

Guest Editorial: Frontiers in Security and Dependability

Edgar R. Weippl and A Min Tjoa
Vienna University of Technology, A-1040 Vienna, Austria
EWeippl@sba-research.org and amin@ifs.tuwien.ac.at

Simon Tjoa
Institute for IT Security Research
St. Poelten University of Applied Sciences
Simon.Tjoa@fhstp.ac.at

Today, our society and economy are more dependent on information than ever before. Incidents in the past impressively demonstrate which impacts can be caused by cyber-attacks and malfunctions of IT. The ability to improve security and dependability by facilitating the research within this area is therefore a central issue to protect social welfare, public order and economy.

This special issue aims at showcasing the latest researches and technologies in the security domain. It comprises seven papers which are extended versions carefully selected from the 7th International Conference on Availability Reliability and Security (ARES'12)¹. Since 2006, the AReS conference series have provided a platform for a full and detailed discussion of the research issues of dependability, which combines the concepts of availability, safety, confidentiality, integrity, maintainability and security in the different fields of applications.

- The first paper of this issue “From Computationally-Proved Protocol Specifications to Implementations and Application to SSH” [1] introduces a novel framework for proving specification of security protocols.
- The second paper “Forward-Secure Identity-Based Signature: New Generic Constructions and Their Applications” [2] presents a forward-secure identity-based signature (FSIBS) which ensures that past signature are unforgeable even if the current signature key is exposed.
- The third paper “Design and Formal Analysis of A Group Signature Based Electronic Toll Pricing System” [3] introduces a novel electronic tolling pricing system GroupETP which is based on group signatures. Furthermore, the approach is evaluated regarding privacy and performance aspects.
- In the forth paper “Securing a Space-Based Service Architecture with Coordination-Driven Access Control” [4] an access control model, targeting permissions for invoking specific coordination services on the one side and permissions for the data that is accessed by them on the other side, is presented.
- The fifth paper “Comparative Analysis of Voting Schemes for Ensemble-based Malware Detection” [5] presents a novel malware detection approach using supervised learning methods.
- The sixth paper “Consensus Building and In-operation Assurance for Service Dependability” [6] is dedicated to the essential field of assurance. The authors propose a process cycle for building consensus among stakeholders using assurance cases.

Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications, volume: 4, number: 1, pp. 1-3

¹ARES'12 was held in Prague, Chzech Republic on August 20-24, 2012. <http://www.ares-conference.eu/ares2012/>

- In the seventh paper of this special issue “Evidence and Cloud Computing: The Virtual Machine Introspection Approach” [7], the authors provide an overview about current research activities in the area. A focal point of the paper constitutes the investigation on hypervisor level.

Finally, we wish to express our sincere thanks to all authors for their excellent contributions and all reviewers for their valuable comments and reviews.

Edgar R. Weippl, A Min Tjoa, and Simon Tjoa
Guest Editors
March 2013

References

- [1] D. Cadé and B. Blanchet, “From Computationally-Proved Protocol Specifications to Implementations and Application to SSH,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, vol. 4, no. 1, pp. 4–31, 2013.
- [2] N. A. Ebri, J. Baek, A. Shoufan, and Q. H. Vu, “Forward-Secure Identity-Based Signature: New Generic Constructions and Their Applications,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, vol. 4, no. 1, pp. 32–54, 2013.
- [3] X. Chen, L. Gabriele, S. Mauw, and J. Pang, “Design and Formal Analysis of A Group Signature Based Electronic Toll Pricing System,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, vol. 4, no. 1, pp. 55–75, 2013.
- [4] S. Craß, T. Dönz, G. Joskowicz, E. Kühn, and A. Marek, “Securing a Space-Based Service Architecture with Coordination-Driven Access Control,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, vol. 4, no. 1, pp. 76–97, 2013.
- [5] R. K. Shahzad and N. Lavesson, “Comparative Analysis of Voting Schemes for Ensemble-based Malware Detection,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, vol. 4, no. 1, pp. 98–117, 2013.
- [6] Y. Matsuno and S. Yamamoto, “A Framework for Dependability Consensus Building and In-Operation Assurance,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, vol. 4, no. 1, pp. 118–134, 2013.
- [7] R. Poisel, E. Malzer, and S. Tjoa, “Evidence and Cloud Computing: The Virtual Machine Introspection Approach,” *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, vol. 4, no. 1, pp. 135–152, 2013.



Edgar R. Weippl is Research Director of SBA Research and Associate Professor (Privatdozent) at the Vienna University of Technology. His research focuses on applied concepts of IT-security and e-learning. Edgar is member of the editorial board of Computers & Security (COSE) and organizes the ARES conference. After graduating with a Ph.D. from the Vienna University of Technology, Edgar worked for two years in a research startup. He then spent one year teaching as an assistant professor at Beloit College, WI. From 2002 to 2004, while with the software vendor, he worked as a consultant in New York, NY and Albany, NY, and in Frankfurt, Germany. In 2004 he joined the Vienna University of Technology and founded together with A Min Tjoa and Markus Klemen the research center SBA Research.



A Min Tjoa is a full professor and director of the Institute of Software Technology and Interactive Systems at the Vienna University of Technology. He is currently also chairman the Austrian National Competence Center for Security Research (COMET - SBA). He was visiting professor at the Universities of Zurich, Kyushu and Wroclaw (Poland), National Institute of Informatics (NII, Japan) and at the Technical Universities of Prague and Lausanne (Switzerland). From 1999 to 2003, he was the president of the Austrian Computer Society. He is vice-chairperson of the IFIP Technical Committee for Information Systems and chairperson of the IFIP Working Group on Enterprise Information Systems (WG 8.9). In 2011 he received the Honorary Doctorate degree of the Czech Technical University in Prague and a Honorary Professor degree from the University of Hue (Vietnam). His current research focus areas are data warehousing, grid computing, semantic web, security, and personal information management systems. He is chairperson of the ASEA-UNINET University Network for the period 2013-2014. He has published more than 150 peer reviewed articles in journals and conferences. He is author and editor of more than 20 books.



Simon Tjoa is associate professor at St. Polten University of Applied Sciences. He received his Ph.D. in informatics from University of Vienna. His research interests include critical infrastructure protection, digital forensics, business continuity management and business process security. He is programm committee and organizing committee member of several security related international workshops and conferences. Furthermore, he currently serves as secretary of IEEE SMC Austria Chapter and holds professional security certifications such as AMBCI, ACE, CISA, CISM.