

# Domain-Specific Standards for Semantic Interoperability

Wilhelm Hasselbring

OFFIS, University of Oldenburg, Software Engineering Group, Oldenburg, Germany  
hasselbring@informatik.uni-oldenburg.de  
<http://www.offis.de/>, <http://se.informatik.uni-oldenburg.de/>

## Abstract

To achieve effective communication, not only technical interfaces are required, but also common semantics for exchanged data. This talk focuses on problems of interoperability on the level of the application architecture, viz. Enterprise Application Integration [1]. The IEEE defines interoperability as the ability of two or more systems or components to exchange information and to *use* the information that has been exchanged. Semantic interoperability problems arise in various business domains [2]. Exemplary, we will take a look at the healthcare domain. Connecting heterogeneous information sources in health care usually implies problems of semantic interoperability. A typical problem of semantic interoperability in this domain is that the same terms are often used for different concepts (homonyms) and that the same concepts are denoted by different terms (synonyms). Many standardization efforts aim at solving these problems [3]. Standards play an important role for ensuring a common understanding of transferred data among heterogeneous application systems [4]. Various health care standards are analyzed, uniformly structured and put into the context of a software architecture that enables interoperability based on domain-specific standards. Top-down integration, based on domain-specific standards, can result in scalable and flexible software architectures for federated information systems [5,6]. In the domain of health care there exist various standards for communication and documentation, which are integrated into a common metamodel.

## References

1. Hasselbring, W.: Information system integration. *Communications of the ACM* **43** (2000) 32–36
2. Hasselbring, W., Weigand, H.: Languages for electronic business communication: State of the art. *Industrial Management & Data Systems* **101** (2001) 217 bis 227
3. Pedersen, S., Hasselbring, W.: Interoperabilität für Informationssysteme im Gesundheitswesen. *Informatik Forschung und Entwicklung* **18** (2004) 174–188
4. Hasselbring, W.: The role of standards for interoperating information systems. In Jakobs, K., ed.: *Information Technology Standards and Standardization: A Global Perspective*. Idea Group Publishing, Hershey, PA (2000) 116–130
5. Hasselbring, W.: Web data integration for e-commerce applications. *IEEE Multimedia* **9** (2002) 16–25
6. Hasselbring, W., et al.: Top-down enterprise application integration with reference models. *Australian Journal of Information Systems* **8** (2000) 126–136