

Review report of a final thesis

Czech Technical University in Prague

Faculty of Information Technology

Student: Bc. Dan Homola
Reviewer: Ing. Zdeněk Rybala
Thesis title: Model-Driven Engineering Approach for OntoUML
Branch of the study: Web and Software Engineering

Date: 2. 6. 2016

<i>Evaluation criterion:</i>	<i>The evaluation scale: 1 to 5.</i>
1. Difficulty and other comments on the assignment	1 = extremely challenging assignment, 2 = rather difficult assignment, 3 = assignment of average difficulty, 4 = easier, but still sufficient assignment, 5 = insufficient assignment
<i>Criteria description:</i> Characterize this final thesis in detail and its relationships to previous or current projects. Comment what is difficult about this thesis (in case of a more difficult thesis, you may overlook some shortcomings that you would not in case of an easy assignment, and on the contrary, with an easy assignment those shortcomings should be evaluated more strictly.)	
<i>Comments:</i> The assignment is complex and requires the student to get acquainted with a not very well known modelling language and design transformations from this language into C#, including the design of all meta-models required during the transformation process. Even more, an application of the designed transformation was required to implement.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 1 to 4.</i>
2. Fulfilment of the assignment	1 = assignment fulfilled, 2 = assignment fulfilled with minor objections, 3 = assignment fulfilled with major objections, 4 = assignment not fulfilled
<i>Criteria description:</i> Assess whether the thesis meets the assignment statement. In Comments indicate parts of the assignment that have not been fulfilled, completely or partially, or extensions of the thesis beyond the original assignment. If the assignment was not completely fulfilled, try to assess the importance, impact, and possibly also the reason of the insufficiencies.	
<i>Comments:</i> Assignment is fully fulfilled.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 1 to 4.</i>
3. Size of the main written part	1 = meets the criteria, 2 = meets the criteria with minor objections, 3 = meets the criteria with major objections, 4 = does not meet the criteria
<i>Criteria description:</i> Evaluate the adequacy of the extent of the final thesis, considering its content and the size of the written part, i.e. that all parts of the thesis are rich on information and the text does not contain unnecessary parts.	
<i>Comments:</i> The extent of the thesis is adequate to the assignment, containing all necessary parts required to explain the problem and its solution.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
4. Factual and logical level of the thesis	85 (B)
<i>Criteria description:</i> Assess whether the thesis is correct as to the facts or if there are factual errors and inaccuracies. Evaluate further the logical structure of the thesis, links among the chapters, and the comprehensibility of the text for a reader.	
<i>Comments:</i> The factual and logical level of the thesis is very good. The thesis structure is clear, individual parts of the transformation process and the meta-models are described and explained well. However, everything is described only in text and the reader gets lost easily in the models' description - diagrams of the models would be very useful. Also, diagrams explaining the OntoUML universal types would help its understanding. The architecture is also not very clear from the description. The description of the OntoUML feature of an object being instance of multiple types omits the fact that in UML it is also possible thanks to the generalization sets. Also, the change in generalization sets' constraints in UML 2.5 is not reflected. There is a crucial misunderstanding of the concept of Roles in OntoUML in regards of their cardinality to its identity bearer. The author declares that an object can play a single role multiple times, but it is in conflict with the UFO's definition of Roles. This error is then carried across the whole solution of transformations. For RoleMixins, the crucial fact that the roles must have different identities is not mentioned. In Algorithm 3, the first negation is incorrect. In 8.3.5 (Role mapping), the author incorrectly excluded RoleMixin from the set of valid parents of a Role. Even a RoleMixin can play another role - this difference must be distinguished in some other way.	

<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
5. Formal level of the thesis	85 (B)
<i>Criteria description:</i> Assess the correctness of formalisms used in the thesis, the typographical and linguistic aspects, see Dean's Directive No. 12/2014, Article 3.	
<i>Comments:</i> The formal level of the thesis is high. The text is well understandable and clear. However, there are some grammatical mistakes and typos. Also, in two places, the lists of items overflow the page. The listings of the code examples are not well separated from the text.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
6. Bibliography	95 (A)
<i>Criteria description:</i> Evaluate the student's activity in acquisition and use of studying materials in his thesis. Characterize the choice of the sources. Discuss whether the student used all relevant sources, or whether he tried to solve problems that were already solved. Verify that all elements taken from other sources are properly differentiated from his own results and contributions. Comment if there was a possible violation of the citation ethics and if the bibliographical references are complete and in compliance with citation standards.	
<i>Comments:</i> Very good work with the references and sources. Various books, research papers and online sources were used. Missing one reference in section 8.2.	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
7. Evaluation of results, publication outputs and awards	95 (A)
<i>Criteria description:</i> Comment on the achieved level of major results of the thesis and indicate whether the main results of the thesis extend published state-of-the-art results and/or bring completely new findings. Assess the quality and functionality of hardware or software solutions. Alternatively, evaluate whether the software or source code that was not created by the student himself was used in accordance with the license terms and copyright. Comment on possible publication output or awards related to the thesis.	
<i>Comments:</i> The thesis brings important and innovative results in the field of using OntoUML in the software development process. It defines individual meta-models and transformation of individual constructs from an OntoUML model into source codes in C#. The process contains certain mistakes, however, they are not crucial for the general solution. After correcting these mistakes, the thesis might be published as a research publication.	
<i>Evaluation criterion:</i>	<i>No evaluation scale.</i>
8. Applicability of the results	
<i>Criteria description:</i> Indicate the potential of using the results of the thesis in practice.	
<i>Comments:</i> The thesis brings important and innovative results in the field of using OntoUML in the software development process. Although there are some factual mistakes in the interpretation of certain OntoUML constructs (Roles, RoleMixins, Relators), the defined transformations can be applied correctly. An application implementing the transformations from RefOntoUml model exported from OLE into OntoObjectModel, into C# ViewModel, into C# source code files was developed. Moreover, the application can be easily extended to support different input forms of the model and different output models and programming languages.	
<i>Evaluation criterion:</i>	<i>No evaluation scale.</i>
9. Questions for the defence	
<i>Criteria description:</i> Formulate any question(s) that the student should answer to the committee during the defence (use a bullet list).	
<i>Questions:</i> Explain the architecture of the application in more details. Explain the difference between subtypes of a role and a role playing different role. Is this distinction respected by the transformations? Explain the RoleMixins correctly according to the identity principle of the roles extending the RoleMixin. What is the difference between a RoleMixin and Role subtypes (subroles)? Is it possible to update source codes according to a change in the model? Is it able to persist the changes made in the source code files (the implementation of method bodies)?	
<i>Evaluation criterion:</i>	<i>The evaluation scale: 0 to 100 points (grade A to F).</i>
10. The overall evaluation	90 (A)
<i>Criteria description:</i> Summarize the parts of the thesis that had major impact on your evaluation. The overall evaluation does not have to be the arithmetic mean or any other formula with the values from the previous evaluation criteria 1 to 9.	
<i>Comments:</i> The thesis is very good showing high research potential, bringing an important and innovative know-how to the usage of OntoUML in the software development process. The thesis is clear and understandable, the language is on good level. The designed transformations are implemented in an application for transforming a RefOntoUML model into C# source codes. Although the thesis contains certain factual and formal mistakes, I would recommend the classification by A - excellent, mainly because the complexity and research contribution.	

Signature of the reviewer: