

Grigore Havarneanu · Roberto Setola
Hypatia Nassopoulos · Stephen Wolthusen (Eds.)

Critical Information Infrastructures Security

11th International Conference, CRITIS 2016
Paris, France, October 10–12, 2016
Revised Selected Papers

Contents

Stealth Low-Level Manipulation of Programmable Logic Controllers I/O by Pin Control Exploitation	1
<i>Ali Abbasi, Majid Hashemi, Emmanuele Zambon, and Sandro Etalle</i>	
Developing a Cyber Incident Communication Management Exercise for CI Stakeholders.	13
<i>Tomomi Aoyama, Kenji Watanabe, Ichiro Koshijima, and Yoshihiro Hashimoto</i>	
On Auxiliary Entity Allocation Problem in Multi-layered Interdependent Critical Infrastructures	25
<i>Joydeep Banerjee, Arunabha Sen, and Chenyang Zhou</i>	
Cyber Targets Water Management.	38
<i>Pieter Burghouwt, Marinus Maris, Sjaak van Peski, Eric Luijff, Imelda van de Voorde, and Marcel Spruit</i>	
Integrated Safety and Security Risk Assessment Methods: A Survey of Key Characteristics and Applications.	50
<i>Sabarathinam Chockalingam, Dina Hadžiosmanović, Wolter Pieters, André Teixeira, and Pieter van Gelder</i>	
Railway Station Surveillance System Design: A Real Application of an Optimal Coverage Approach	63
<i>Francesca De Cillis, Stefano De Muro, Franco Fiumara, Roberto Setola, Antonio Sforza, and Claudio Sterle</i>	
A Synthesis of Optimization Approaches for Tackling Critical Information Infrastructure Survivability	75
<i>Annunziata Esposito Amideo and Maria Paola Scaparra</i>	
A Dataset to Support Research in the Design of Secure Water Treatment Systems	88
<i>Jonathan Goh, Sridhar Adepu, Khurum Nazir Junejo, and Aditya Mathur</i>	
Human Vulnerability Mapping Facing Critical Service Disruptions for Crisis Managers.	100
<i>Amélie Grangeat, Julie Sina, Vittorio Rosato, Aurélie Bony, and Marianthi Theocharidou</i>	

A Methodology for Monitoring and Control Network Design	111
<i>István Kiss and Béla Genge</i>	
Effective Defence Against Zero-Day Exploits Using Bayesian Networks	123
<i>Tingting Li and Chris Hankin</i>	
Power Auctioning in Resource Constrained Micro-grids: Cases of Cheating. . . .	137
<i>Anesu M. C. Marufu, Anne V. D. M. Kayem, and Stephen D. Wolthusen</i>	
Using Incentives to Foster Security Information Sharing and Cooperation: A General Theory and Application to Critical Infrastructure Protection	150
<i>Alain Mermoud, Marcus Matthias Keupp, Solange Ghernaouti, and Dimitri Percia David</i>	
Dynamic Risk Analyses and Dependency-Aware Root Cause Model for Critical Infrastructures	163
<i>Steve Muller, Carlo Harpes, Yves Le Traon, Sylvain Gombault, Jean-Marie Bonnin, and Paul Hoffmann</i>	
Selecting Privacy Solutions to Prioritise Control in Smart Metering Systems	176
<i>Juan E. Rubio, Cristina Alcaraz, and Javier Lopez</i>	
A Six-Step Model for Safety and Security Analysis of Cyber-Physical Systems	189
<i>Giedre Sabaliauskaite, Sridhar Adepu, and Aditya Mathur</i>	
Availability Study of the Italian Electricity SCADA System in the Cloud. . . .	201
<i>Stefano Sebastio, Antonio Scala, and Gregorio D'Agostino</i>	
Railway System Failure Scenario Analysis	213
<i>William G. Temple, Yuan Li, Bao Anh N. Tran, Yan Liu, and Binbin Chen</i>	
Tamper Resistant Secure Digital Silo for Log Storage in Critical Infrastructures	226
<i>Khan Ferdous Wahid, Helmut Kaufmann, and Kevin Jones</i>	
Access Control and Availability Vulnerabilities in the ISO/IEC 61850 Substation Automation Protocol	239
<i>James G. Wright and Stephen D. Wolthusen</i>	
A Case Study Assessing the Effects of Cyber Attacks on a River Zonal Dispatcher	252
<i>Ronald Joseph Wright, Ken Keefe, Brett Feddersen, and William H. Sanders</i>	

Reliable Key Distribution in Smart Micro-Grids	265
<i>Heinrich Strauss, Anne V. D. M. Kayem, and Stephen D. Wolthusen</i>	
Security Validation for Data Diode with Reverse Channel	271
<i>Jeong-Han Yun, Yeop Chang, Kyoung-Ho Kim, and Woonyon Kim</i>	
Towards a Cybersecurity Game: Operation Digital Chameleon	283
<i>Andreas Rieb and Ulrike Lechner</i>	
Cyber Security Investment in the Context of Disruptive Technologies: Extension of the Gordon-Loeb Model and Application to Critical Infrastructure Protection	296
<i>Dimitri Percia David, Marcus Matthias Keupp, Solange Ghernaouti, and Alain Mermoud</i>	
Behavioral Intentions and Threat Perception During Terrorist, Fire and Earthquake Scenarios	302
<i>Simona A. Popușoi, Cornelia Măirean, and Grigore M. Havârneanu</i>	
An Operator-Driven Approach for Modeling Interdependencies in Critical Infrastructures Based on Critical Services and Sectors.	308
<i>Elisa Canzani, Helmut Kaufmann, and Ulrike Lechner</i>	
Domain Specific Stateful Filtering with Worst-Case Bandwidth	321
<i>Maxime Puys, Jean-Louis Roch, and Marie-Laure Potet</i>	
Securing SCADA Critical Network Against Internal and External Threats: Short Paper	328
<i>Mounia El Anbal, Anas Abou El Kalam, Siham Benhadou, Fouad Moutaouakkil, and Hicham Medromi</i>	
Simulation of Cascading Outages in (Inter)-Dependent Services and Estimate of Their Societal Consequences: Short Paper	340
<i>Antonio Di Pietro, Luigi La Porta, Luisa Lavalle, Maurizio Pollino, Vittorio Rosato, and Alberto Tofani</i>	
Author Index	347