University of Zurich[UZH]

RERG

Requirements Engineering II

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
[Chung et al. 2000], [Gross and Yu 2001]: Modeling Non-Functional Requirements Using Soft Goals
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

Themes will be assigned by the assistant who tutors this course; your group can apply for a theme.

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 graphical models?

B. Modeling Non-Functional Requirements Using Soft Goals

What are soft goals? How are they related to quality requirements? How can NFRs guide the application of patterns during the design of a system?

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

Chung, L., B. Nixon, E. Yu, J. Mylopoulos (2000). The NFR Framework in Action. In Chung, L., B. Nixon, E. Yu, J. Mylopoulos: *Non-Functional Requirements in Software Engineering*. Kluwer Academic Publishers. 15-45.

Glinz, M., S. Berner, S. Joos (2002). Object-oriented Modeling with ADORA. *Information Systems* **27**, 6. 425-444.

Glinz, M. (2010). Very Lightweight Requirements Modeling. *18th IEEE International Requirements Engineering Conference (RE'10)*. 385-386.

Gross, D., E. Yu (2001). From Non-Functional Requirements to Design through Patterns. *Requirements Engineering* **6**, 1 (Feb. 2001). 18-36.

Ludewig, J. (2003). Models in Software Engineering – An Introduction. *Software and Systems Modeling* **2**, 1 (Mar. 2003). 5-14.

Machado, R., I. Ramos, J. Fernandes (2005). Specification of Requirements Models. In Aurum, A., C. Wohlin. *Engineering and Managing Software Requirements*. Springer. 47-68.

Moody, D. (2005). Theoretical and Practical Issues in Evaluating the Quality of Conceptual Models: Current State and Future Directions. *Data & Knowledge Engineering* **55**, 3 (Dec. 2005). 243-276.

Reinhard, T., 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.

Wüest, D., Seyff, N., Glinz, M. (2012). FlexiSketch: A Mobile Sketching Toll for Software Modeling, *4th International Conference on Mobile Computing, Applications and Services (MobiCASE 2012).*

Wüest, D., Seyff, N., Glinz, M. (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.