

Review of Doctoral Thesis

Thesis Title: Conceptual Modeling for XML

Thesis Author: Mgr. Martin Nečaský
Faculty of Mathematics and Physics
Charles University
Prague

Review Author: Doc. Ing. Michal Krátký, Ph.D.
Department of Computer Science
VŠB Technical University of Ostrava
17. listopadu 15
708 33 Ostrava-Poruba
Czech Republic

Review

Introduction

Conceptual modeling for XML is the current research issue. This work provides novel models and describes an improvement of these models.

We can distinguish these four publications in proceedings of international conferences:

1. Necasky M.: XSEM - A Conceptual Model for XML. Proceedings of The Fourth Asia-Pacific Conference on Conceptual Modelling. CRPIT, 67. Australian Computer Society. January 2007. Ballarat, Australia. pp. 37-48.
2. Necasky M., Pokorny J.: Extending E-R for Modelling XML Keys. Proceedings of The Second International Conference on Digital Information Management, IEEE Computer Society. October 2007. Lyon, France. pp. 236-241.
3. Necasky M., Pokorny J.: Conceptual Modeling of IS-A hierarchies for XML. Proceedings of The 18th European Japanese Conference on Information Modelling and Knowledge Bases. Pre-approved for publication in IOS Press Series of the "Frontiers on Artificial Intelligence". June 2008. Tsukuba, Japan.
4. Necasky M., Pokorny J.: Design and Management of Semantic Web Services using Conceptual Model. Proceedings of The 23rd Annual ACM Symposium on Applied Computing, Volume 3. March 2008. Fortaleza, Ceara, Brazil. pp. 2243-2247.

; four articles in local proceedings, one technical report, and one local book. Three from these articles cover the main part of this thesis.

In the first chapter, author provides an introduction and motivation for conceptual modeling in world of XML. The second chapter depicts an introduction for conceptual modeling, the third chapter provides the state-of-the-art in the research field. Chapters 4 and 5 include both novel models: platform independent XSEM-ER and platform specific XSEM-H. These models include modeling more complex XML structures as well as a formal background. Chapter 6 shows how to translate XSEM views to a representation in the XML Schema language.

Questions

1. In Chapter 3, author proposes 10 requirements for a conceptual model and he shows that up-to-date ER-based models do not meet all these requirements. In Section 3.4, author provides a comparison of the novel models with UML-based approaches. The UML-based approaches often apply model-driven architecture as well, therefore, it is important that author describes an improvement of the proposed models. However, it is not clear if the novel models meet the mentioned requirements. Can you clear this issue?
2. Can you provide a relation to other works in this research field, e.g.:
David W. Embley, S. W. Liddle, and R. Al-Kamha. Enterprise Modeling with Conceptual XML. In Proceedings of the 23rd International Conference on Conceptual Modeling, ER 2004. LNCS, Springer, 2004.?
3. In Conclusion, author proposes an application of XSEM-ER and XSEM-H for the data normalization. Can you provide a relation to other works in this field, e.g.:
M. Arenas and L. Libkin. A normal form for XML documents. ACM Transactions on Database Systems (TODS), 29 (2004), 195-232.?

Notice: page 13: Model-Driver Architecture

Conclusion

The text of this work is clear and language is good. This work includes own novel conceptual models for XML. Four articles have been published in proceedings of international conferences, author proved the ability of the stand-alone work. I recommend this work for the defense.

In Ostrava, 26th August 2008

