Preface

This book is intended for information modeling researchers and practitioners, who seek to understand the trends and developments in information modeling. We review the state-of-the-art and state-of-the-practice modeling methods and methodologies in information systems development and provide insights into important developments in the new millennium. This book aids in selecting strategies and frameworks for systems development. This is particularly important now as we see the emergence of complex new multi-tier systems and architectures and increased on-line provision of critical services.

The book is divided into five sections: foundations of information modeling, language and ontological perspectives; object-oriented modeling and its extensions; applied information modeling; and hypermedia and Web systems modeling.

The first section, foundations of information modeling methods, looks at the key terms and issues that constitute our field. The key paradigms and approaches are identified and foundations are laid out for the future research and practice. In the first chapter we look at the challenges and issues for information modeling. The second chapter gives an integrative view of modeling different facets of ICT and organizations. The third chapter gives us an interesting organic perspective to information systems development. The last chapter of this section looks at the constituent concept of concept in information modeling.

The second section, language and ontological perspectives, looks at the quite wide area of linguistic perspectives to information modeling. Genre-based method is presented as a fresh new approach to modeling complex information domains. The two chapters about language action perspective, and many references to it in other chapters, show the strength and importance of LAP for ISD community. Chapter seven develops a business and information modeling method based on LAP principles. In chapter eight the implementation of an environment for developing and managing enterprise wide ontologies is presented.

The third section looks at the now mainstream object-oriented methods and their extensions. This section looks at possible enhancements to existing methods, such as unified modeling language and proposes new ways of tackling with issues like components. The first two chapters aim at integrating OO and fact-oriented

modeling and OO and agent modeling, respectively. Chapter eleven uses the concept of object in a new way to model operations. In Chapter 12 the behavior of designers, while developing systems using UML, is investigated. The last chapter of this section looks at components as part of a methodical approach to systems development.

The fourth section, applied information modeling, looks at several special purpose methods and approaches to information modeling. We revisit natural language processing and look at how it can be connected to OO. Special purpose methods and models for document engineering, user interface and event modeling are described. Chapter 18 looks at how information models can be transformed into systems. The metrics proposed in chapter 19 are an important and interesting approach to quality of information models. The last chapter of this section focuses on another special issue, spatial datamodels, which will certainly be very important as we move towards mobile and location aware applications.

The final section is last due only to its newness as a field, not last on its impact. This section covers the emerging area of Web- and hypermedia information systems development. Most of the promising approaches of today are presented here and some very interesting new developments are outlined. These chapters provide a good overview of the field for sometime to come. In the first chapter of this section the requirements for Web engineering methods are revisited. The next chapter describes the HMT method, then we look at multimedia components and their special needs. Chapters 24 - 27 develop interesting alternative ways of modeling Web applications. Chapter 24 takes a "traditional" IM approach, whereas Chapter 25 looks at user models as a basis and chapter 26 uses OO as its foundation. In Chapter 27 special attention is paid to typing of relationships, which will actually be possible with XML within the Web. The last chapter takes a fresh new view by looking at services as the basis for modeling Web applications.

In all these 28 chapters provide an excellent overview of the field's current status and they also look forward by describing new approaches and extensions to old ones.

As editors we would like to thank all the contributors for their valuable work and patience with the process. Making this kind of compilation is a huge undertaking and it brings together people with very different backgrounds and views. We sincerely hope that the readers find this a useful collection of reference chapters for their work.