

## Foreword

Research on electronic business (e-business) gained huge momentum at the beginning of the new millennium. After the dot.com crash, the world of e-business has undergone a radical change and advancement driven by the marketplace competition on one hand and the advent of information and communication technologies, especially Internet and the Web, on the other. The major challenge that worldwide industries as well as the public sector are facing in applying e-business is the transformation towards globally networked enterprises and virtual marketplaces. A key requirement is interoperability, i.e. the ability of an enterprise to efficiently establish, conduct and develop e-business relationships with other organizations and individuals. Enterprise applications and software systems need to be interoperable in order to achieve seamless business across organizational boundaries and thus realize virtual networked organizations.

While an increasing number of e-business standards and specifications, such as ebXML, are being created, adopted and are ready for full scale deployment, it is still cumbersome to achieve full interoperability of business process spanning different enterprises and organizations. A myriad of standards and standards development organizations are all seeking to provide appropriate tools and methods to achieve effective e-business interoperability.

This book, *Electronic Business Interoperability: Concepts, Opportunities, and Challenges*, presents all important issues regarding interoperability of e-business from very specific, technology oriented aspects, over recent findings in research and development to broad, application and industry oriented aspects and solutions.

The book starts with review of interoperability issues in e-business, such as: finding the right strategy and using the right instruments for establishing interoperability, exchanging business artifacts to support business interactions, as well as XML schema mapping and developing of architecture tools that can enable, support and maintain interoperability in heterogeneous and dynamic business environments. The applicability of current standards and technologies in achieving e-business interoperability is properly illustrated. Following chapters pay attention to verification and validation of business process implementations based on formal methods such as CTL (Computational Tree Logic), and Petri nets which represent the foundation for achieving interoperability between intra- and inter-enterprise business processes.

The book also presents several approaches that use up-to-date Web service technologies, SOA and MDA paradigm to provide support for cooperation, reconfiguration, composition and interoperability between distributed business processes.

A large fraction of the book is dedicated to semantic technologies in e-business, which argues over the usage of ontologies and ontology engineering tools in e-business modeling and interoperability. Ontologies are seen as a first class concept for achieving semantic interoperability of e-business conceptual

models, as well as automatic ontology derivation and e-business conceptual knowledge retrieval from XML sources. Ontology-driven e-business modelling provides semantically enabled e-business solutions and applications and supports e-business interoperability and collaboration.

To achieve effective e-business applications and solutions, appropriate frameworks are needed. The book presents several approaches to definition and development of e-business frameworks for enterprise interoperability, as well as semantic description and exchange of business documents. Such frameworks are based on current standards, concepts and technologies such as ebXML, SOA, ontologies, and MDA.

The final part of the book is dedicated to security in e-business collaborations and identity management, and shows how to solve such important issues in globally connected enterprises. The editor awarded the importance of the security in e-business interoperability solutions throughout of the book.

Altogether, this book gives an interesting overview of recent findings in many relevant areas of research, development, and standardization in electronic business interoperability. Considering the range and depth of the chapters, written by experts, yet highly readable to non-experts, this book is an important and much needed contribution for a wider audience ranging from researchers and those in undergraduate education to professionals who are involved in design and development of interoperable e-business applications and solutions. Moreover, it can inspire the whole e-business community to come up with entirely new ideas in this fascinating research and development area.

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