University of Zurich
Department of Informatics

Requirements Engineering II

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Assignment 2: Goal-Oriented RE and Quality Requirements

1. Tasks

Individual Tasks

- Read the mandatory items in the reading list
- Be prepared to answer the questions given below in class

Group Tasks

- Prepare a 15 minutes presentation (5-10 slides) on the theme assigned to your course group. Browse/read additional papers and/or web pages where necessary.
- Buid *i** models (a strategic dependency model and a strategic rationale model) for the case study that you worked on in Requirements Engineering I.

2. Reading list

Mandatory reading

[van Lamsweerde 2009] provides an overview on goal-oriented requirements engineering. [Dardenne 1993] describes KAOS and [Yu 1997] *i**. These approaches utilize goals for requirements engineering purposes.

Theme-specific reading

[Darimont 1996], [van Lamsweerde 1998]: Goal refinement and conflict resolution with KAOS.
[Fuxman 2004], [Bresciani 2004]: From *i**-based requirements to agent-oriented software development.
[Chung 2000], [Glinz 2008]: Soft goals and quality requirements.

3. Questions

- What is goal-oriented requirements engineering?
- What is the added value of goals in the requirements engineering process?
- What is the difference between goals, intentions, and requirements?
- What are the basic concepts of KAOS?
- What are the basic concepts of *i**?

4. Themes for presentation

(Will be assigned by the research assistant who tutors this course; your group can apply for a theme)

A. KAOS

(Present the main ideas using an example. How can complexity of goal-oriented reasoning be hidden? How can conflicts between goals be detected and resolved?)

B. *i and Tropos**

(Present the main ideas using an example. How can the quality of early-phase requirements be checked? How are such goal-oriented requirements translated into a software solution?)

C. Softgoals and Quality Requirements

(How are goals analyzed that cannot be proven to be satisfied? How do these soft goals relate to quality requirements? How should they be specified in practice?)

References

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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.

Dardenne, A., A. van Lamsweerde, S. Fickas (1993). Goal-Directed Requirements Acquisition. *Science of Computer Programming* **20**. 3-50.

Darimont, R., A. van Lamsweerde (1996). Formal Refinement Patterns for Goal-Driven Requirements Elaboration. *4th ACM Symposium on the Foundations of Software Engineering (FSE4)*. San Francisco, CA, USA. 179-190.

Fuxman, A., L. Liu, J. Mylopoulos, M. Pistore, M. Roveri, P. Traverso (2004). Specifying and Analyzing Early Requirements in Tropos. *Requirements Engineering* **9**, 2. 132-150.

Glinz, M. (2008). A Risk-Based, Value-Oriented Approach to Quality Requirements. *IEEE Software* **25**, 2 (Mar./Apr. 2008). 34-41.

van Lamsweerde, A., R. Darimont, E. Letier (1998). Managing Conflicts in Goal-Driven Requirements Engineering. *IEEE Transactions on Software Engineering* **24**, 11. 908-926.

van Lamsweerde, A. (2009). Goal Orientation in Requirements Engineering. In van Lamsweerde, A. *Requirements Engineering: From System Goals to UML Models to Software Specifications*. Wiley. 259-283.

Yu, E. (1997). Towards Modelling and Reasoning Support for Early-Phase Requirements Engineering. *3rd IEEE International Symposium on Requirements Engineering (RE'97)*, Annapolis MD, USA. 226-235.