



## Requirements Engineering II

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# Assignment 2: Goal-Oriented Requirements Engineering

## 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.
- Build *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 and Mylopoulos provide an overview of goal-oriented Requirements Engineering [van Lamsweerde 2001], [van Lamsweerde 2004], [Mylopoulos 2006]. The conceptual basis of the KAOS approach to goal-oriented Requirements Engineering is laid in [Dardenne, Fickas and van Lamsweerde 1991]. You may substitute this paper by reading the journal version [Dardenne, van Lamsweerde and Fickas 1993]. The other strand of goal-oriented RE starts with Eric Yu's work on *i\** [Yu 1997].

### Mandatory browsing

Tropos extends the *i\** work towards an agent-oriented software development methodology. Browse [Castro, Kolp and Mylopoulos 2002] or [Bresciani et al. 2004] for getting an overview of Tropos.

### Optional reading

For more on KAOS, read [Dardenne, van Lamsweerde and Fickas 1993] and the KAOS tutorial [Objectiver 2003]. For more on Tropos, read [Castro, Kolp and Mylopoulos 2002] or [Bresciani et al. 2004] in detail. For goal-oriented requirements elicitation and analysis, read [Antón 1996] and [Antón and Potts 1998]. You may also read [Rolland, Souveyet and Ben Achour 1998] for another perspective on elicitation.

## 3. Questions

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

#### 4. Themes for presentation

(Will be assigned by the research assistant who tutors this course; your group can apply for the theme you would like to work on)

- A. An overview of goal-oriented Requirements Engineering and goal-oriented requirements elicitation
- B. The KAOS approach to goal-oriented Requirements Engineering
- C.  $i^*$  and related approaches to goal-oriented Requirements Engineering

#### References

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- Antón, A., C. Potts (1998). The Use of Goals to Surface Requirements for Evolving System. *Proceedings of the 20th International Conference on Software Engineering (ICSE'98)*. 157-166.
- Bresciani, P., A. Perini, P. Giorgini, F. Giunchiglia, J. Mylopoulos (2004). Tropos: An Agent-Oriented Software Development Methodology. *Autonomous Agents and Multi-Agent Systems* **8**, 3 (May 2004). 203-236.
- Castro, J., M. Kolp, J. Mylopoulos (2002). Towards Requirements-Driven Information Systems Engineering: The Tropos Project. *Information Systems* **27**, 6. 365-389.
- Chung, L., B. Nixon, E. Yu, and J. Mylopoulos. (2000). *Non-Functional Requirements in Software Engineering*. Kluwer Academic Publishers.
- Dardenne, A., S. Fickas and A. van Lamsweerde (1991). Goal-Directed Concept Acquisition in Requirements Elicitation. *Proceedings of the 6th International Workshop on Software Specification and Design (IWSSD-6)*, Como, Italy. 14-21.
- Dardenne, A., A. van Lamsweerde and S. Fickas (1993). Goal-directed Requirements Acquisition", *Science of Computer Programming* **20**, 1. 3-50
- van Lamsweerde, A. (2001). Goal-Oriented Requirements Engineering: A Guided Tour. *Proceedings of the 5th IEEE International Symposium on Requirements Engineering (RE'01)*, Toronto, Canada. 249-261.
- van Lamsweerde, A. (2004). Goal-Oriented Requirements Engineering: A roundtrip from Research to Practice. *Proceedings of the 12th IEEE International Requirements Engineering Conference (RE'04)*, Kyoto, Japan. 4-7.
- Mylopoulos, J. (2006). *Goal-Oriented Requirements Engineering: Part II*. Presentation slides of keynote talk at the 14th IEEE International Requirements Engineering Conference (RE'06), Minneapolis, USA. <http://www.re06.org>
- Objectiver (ed.) (2003). A KAOS Tutorial. <http://www.objectiver.com/download/documents/KaosTutorial.pdf>
- Rolland, C., C. Souveyet, C. Ben Achour (1998). Guiding Goal Modeling Using Scenarios. *IEEE Transactions on Software Engineering* **24**, 12 (Dec 1998). 1055-1071.
- Yu, E. (1997). Towards Modelling and Reasoning Support for Early-Phase Requirements Engineering. *Third IEEE International Symposium on Requirements Engineering (RE'97)*. 226-235.

#### Web resources

- Objectiver (KAOS tool): <http://www.objectiver.com>
- Organization Modelling Environment (tool supporting  $i^*$ ): <http://www.cs.toronto.edu/km/ome/>