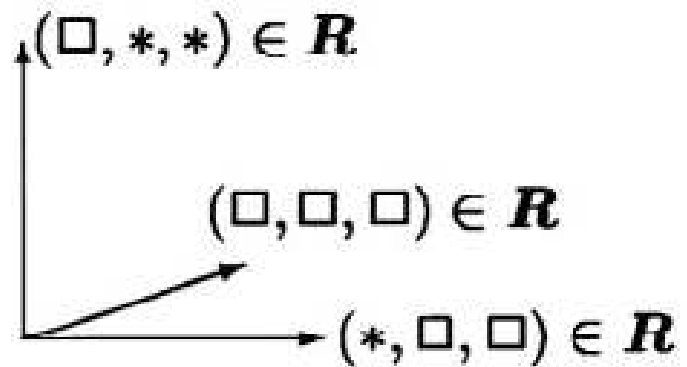
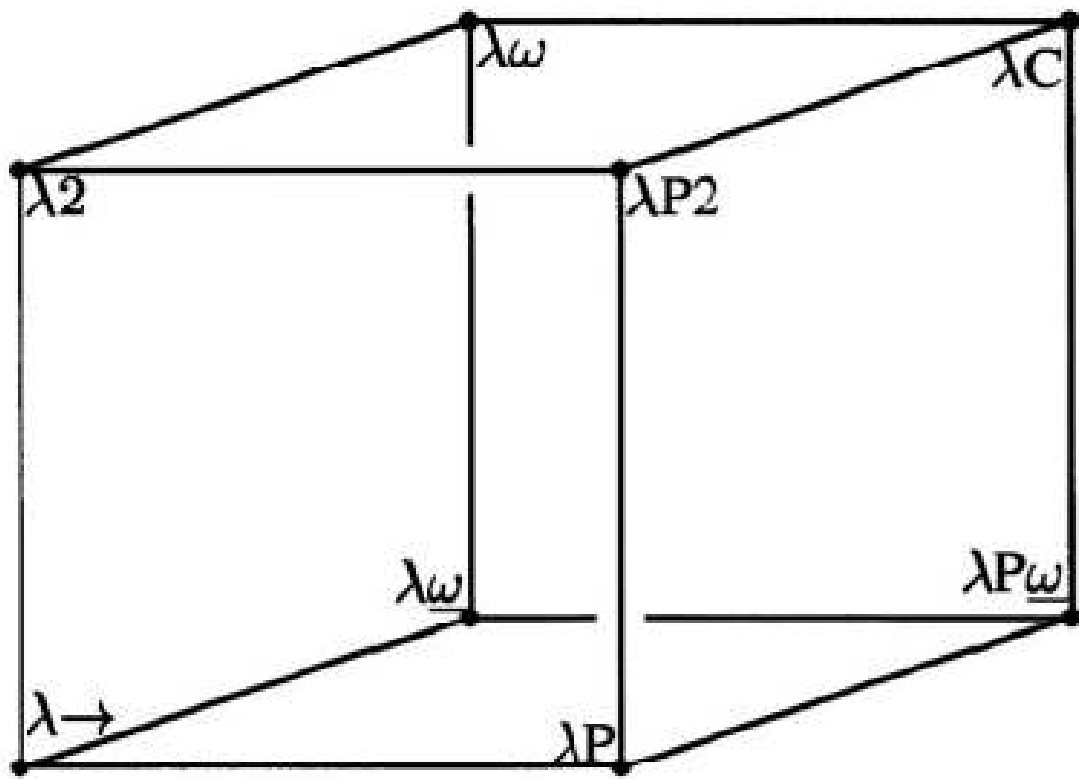
- Depending on the way of reflecting a business domain, the predication of things in the sense of being true or false can happen in language (nominalism), in thought (conceptualism) or in reality (realism), as already mentioned. This results in different formal ontologies representing a variant of the aforementioned formal theory of predication. Also the variety of categories and types of quantifiable variables for expressions offered to represent the ontological category of being defines the system of formal ontology applied.

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## Types of ontologies

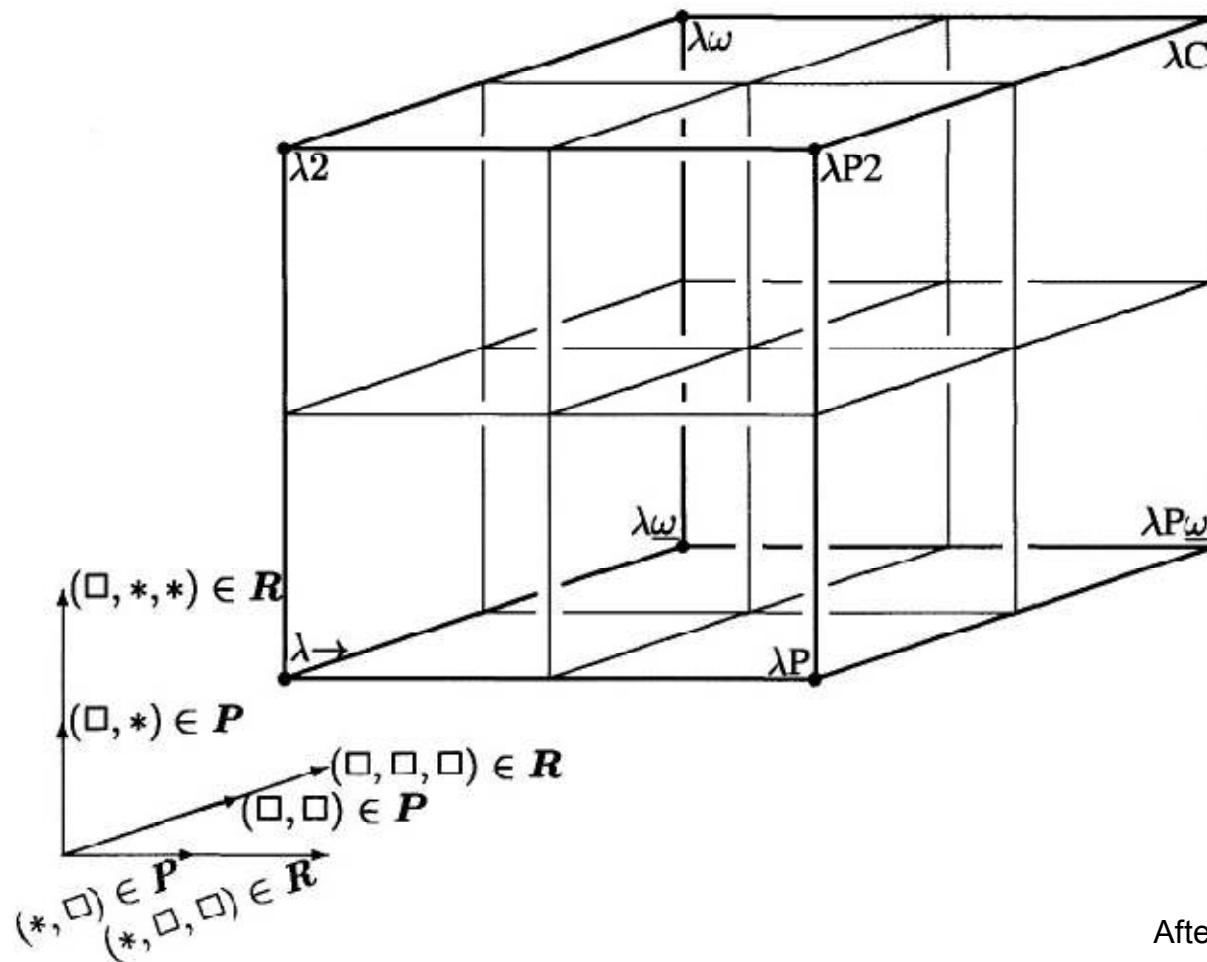


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After Kamareddine et al.

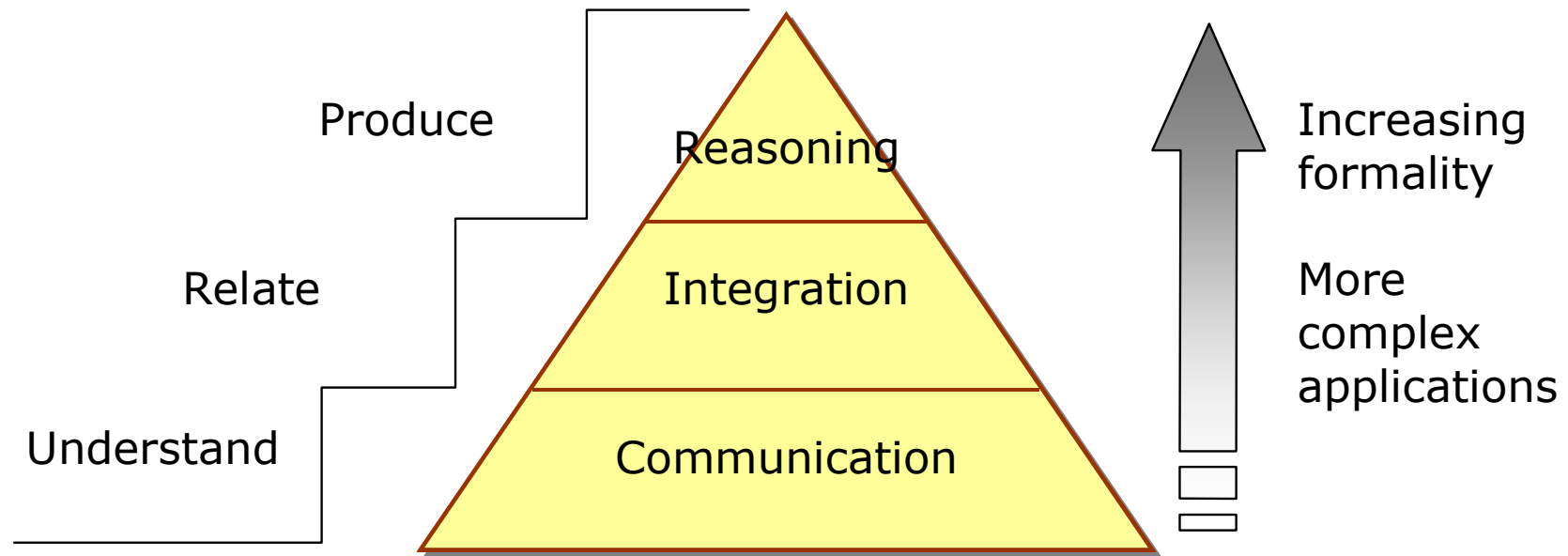
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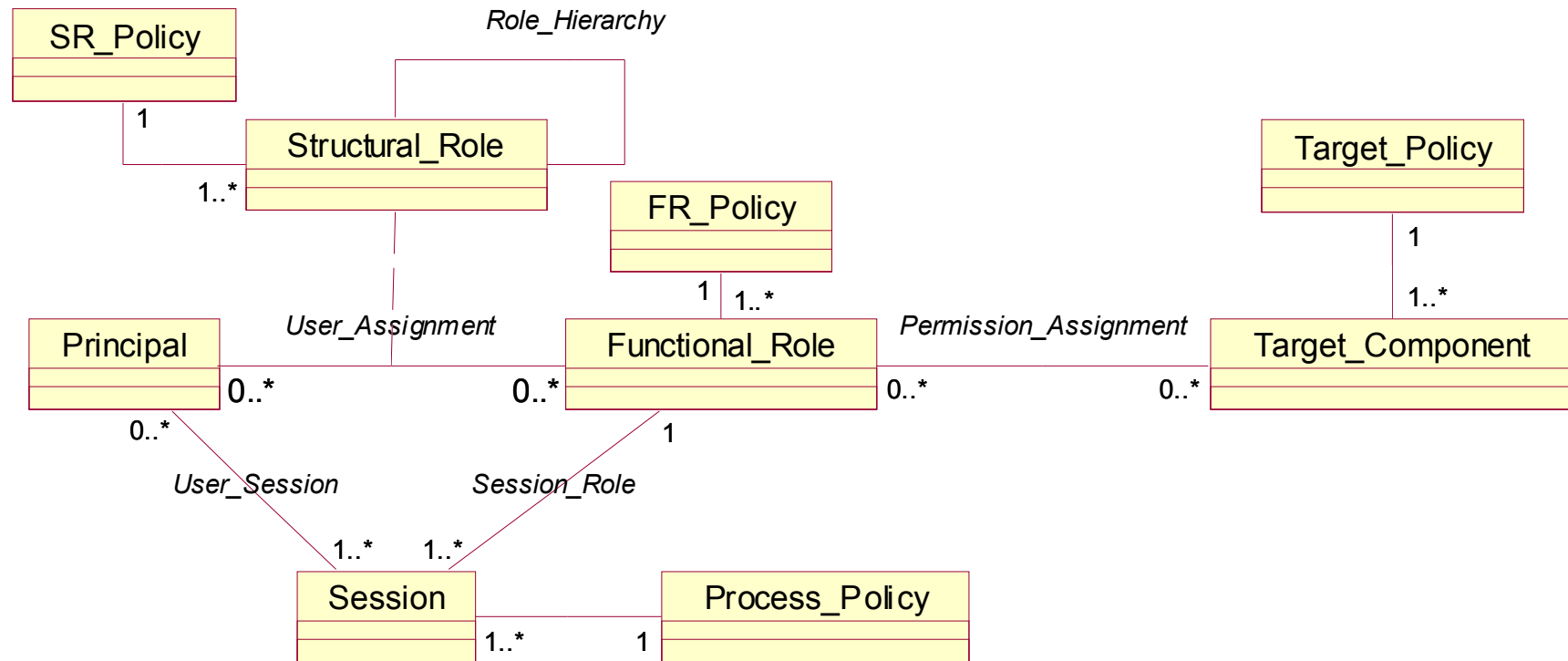
After Kamareddine et al.

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# Pyramid of Increasing Formalization (after Mikas, 2004)

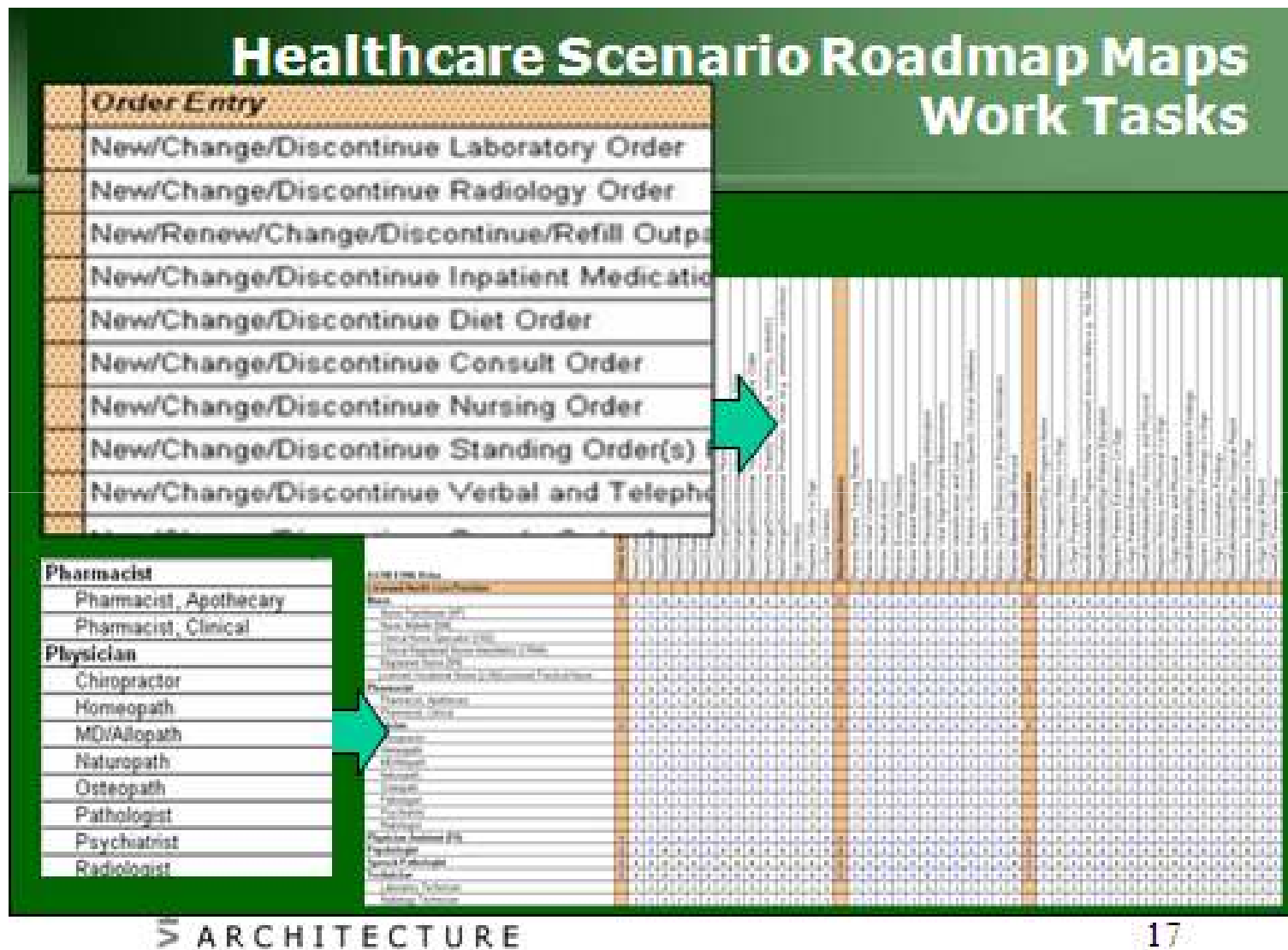


# Policy-Driven, Role-Based Access Control



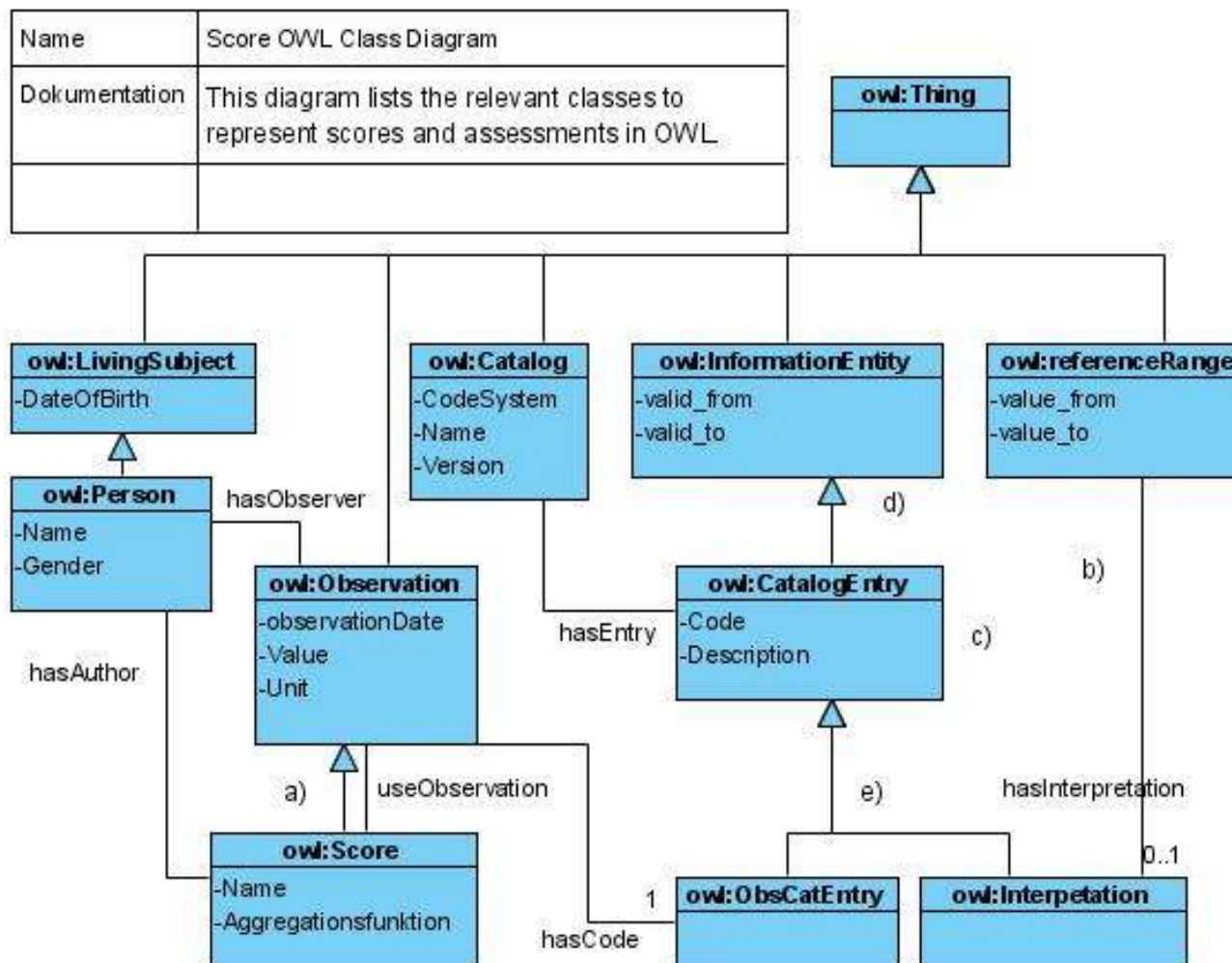


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## UML OWL Model (after Oemig)



## Conclusions

- For including the domain business, the domain ontology must be represented properly following a hierarchical system of ontologies.
- The resulting ontology-driven architecture must master ontology management and ontology harmonization (mapping, bridging, etc.).
- Among other countries intensively working on the establishment of an eHealth platform, Germany spends a lot of efforts in ontology research including natural language processing for enabling semantic interoperability in health informatics.

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# Thank you for your attention!

**Bernd Blobel, PhD, Associate Professor**  
**eHealth Competence Center**  
**University of Regensburg Medical Center**  
Franz-Josef-Strauss-Allee 11  
D-93042 Regensburg, Germany  
Email: [bernd.blobel@klinik.uni-regensburg.de](mailto:bernd.blobel@klinik.uni-regensburg.de)  
Phone: +49-941-944 6769  
Fax: +49-941-944 6766  
<http://www.ehealth-cc.de>



## For more information

***Blobel B, Pharow P, Nerlich M (Eds.): eHealth: Combining Health Telematics, Telemedicine, Biomedical Engineering and Bioinformatics to the Edge - Global Experts Summit Textbook. Series "Studies in Health Technology and Informatics", Vol. 134. IOS Press, Amsterdam, Berlin, New York, Tokyo 2008.***

<http://www.cehr.de>



Bernd Blobel  
eHealth Competence Center  
University Hospital Regensburg



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