Task Analysis Meets Prototyping: Seeking Seamless UI-Development

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ABSTRACT
This full-day tutorial introduces a seamless development approach for user interface generation, based on the user-centered Groupware Task Analysis GTA, and the task-based design technique and tool TADEUS (Task Analysis / Design / End User Systems). The seamless procedure ensures (i) for the developers consistency and semantic richness throughout analysis and design, and (ii) for end users context-sensitive and immediate feedback of analysis and design inputs through prototyping from analysis/design representations. The tutorial is held in participatory style and introduces the background, goals, experiences, methodology to be followed, methods and tools to use. It also provides hand-on experiences with existing tools to be used along the lines of development. The methodology will be explained and experienced along one or more projects the participants will identify and specify according to their interest and profile.

Keywords
Task analysis, knowledge elicitation, task-based design, user interface prototyping, user-centered development, cognitive engineering, model-based design, usability engineering.

INTRODUCTION
Task-oriented and user-centered user interfaces require sound methods for analysis and design. Orthogonal to product-driven approaches, such as conceptual (re)design, this tutorial focuses on techniques that enable to acquire and represent end users' needs stemming from the context of use. The benefits of this approach are the involvement of the actual end users in development activities (participatory development) and early user feedback for product development (see also [2]).

OBJECTIVES
This tutorial should provide its participants with an in-depth understanding of user-centered and task-based user interface analysis, design, and prototyping from a
• conceptual and
• methodological perspective.

The tutorial should help them to bridge the gap between user-perceived requirements and technological solutions through a seamless and context-sensitive task analysis and task-based design and prototyping technique. It provides both a structured procedure and a usability engineering tool.

Positive transfer of knowledge should be achieved through the project-specific style of presentation, and hands-on experiences with the technique and tools.

AUDIENCE
We recommend this full-day tutorial to interactive software developers (analysts, designers, programmers, testers, managers, usability engineers etc.). The developers should not only stem from teams assigned to end user-oriented developments, but also providers of interactive workbenches for software developers. We also address quality managers, members of standardization bodies interested in operational definitions of principles and criteria, as well as software and organization ergonomists.

The materials are designed for both beginners and professionals in particular fields, such as usability engineering.

CONTENT
GTA and TADEUS are synergistic with respect to several aspects, since they both enable an integrated view on technological and organizational issues. In addition, they
are oriented towards a structured procedure and easy-to-understand representation of development knowledge.

GTA (Groupware Task Analysis) [5,6] provides an approach towards analyzing and modeling the existing/current work situation (task model 1) as well as envisioning the future situation when new technology will have been implemented (task model 2). GTA provides a conceptual framework for analysis that features 3 complementary viewpoints on the task domain: work (goals and tasks, procedures and strategies, actions and events); and situation (objects and object relations, environment, history). The viewpoints are strongly interrelated but each offers different and complementary views on the task domain. GTA offers a variety of representations (trees, networks, flow of work and data, object templates, multimedia illustrations), and a design environment with representation and analysis tools (EUTERPE).

The TADEUS (Task Analysis/Design/End User Systems) approach [3,4] provides a model-based framework for representation, a methodology, and a corresponding environment for user interface development. The inputs for this approach have been provided by techniques from workflow modeling as well as by user interface description languages, aiming at task-based and user-oriented development of interactive software.

In order to enable workflow-oriented prototyping TADEUS has been based on a single object-oriented notation, namely the one proposed for Object-Oriented Systems Analysis [1]. Hence, the knowledge about the functionality of an interface, as well as about the behavior (how tasks are accomplished) can be kept encapsulated, transparent and consistent throughout analysis, design and implementation. Moreover, since the design is specified in an object-oriented notation, code can automatically be generated from the representations in the TADEUS environment.

The basic design activities in TADEUS start with a specification of the task and user (role) model according to the organization of work. Then, a data model is derived from these models, followed by migrating interaction features with the previous results. Finally, either prototyping with end users might be performed, or code may be generated from the integrated object-oriented representation.

Due to the consistency checks of abstract relationships in the specifications, each of the models can be manipulated separately as well as in an integrated way, according to design requirements.

ABOUT THE INSTRUCTORS

Chris Stary is currently full professor of the Department of Business Information Systems at the University of Linz. He received his PhD (on conceptual HCI-modeling) in computer science from the Vienna University of Technology. Professor Stary is also head and founder of the Working Life Research Center Vienna, a human factors and usability consulting institute he established in 1991. He developed the model-based TADEUS framework, the TADEUS methodology and environment for task-based user interface development. Based on his experiences in industry he has also been leading industrial award-winning developments, such as N-JOY at COMDEX92. In the course of his several visiting and associate professorships in the US and Europe he taught numerous courses in the field of HCI. He is member of ACM and IEEE, and has published several books and papers focusing on the interface between humans and computers, and its context-sensitive construction.

Gerrit C. van der Veer is Reader in Interactive Systems at the Department of Computer Science of the Vrije Universiteit, Amsterdam. After a Masters in Cognitive Psychology he received his PhD in Computer Science. He developed the GTA approach based on collaboration with designers in industry. He coordinates several European Interdisciplinary Projects in the domain of human-machine interaction. He represents the Dutch Computer Society in IFIP's TC 13 on Human-Computer Interaction, and he is a member of ACM, SIGCHI, IEEE Computer Society, and EACE (European Association of Cognitive Ergonomics).

REFERENCES


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