



Assignment 6

Requirements Modeling

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I. Task

Individual Tasks

- Read the mandatory items in the reading list
- Prepare a critique of each mandatory paper. For each paper, we will select a student to present her or his critique orally in class (3-5 minutes). Particular questions to be addressed are:
 - What is the main message of the paper?
 - What are the expected practical benefits?
 - What are the strengths and weaknesses of the paper?
 - What questions do you have about the paper? (prepare at least two questions)
 - What is your personal opinion about the paper? Do you agree or disagree with its findings?
- Be prepared to answer the questions given in Sect. III below in class

Group Tasks

- Prepare a 10-12 minutes presentation (plus 6-8 minutes of discussion) on the theme assigned to your course group (cf. Sect. IV) and choose two students from your group to present it.
 - At the beginning of your presentation, relate your topic to the session's topic (as represented by the mandatory reading).
 - Browse/read additional papers and/or web pages where necessary.
 - Send your presentation to Norbert after the session to share it with others.

II. Reading List

Mandatory reading

[Ludewig 2003] explains the role of models in Software Engineering, while [Machado et al. 2005] discuss various techniques for modeling requirements. [Moody 2005] discusses the evaluation of model quality.

Theme-specific reading

[Glinz et al. 2002], [Reinhard et al. 2008]: Modeling Systems with ADORA

Chapter 2 of [Pohl et al. 2005], [Schobbens 2007]: Requirements in Software Product Lines

Glinz [2010], [Wüest et al. 2012], [Wüest et al. 2015]: Lightweight and Flexible Requirements Modeling

III. Questions

- How are models used in Requirements Engineering?
- What are the differences between modeling and specifying?
- What are the basic principles of ADORA?
- What are the main differences between ADORA and UML?
- What are the characteristics of FlexiSketch?

IV. Themes for Presentation

A. Modeling Systems with ADORA

Present an overview of the key features of the ADORA modeling language. How are these features supported by the tool? What are the challenges related to the implementation of this tool? Why is it a challenge to navigate in ADORA models?

B. Requirements in Software Product Lines

Describe briefly what a Software Product line is and why in domain engineering, requirements consist of two sets of requirements, the commonality and the variability. Then discuss what a feature model is and how feature modeling is used to specify the variability of a product line. When describing feature diagrams, concentrate on FODA and EFD and keep the presentation of abstract syntax and formal semantics short.

C. Lightweight and Flexible Requirements Modeling

What are the characteristics of lightweight and flexible modeling? What are the advantages (and disadvantages) compared to traditional requirements modeling? Is there a meaningful co-existence?

References

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- J. Ludewig (2003). Models in Software Engineering – An Introduction. *Software and Systems Modeling* 2(1):5-14.
- R. Machado, I. Ramos, J. Fernandes (2005). Specification of Requirements Models. In A. Aurum, C. Wohlin. *Engineering and Managing Software Requirements*. Springer. 47-68.
- D. Moody (2005). Theoretical and Practical Issues in Evaluating the Quality of Conceptual Models: Current State and Future Directions. *Data & Knowledge Engineering* 55(3):243-276.
- K. Pohl, G. Böckle, F. van der Linden (2005). *Software Product Line Engineering – Foundations, Principles, and Techniques*. Springer. 20-38.
- T. Reinhard, S. Meier, R. Stoiber, C. Cramer, M. Glinz (2008). Tool Support for the Navigation in Graphical Models. *30th International Conference on Software Engineering (ICSE'08)*. 823-826.
- P.-Y. Schobbens, P. Heymans, J.-C. Trigaux, Y. Bontemps (2007). Generic Semantics of Feature Diagrams. *Computer Networks* 51(2):456-479.
- D. Wüest, N. Seyff, M. Glinz (2012). FlexiSketch: A Mobile Sketching Tool for Software Modeling, *4th International Conference on Mobile Computing, Applications and Services (MobiCASE 2012)*.
- D. Wüest, N. Seyff, M. Glinz (2015). Sketching and Notation Creation with FlexiSketch Team: Evaluating a New Means for Collaborative Requirements Elicitation. *23rd IEEE International Requirements Engineering Conference (RE'15)*. 186-195.