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Christos G. Panayiotou · Georgios Ellinas
Elias Kyriakides · Marios M. Polycarpou (Eds.)

Critical Information Infrastructures Security

9th International Conference, CRITIS 2014
Limassol, Cyprus, October 13–15, 2014
Revised Selected Papers

Editors

Christos G. Panayiotou
University of Cyprus
Nicosia
Cyprus

Georgios Ellinas
University of Cyprus
Nicosia
Cyprus

Elias Kyriakides
University of Cyprus
Nicosia
Cyprus

Marios M. Polycarpou
University of Cyprus
Nicosia
Cyprus

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Preface

This volume contains revised selected papers from the proceedings of the 9th International Conference on Critical Information Infrastructures Security (CRITIS 2014), which was held in Limassol, Cyprus during October 13–15, 2014. The workshop was organized by the KIOS Research Center for Intelligent Systems and Networks and the Department of Electrical and Computer Engineering of the University of Cyprus and was held in a beautiful five-star hotel in the historic Amathus area of Limassol. The conference participants had the opportunity to enjoy an excellent technical program, as well as the rich cultural heritage of Cyprus, whose nine-thousand-year cultural legacy has been at the crossroads of world history. Currently, Cyprus is a full member of the European Union and combines European culture with ancient enchantment.

CRITIS 2014 continued a well-established tradition of successful annual conferences. CRITIS aims at bringing together researchers and professionals from academia, industry, and governmental organizations working in the field of security of critical infrastructure systems. Critical infrastructure systems are made up of unreliable components that may fail at any point in time. Despite component failures, it is expected that the infrastructure as a whole will continue to function. For this reason, this year's program was enhanced with topics from the fault diagnosis and fault tolerant control areas.

The full technical program of the three-day conference included four plenary lectures by accomplished researchers in the field, 37 technical papers organized in two parallel sessions, a panel discussion, a case study session, as well as two special sessions. The four plenary talks were the following:

- “System of Systems Simulation in a Cooperative Multinational Environment,” José R. Martí, University of British Columbia, Vancouver, Canada
- “Methodologies for the Identification of Critical Information Infrastructure Assets and Services,” Rossella Mattioli, ENISA, Greece
- “Risk Prediction for Increasing Critical Infrastructure Protection: A Key Issue for Enhancing City Resilience,” Vittorio Rosato, Head of the ENEA Laboratory of Technological and Computing Infrastructures, Italy
- “Water Distribution Systems Security Enhancement through Monitoring,” Avi Ostfeld, Technion Institute of Technology, Israel

The Technical Program Committee (TPC) received 74 high-quality submissions, which were thoroughly reviewed by the expert members of the TPC. Out of these papers, 42 with mature work or promising work-in-progress were retained for oral presentations during the conference. The technical papers were organized in sessions that included topics on cyber-physical systems and sensor networks, security of water systems, power and energy system security, security and recovery policies, cyber security, and security tools and protocols. Furthermore, six of the accepted papers were

presented in the CIPRNet Young CRITIS Award (CYCA) Session. This award recognizes outstanding research by young experts in critical infrastructure security and protection and was sponsored by the FP7 Network of Excellence CIPRNet. Mature work papers were selected to be presented as full papers in this volume, while work-in-progress papers as short papers.

The panel discussion “*Current Status and Future Challenges in Critical Infrastructure Protection (CIP) in Cyprus*” was organized by G. Boustras (European University, Cyprus), and included panelists from the Cyprus police, civil defense, water development board, and ADITESS, an SME software company. Furthermore, CONcORDE (Development of Coordination Mechanisms During Kinds of Emergencies), an FP7 research project, held the case study session “*CONcORDE Emergency Response Stakeholders Case Studies*,” which was moderated by T. Kotis, Cambridge University Hospitals, and included presentations by the project coordinator as well as representatives of the Cyprus Department of Crisis Management of the Ministry of Foreign Affairs, the Cyprus Fire Brigade, the Cyprus Ministry of Health, the Cyprus Civil Defense, and the Cyprus Joint Rescue Coordination Center. The Technical Program concluded with two invited sessions: the *CRIS2014 Special Session* and the *CONcORDE—Coordination Mechanisms and Decision Support in Emergency Environments Special Session*. These two sessions focused on specific aspects of the security of power systems and the health-care emergency response management.

It is our pleasure to express our gratitude to everybody that contributed to the success of CRITIS 2014. In particular, we would like to thank the Vice-Chairs and the members of the Program Committee who did a tremendous job under strict time limitations during the reviewing process. We also thank the members of the Executive Committee for the great effort and their assistance in the organization of the workshop. We are also grateful to ADITESS—Advanced Integrated Technology Solutions and Services, IOActive—Comprehensive Computer Security Services, the European Research Council (ERC), the CIPRNet Network of Excellence, the University of Cyprus, and the Cyprus Tourism Organization for their financial support. We thank the conference secretariat, Top Kinisis, and especially Marianna Charalambous, for their excellent and timely support in the organization of the workshop. We are grateful to the administrative personnel and several researchers from the KIOS Research Center who assisted in various ways in the organization of CRITIS 2014, and especially Despina Petrou for managing the workshop organization. We would also like to thank the publisher, Springer, for their cooperation in publishing the selected papers from the proceedings in the prestigious series of *Lecture Notes in Computer Science*. Finally, we thank all the authors who contributed to this volume for sharing their new ideas and results with the community. We hope that these ideas will generate further new ideas and innovations for securing our critical infrastructures for the benefit of society and the environment.

February 2016

Christos G. Panayiotou
Georgios Ellinas
Elias Kyriakides
Marios M. Polycarpou

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