Foreword

We live in a service oriented world where service providers provide a variety of services to the consumers. These services include healthcare and medical services, financial and banking services, telecommunication and television services, entertainment and video services, and education services. Typically a consumer may request a service from the service provider. Contracts may be negotiated between the consumer and the service provider. The service provider provides the services for which the consumer may pay in accordance with the contract. The service provider may invoke other service providers to provide certain services to satisfy the consumer. For example, a customer may request a service from an airline. The airline may have a negotiated contract with a hotel service provider and may invoke the hotel service provider. The airline may then provide both the airline and the hotel service to the customer.

During the past ten years with the advent of the World Wide Web, the consumer/service provider concept has been digitized and enforced via the web. This way we now have web supported services where a consumer may request a service via the web site of a service provider and the service provider provides the requested service. This service could be making an airline reservation or purchasing a book from the service provider. Such web supported services have come to be known as web services. Note that services do not necessarily have to be provided through the web. A consumer could send an email message to the service provider and request the service. Such services are computer supported services. However much of the work on computer supported services has focused on web services. An architecture that provides support for the implementation of services has come to be known as service oriented architecture (SOA). In supporting the services, it is crucial that security is enforced. For example, only authorized entities may request certain services and only authorized entities may provide certain services.

Standards groups such as W3C (World Wide Web Consortium) and OASIS (Organization for the Advancement of Structured Information Standards) have developed standards for SOA and security services. This book titled Web Services Security: Standards and Industrial Practice consists of a collection of eleven papers that provides a comprehensive view of secure web services and SOA. It is divided into four parts, each describing some aspect of secure web services, SOA and related standards. Section 1, consisting of two chapters, discusses security engineering of web services. Security engineering tasks include gathering requirements, designing the secure system, verifying and validating the system as well as certifying and accrediting the system. The chapters in Part I describe approaches for security engineering of web services including identification of vulnerability effects in web services using model-based security as well as service oriented security analysis.

Section 2, consisting of five chapters, discusses concepts in web services security architectures. In particular, security polices, security models, building federated systems using the service oriented archi-
tecture paradigm and forensics over web services are described. Section 3, consisting of two chapters, describes web services security standards. In particular some of the trends, challenges and industry practices related to standards are discussed. Section 4, consisting of two chapters, describes security threats and countermeasures. This includes a discussion of the security attacks, threat modeling and security solutions.

This book is a must for anyone who wants to get an understanding of secure services and their related standards. It can be used as a senior undergraduate or first year graduate text on secure web services. It can also be used as a references guide for a student or professor who wants to conduct research in secure web services. This book will also be invaluable to those in the industry, government and standards organization who want to learn about web services security as well as develop standards. The editors have included an excellent collection of papers that provide breadth and depth in secure services and architectures. Since secure web services is a rapidly growing field, we encourage the reader to keep up with the developments. In addition to familiarizing oneself with the security standards that are emerging, the reader should also attend various conferences in this field including the IEEE International Conference on Web Services, Services Computing Conference and the various security related workshops on web services.

Dr. Bhavani Thuraisingham
IEEE Fellow
Professor of Computer Science and
Director of the Cyber Security Research Center
The University of Texas at Dallas, USA

Bhavani Thuraisingham joined The University of Texas at Dallas (UTD) in October 2004 as a Professor of Computer Science and Director of the Cyber Security Research Center in the Erik Jonsson School of Engineering and Computer Science. She is an elected Fellow of three professional organizations: the IEEE (Institute for Electrical and Electronics Engineers), the AAAS (American Association for the Advancement of Science) and the BCS (British Computer Society) for her work in data security. She received the IEEE Computer Society's prestigious 1997 Technical Achievement Award for "outstanding and innovative contributions to secure data management." Prior to joining UTD, Dr. Thuraisingham was an IPA (Intergovernmental Personnel Act) at the National Science Foundation (NSF) in Arlington VA, from the MITRE Corporation. At NSF she established the Data and Applications Security Program and co-founded the Cyber Trust theme. She worked at MITRE in Bedford, MA between January 1989 and September 2001 first in the Information Security Center and was later a department head in Data and Information Management. Dr. Thuraisingham’s work in information security and information management has resulted in over 80 journal articles, over 200 refereed conference papers and workshops, and three US patents. She is the author of nine books in data management, data mining and data security and has given over 60 keynote addresses. Dr. Thuraisingham was educated in the United Kingdom both at the University of Bristol and at the University of Wales.