Preface

Information and communication technologies, along with society's drive for collaboration in the modern world, make "collaborative computing" and its applications possible and even necessary. Trust in such an environment will eventually determine its success and popularity due to people's desire for privacy, integrity and reliability. Today's Internet and existing networks are not trust-oriented in design and might be compromised by many untrustworthy factors, such as hackers, viruses, spam, faults, and system failures. Compared to the two-party interaction model (i.e., the client-server service model), collaborative computing environments are group-oriented, involve a large number of users and shared resources, and are complex, dynamic, distributed, and heterogeneous. These factors offer a good environment for hostile elements to lurk. Besides the previously mentioned untrustworthy factors, collaborative computing environments suffer from dangerous attacks by malicious internal members. Those problems restrain full utilization of the computer systems in collaborative computing. The trusted and secure collaborative computing is one of the objectives for the next generation of the Internet, which is trustworthy and security-oriented. This monograph summarizes the authors' and other researchers' efforts to develop such a trusted environment that possesses high security and reliability for the collaborative computing. The important modules composing the trusted and secure computing environment are elaborated, including Secure Group Communication, Access Control, Dependability, Key Management, Intrusion Detection, and Trace Back. The theories and technologies in this book are illustrated with examples to help readers easily understand. One of the examples in collaborative computing is Grid computing that is popular today. The monograph also discusses security and reliability in grid computing. One typical collaborative computing application is medical

practice and healthcare research based on medical information systems. A real project for developing a nationwide medical information system with high dependability and security is described.

X. Zou, Y. Dai and Y. Pan