



Assignment 4

ADORA and Modeling Notations for RE

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I. Task

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.
- Specify the problem given in the case study below in ADORA (section 5). The focus of the model shall be on the handheld device. Where necessary, ask the tourist guide expert for advice or make and document assumptions. For creating the models, you have the choice between using the ADORA tool (section 6), any general-purpose drawing tool, or paper-and-pencil.

Hints: Start with a type scenario that specifies how a tourist interacts with the tourist guide system. Model the components that are needed to provide the functionality of the tourist guide system. Model the data and the behavior of the components with objects and states. Tourist guide and ADORA expert: Cédric Jeanneret

II. Reading List

Mandatory reading

[Ludewig 2003] explains the role of models in Software Engineering, while [Machado 2005] discusses various techniques for modeling requirements. [Glinz 2002a] provides an overview on ADORA.

Theme-specific reading

[Seybold 2005], [Reinhard 2008]: Modeling Systems with ADORA

[Glinz 2002b], [Bontemps 2005]: Statecharts for Specifying Behavioral Requirements

[Chung 2000], [Gross 2001]: Modeling Non-Functional Requirements Using Soft Goals

III. Questions

- How are models used in Requirements Engineering?
- What are the differences between modeling and specifying?
- What is a “good” specification process?
- What are the basic principles of ADORA?
- What are the main differences between ADORA and UML?

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? What is the purpose of simulating scenarios? To what degree does such a simulation require formal requirements specification?

B. Statecharts for Specifying Behavioral Requirements

What are the basic concepts of state-based requirements specification? What are the main difficulties behind the synthesis of behaviors from scenarios?

C. 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?

V. Case Study

Assume you are working for a company who wants to develop and market a location-and context-sensitive tourist guide system [Davies 2001]. The tourist guide consists of an electronic hand-held device that offers the following facilities to the visitors. The rough requirements are as follows.

For the initialization of the tourist guide a set of preferences and interests is entered by the tourist to generate and propose interesting suggestions for tours of the city and cultural events to visit.

Having initialized the device, the user can choose from the following functions of the tourist guide:

- a) City Information: Retrieve information about the city, including information about the current location. The retrieved information depends on the preferences, interests and position of the user.
- b) Surprise: The device suggests randomly an activity for the tourist. The activity is chosen according to a, c, d, e.
- c) City Tours: Provide route guidance to help visitors move between locations on the tour. The route is chosen according to the position of the preferences, the interests and the position of the user.
- d) Walking Route: The device suggests a walking route. The route is determined according to the preferences, interests and the position of the system.
- e) Cultural Event: The device suggests a cultural event or museum to visit. The suggestion is chosen according to the preferences, interests and position of the user.
- f) Access Services: Access external services, such as hotel and theatre and ticket reservations.

The handheld device locates its position by using a GPS receiver. The position needs to be updated every 20 seconds.

VI. ADORA Editor

The ADORA editor is a prototype that can be freely downloaded¹. The tool requires Eclipse and Java 2 (JDK 1.5). Please note that the simulation features described in [Seybold 2005] are not implemented in the current version of the tool.

¹ <http://www.ifi.uzh.ch/rerg/research/projects/adora/tool/>

References

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