

Managing Development and Application of Digital Technologies

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(Editors)

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Research Insights in the Munich Center
for Digital Technology & Management (CDTM)

With 91 Figures

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Foreword

This collection of research contributions documents the scope of topics investigated by researchers at and connected to the *Center for Digital Technology and Management* (CDTM) in Munich. It shows the effective collaboration between various scientific disciplines and, in turn, demonstrates the potential of interdisciplinary work in a field that is of utmost importance for the socio-economic future all over the globe.

Digital technology determines today's world and will be one of the key technologies of the future. Non-stop technological change demands constant innovation at tremendous speed. While information technology offers great opportunities, it poses quite a few challenges to managers. The ability to integrate business and technology decisions will become a crucial core competence.

Consequently our vision was to create CDTM as an innovative cross-disciplinary institution qualifying promising students for their further managerial career in nowadays business environment. It offers an experience that opens new ideas, new views, new opportunities by combining the abilities of business administration, computer science and electrical engineering students.

CDTM, an interdisciplinary establishment of education and research, was founded in 1998 as a joint venture between the Technische Universität München and the Ludwig-Maximilians-Universität München. Building on the specific strengths of both universities, the CDTM provides highly qualified and ambitious students with an excellent honour's academic education in the field of Technology Management. Since 2004 it is part of the newly founded Bavarian Elite Study Program (see www.cdtm.de).

As a research institution it focuses on topics around the development and application of digital technologies, closely cooperating with industry partners within the TIME sector (Telecommunication, Information Technology, Media, and Entertainment).

Even eight years after its foundation the CDTM is unique in the German academic scene. The ongoing interest of the industry and the students are indicators of its promising strategic positioning and its enduring success.

We wish the CDTM, its staff, students, its graduates, and its partners a bright future in the fascinating field of digital technology and management!

We thank all the authors for their valuable contributions, and in particular Dr. Eva-Maria Kern who with great enthusiasm managed to make this book become a reality.

Manfred Broy

Jörg Eberspächer

Arnold Picot

Founding Professors of CDTM

Munich, March 2006

Preface

Digital Technology plays an important role in today's world. Successful technology development, introduction and management are not only a question of technical issues. Due to their complexity a close cooperation between various scientific disciplines is required to discuss meaningful aspects, arising consequences, chances and risks from manifold points of view as a base for the development of adequate solutions.

The *aim of this anthology* is to highlight a selection of current research topics in the field of digital technology and management, which are investigated in the scientific environment of the *Center for Digital Technology and Management*.

The book is structured in six chapters in which the following topics are discussed:

- *Digital Technology and Management*: This chapter deals with the design of the innovation process. One paper describes a systematic approach for an efficient and user oriented development process. Two contributions deal with the problem how to integrate customers successfully in the innovation process by using a specific toolkit or as active participants in user communities. Another paper describes an approach of preparing IT students for their future job by engaging them in a distributed software engineering course.
- *Digital Rights Management (DRM)*: Intellectual property right is a research issue closely connected to innovation processes and their results. One paper describes the effects of DRM on software innovation in Open Source and proprietary software development processes. Additionally, an architecture for a DRM framework based on OpenTC is introduced.
- *IT Service Management (ITSM)*: Providers of connectivity and value-added services in the IT domain must adopt a service-oriented view of their operations to improve their customer relationships. IT Service Management has become an important part of this strategy. The contributions in this chapter explain the technical components for implementing ITSM and describe two approaches to realize intra- and cross organizational ITSM.

- *Future Communication Networks*: The rapidly evolving network technologies play a key role in information management. Beside technological characteristics cost aspects become more and more relevant. Key trends of future communication networks are described and an approach to cost-efficient core networks is introduced.
- *Mobile Services*: Many applications used by end consumers are based on mobile services. Therefore users need to be integrated in the innovation process. The contributions in this chapter describe a toolkit architecture for involving users in service creation and an approach for using their knowledge in the development of mobile games. Another paper describes the use of ontologies in virtual organizations and distributed teams.
- *Location Based and Ubiquitous Services*: A recent focus in the domain of digital services is on the development of context sensitive and ubiquitous services. This chapter provides a critical discussion of the business potentials of RFID (Radio Frequency Identification Devices), introduces a novel approach to ubiquitous location-based service architectures and describes a test case for context-sensitive service provision.

We hope that our book illustrates the variety of aspects, which have to be considered in the development and application of digital technologies - and therefore the strong need for interdisciplinary research in this scientific domain. We also hope that the articles demonstrate the interdisciplinarity of CDTM and its contribution to research in the field of digital technology management. We cordially thank all the authors for their articles. We would also like to express our thanks to Barbara Karg and Barbara Feß from Springer Verlag who supported us in the final phase to make this book a reality.

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Editors

Munich, March 2006

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