

Wolfgang Nejdl
Klaus Tochtermann (Eds.)

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Innovative Approaches for Learning and Knowledge Sharing

First European Conference
on Technology Enhanced Learning, EC-TEL 2006
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on Technology Enhanced Learning, EC-TEL 2006
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Preface

With the shift towards a knowledge society, changing working conditions and the continuous evolution of information and communication technologies, peoples' knowledge and skills need continuous development. Technology-enhanced learning is one of the strategic objectives of the EU/IST Work Program, with the goal of "improving the efficiency and cost-effectiveness of learning, for individuals and organizations, independent of time, place and pace." Innovative infrastructures, methods and approaches are needed to reach this goal, and will facilitate transfer and sharing of knowledge between individuals and in organizations. For e-learning, as in e-commerce and e-business, systemic changes wrought by emerging technologies are also changing the relationships between consumption and production—in this case of knowledge—as what many call 'Web 2.0' becomes more interactive and user-generated content becomes more widespread.

EC-TEL 2006, the First European Conference on Technology-Enhanced Learning, provided a unique forum for all research related to technology-enhanced learning in Europe and world-wide, as well as its interactions with knowledge management, business processes and work environments, through specialized workshops and the main conference. Additionally, EC-TEL 2006 provided unique networking possibilities for participating researchers throughout the week and included project meetings and discussions for EU/IST projects funded within the sixth framework program under the action line of "Technology-Enhanced Learning and Access to Cultural Heritage."

EC-TEL 2006 was organized by the Professional Learning Cluster (PRO-LC). PRO-LC has been founded by a cluster of major European research projects in the area of technology-enhanced learning focusing on professional learning: the Network of Excellence in Professional Learning (PROLEARN) and the Integrated Projects PROLIX, APOSDLE, and TENCompetence. Further members are the Specific Targeted Research Projects COOPER and iCamp as well as the projects "Embedding ICT/ Multimedia Standardisation Initiatives into European Vocational Training Development Strategies" (Leonardo da Vinci), EUCAM (Multilingual Communication in European Car Manufacturing), and BASE2 (Broadband Access Satellite Enabled Education).

EC-TEL 2006 received 192 submissions, 146 of those full papers. All submissions went through a rigorous review process, with a final acceptance rate of about 22% for full papers. Based on the reviews, the Program Committee accepted 33 full papers, 16 short papers, as well as 33 posters to be presented in a poster presentation session. In addition, 9 workshops out of 18 proposed and a session on EU/IST funding for technology-enhanced learning research completed the program.

Thanks to this ambitious and competitive selection process, EC-TEL 2006 managed to bring together the leading experts in the field of technology-enhanced learning, addressing the following topics during the conference:

- Collaborative Learning
- Personalized Learning
- Multimedia Content
- Semantic Web, Metadata and Learning
- Workplace Learning
- *Learning Repositories and Infrastructures for Learning*
- Experience Reports, Assessment, and Case Studies

An event such as EC-TEL 2006 requires much support at different levels: We are grateful to our invited keynote speakers for sharing with our attendees their ideas about the future development of technology-enhanced learning. Many thanks go to all authors who submitted their papers and of course to the Program Committee for their careful reviews. The contributions which were selected by our Program Committee are published in these proceedings.

Peter Dolog worked hard to get the conference proceedings ready in time, and helped with many other tasks necessary for a successful conference, for which we thank him a lot. We also want to thank our staff at L3S in Hannover and the Know-Center in Graz for their high motivation in preparing and organizing EC-TEL 2006. Finally, our special thanks go to all members of our Organizing Committee as well as additional staff from NCSR in Athens and L3S Research Center in Hannover who were responsible for successfully organizing the entire event and in supporting our attendees — and all this without losing patience and gentleness! We are convinced that EC-TEL 2006 was a terrific start for our new conference series and we hope that the conference in Crete provided you with new ideas for your research and with new opportunities for partnerships with other research groups.

July 2006

Wolfgang Nejdl and Klaus Tochtermann
Program Co-chairs
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<http://www.professional-learning-cluster.org/>

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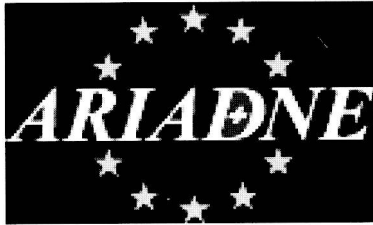
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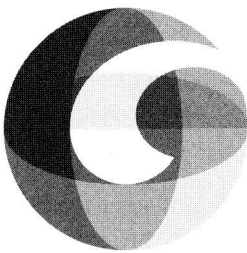
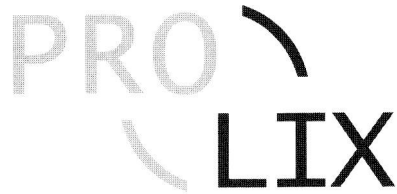
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From Clicks to Touches: Enabling Face-to-Face Shared Interface

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Making the interactions with a digital user interface disappears into and becomes a part of the human to human interaction and conversation is a challenge. Conventional metaphor and underlying interface infrastructure for single-user desktop systems have been traditionally geared towards single mouse and keyboard-based WIMP interface design. On the other hand, people usually meet around a table, facing each other. A table setting provides a large interactive visual surface. It encourages collaboration, coordination, as well as simultaneous and parallel problem solving among multiple people. In this talk, I will describe six particular challenges for the design of direct-touch tabletop environments, and present solutions and experiences to these challenges.

The term *display* suggests a device used solely to output visual information, untouched for fear of occluding or dirtying the screen. *Surfaces*, meanwhile, are free of this burden – they are a part of the physical environment, and invite both touching and interaction. What happens, then, when surfaces become displays and when input and visual output spaces are superimposed, creating touchable, interactive surfaces? Such surfaces can be used in any number of ways; one exciting form-factor is as a horizontal, interactive, computationally augmented tabletop. Interactive tables provide three potential benefits for users over traditional displays: First, since a direct touch interactive table serves both as a display and as the user's immediate direct input device, natural hand gestures and intuitive manipulations may be employed to improve the fluidity and reduce the cognitive load of interaction between the user and the digital content. Second, by leveraging the tendency to gather around a table for face-to-face interaction, a horizontal tabletop surface offers affordances and opportunities for building and enhancing co-located collaborative environments. Third, large surfaces such as tabletops offer a spacious work area that may influence working styles and group dynamics. The larger area also provides a larger visual field, which may be utilized as external physical memory in order to extend the working memory capacity of its users, and as an external cognitive medium.

In the past few years, in our pursuit to exploit the advantages and the affordances of direct-touch surfaces, we have designed, implemented and studied a variety of tabletop user interfaces, interaction techniques, and usage scenarios. We have also carried out empirical evaluations, and obtained preliminary findings on how people using a story-sharing table with digital photos, on non-speech audio feedback on multi-user interactive tabletops, and on some of the effects of the size of groups on different aspects of multi-user tabletop collaboration.