

Review of Doctoral Thesis

Author: Jakub Klímek

Title: XML Formats Evolution and Integration

Reviewer: Martin Nečaský, Ph.D. (thesis supervisor)

General Overview of the Thesis and Scientific Contribution

The thesis presents a significant scientific contribution in the area of conceptual modeling for XML schemas. The author builds on the results of his supervisor in the area and extends it with techniques for XML schema integration and evolution at the conceptual level. The thesis shows that considering the problems of integration and evolution at the conceptual level brings several advantages. First, a conceptual schema of a data domain linked to XML schemas we want to integrate/evolve reduces the amount of work required to integrate a set of XML schemas and evolve them coherently. Second, the approach prevents XML schema designers from many errors. Among many contributions of the thesis, we can identify the following ones as the most significant:

- Techniques for XML schema integration on the base of a common conceptual schema of the problem data domain
- Extension of the conceptual model for XML with inheritance capabilities
- Extension of the XML schema evolution techniques with inheritance capabilities
- Extensive implementation of the conceptual model for XML plus integration and evolution techniques in a case tool eXolutio
- Exploitation of conceptual modeling techniques for XML in the area of semantic web services.
- Methods for generating Schematron schemas from XML conceptual schemas.

Publications

The publications covered in this thesis involve 2 journal papers with IF and 15 papers published at reviewed international conferences and workshops. The author published his results at several acknowledged events such as ICWS, WISE or ECWS. Some of his publications have been awarded as best papers. Therefore, his results are more than sufficient with regard to the respective research level.

Other Activities

Jakub Klímek was also involved in teaching at our department and also at other schools (see his CV). At our department, he has supervised 1 master and 3 bachelor theses. He also supervised a student software project Payola. He has participated in several research projects including EU funded projects (see his CV). He spent three months on an abroad research stay in Germany (see his CV).

Besides the area of conceptual modeling for XML, Jakub Klímek has also been involved in another research area at our department – Linked Data analysis and visualization. However, his preliminary results in this area are not presented in this thesis.

Conclusion

The thesis of Jakub Klímek fulfills all the conditions for gaining the Ph.D. degree in Computer Science at Charles University in Prague. Therefore, it is recommended.

In Prague, May 14, 2013

.....
Martin Nečaský, Ph.D.

Department of Software Engineering
Faculty of Mathematics and Physics
Charles University in Prague
Malostranské nám. 25
118 00 Praha 1
Czech Republic