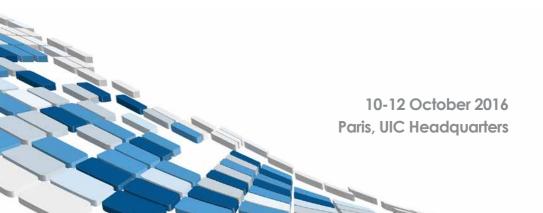


11TH INTERNATIONAL CONFERENCE ON CRITICAL INFORMATION INFRASTRUCTURES SECURITY

PROGRAMME







WELCOME

IN 2016, THE INTERNATIONAL CONFERENCE ON CRITICAL INFORMATION INFRASTRUCTURES SECURITY REACHES ITS 11TH ANNIVERSARY.

CRITIS 2016 continues the tradition of presenting innovative research and exploring new challenges in the field of critical (information) infrastructures protection (C(I)IP) and fostering the dialogue with stakeholders. CRITIS 2016 aims at bringing together researchers and professionals from academia, industry and governmental organisations working in the field of the security of critical (information) infrastructure systems.

The programme is based on the 30 technical papers (22 full papers and 8 short papers) which cover five topics grouped into thematic sessions. In continuation of an initiative first taken up at the 2014 CRITIS, the conference inludes one session and an award for young researchers (the 3rd CIPRNet Young CRITIS Award - CYCA).

As in previous years, invited speakers and special events complement a programme of original research contributions. The conference invites the different research communities and disciplines involved in the C(I)IP space, and encourages discussions and multidisciplinary approaches to relevant C(I)IP problems.

This year's edition of CRITIS is hosted in Paris, France by the International Union of Railways (Union Internationale des Chemins de Fer - UIC) - the worldwide professional association representing the railway sector and promoting rail transport.



MONDAY 10 OCTOBER 2016

12:00 - Registration and get together

UIC Main Hall

13:50 - Take Seats

14:00 - 14:30 Conference Opening

Welcome address from *Jean-Pierre Loubinoux (UIC Director General)*Opening by UIC Security Division and CRITIS Steering Committee Chairs

14:30 - 16:00 Session 1a - Smart Grids and Interdependencies in CI

14:30-15:00 Keynote: *Dr. Artūras Petkus* - CEIP and Energy Security in Perspective of NATO Energy Security Center of Excellence (CIPRNet Lecture)

15:00-15:20 Selecting Privacy Solutions to Prioritise Control in Smart Metering Systems. *Juan E. Rubio, Cristina Alcaraz and Javier Lopez*

15:20-15:40 Access Control and Availability Vulnerabilities in the ISO/IEC 61850 Substation Automation Protocol. *James Wright and Stephen Wolthusen*

15:40-16:00 Power Auctioning in Resource Constrained Micro-Grids: Cases of Cheating. *Anesu Marufu, Anne V.D.M. Kayem and Stephen Wolthusen*

16:00 - 16:30 Coffee Break

16:30 - 17:50 Session 1b - Smart Grids and Interdependencies in Cl

16:30-16:50 Stealth Low-Level Manipulation of Programmable Logic Controllers I/O by Pin Control Exploitation. *Ali Abbasi, Majid Hashemi, Emmanuele Zambon and Sandro Etalle*

16:50-17:10 On Auxiliary Entity Allocation Problem in Multi-layered Interdependent Critical Infrastructures. *Joydeep Banerjee, Arun Sen and Chenyang Zhou*

17:10-17:30 An Operator-driven Approach for Modeling Interdependencies in Critical Infrastructures based on Critical Services and Sectors (Short paper). *Elisa Canzani, Helmut Kaufmann and Ulrike Lechner*

17:30-17:50 Reliable Key Distribution in Smart Micro-Grids: Attack Models and Countermeasures (Short paper). *Heinrich Strauss, Anne Kayem and Stephen Wolthuser*

18:00 - Networking Cocktail (UIC HQ)





Tuesday 11 October 2016

08:50 - Take Seats

09:00 - 10:30 Session 2a - Human Factors, decision support, and cross-sector C(I)IP approaches

09:00-9:30 Keynote: *CDR Cyril Stylianidis* - The "Cellule Interministeriel de Crise" (CIC), the French tool for interministerial level crisis management

09:30-9:50 Security validation for data diode with reverse channel. Jeong-Han Yun, Yeop Chang, Kyoung-Ho Kim and Woo-Nyon Kim

09:50-10:10 A Synthesis of Optimization Approaches for Tackling Critical Information Infrastructure Survivability. *Annunziata Esposito Amideo and Maria Paola Scaparra*

10:10-10:30 Developing a Cyber Incident Communication Management Exercise for CI Stakeholders. *Tomomi Aoyama, Kenji Watanabe, Yoshihiro Hashimoto and Ichiro Koshijima*

10:30 - 11:00 Coffee Break

11:00 - 12:00 Session 2b - Human Factors, decision support, and cross-sector C(I)IP approaches

11:00-11:20 Towards a Cybersecurity Game: Operation Digital Chameleon (Short paper). Andreas Rieb and Ulrike Lechner

11:20-11:40 Behavioral intentions and threat perception during terrorist, fire and earthquake scenarios (Short paper). Simona Popuşoi, Cornelia Măirean and Grigore Havârneanu

11:40-12:00 Simulation of cascading outages in (inter)-dependent services and estimate of their societal consequences (Short paper). Antonio Di Pietro, Luisa Lavalle, Maurizio Pollino, Vittorio Rosato and Alberto Tofani

12:00 - 13:20 Lunch (UIC HQ)

13:20 - Take Seats

13:30 - 14:40 Session 3 - Challenges for the railway sector

13:30-14:00 Keynote: *Mr. Kris Christmann* - Findings from the PRE-EMPT Project: Establishing Best Practice for Reducing Serious Crime and Terrorism at Multi-Modal Passenger Terminals (MMPT)

14:00-14:20 Railway station surveillance system design: a real application of an optimal coverage approach. *Francesca De Cillis, Stefano De Muro, Franco Fiumara, Roberto Setola, Antonio Sforza and Claudio Sterle*

14:20-14:40 Railway System Failure Scenario Analysis. *William G. Temple, Yuan Li, Bao Anh N. Tran, Yan Liu and Binbin Chen*

14:40 - 15:20 Session 4a - CIPRNet Young CRITIS Award (CYCA)

14:40-15:00 A Dataset to Support Research in the Design of Secure Water Treatment Systems (CYCA paper). Jonathan Goh, Sridhar Adepu, Khurum Nazir Junejo and Aditya Mathur

15:00-15:20 Integrated Safety and Security Risk Assessment Methods: A Survey of Key Characteristics and Applications (CYCA paper). Sabarathinam Chockalingam, Dina Hadziosmanovic, Wolter Pieters, Andre Teixeira and Pieter van Gelder

15:20 - 15:50 Coffee break

15:50 - 17:10 Session 4b - CIPRNet Young CRITIS Award (CYCA)

15:50-16:10 Availability Study of the Italian Electricity SCADA System in the Cloud (CYCA paper). *Stefano Sebastio, Antonio Scala and Gregorio D'Agostino*

16:10-16:30 Dynamic Risk Analyses Based on a Risk Taxonomy for Critical Infrastructures (CYCA paper). Steve Muller, Carlo Harpes, Yves Le Traon, Sylvain Gombault, Jean-Marie Bonnin and Paul Hoffmann

16:30-16:50 Effective Defence Against Zero-Day Exploits Using Bayesian Networks (CYCA paper). *Tingting Li and Chris Hankin*

16:50-17:10 Human vulnerability mapping facing critical service disruptions for crisis managers (CYCA paper). *Amélie Grangeat, Julie Sina, Vittorio Rosato, Aurélia Bony and Marianthi Theocharidou*

19:30 - Official Dinner (Paris Wine Museum)





Wednesday 12 October 2016

08:50 - Take Seats

09:00 - 10:30 Session 5a - Innovative technologies and procedures in cybersecurity

09:00-9:30 Keynote: *Dr. Paul Théron* - A way towards a fully bridged European certification of IACS cybersecurity

09:30-9:50 Using incentives to foster security information sharing and cooperation: A general theory and application to critical infrastructure protection. *Alain Mermoud, Solange Ghernaouti, Marcus Keupp and Dimitri Percia David*

09:50-10:10 A Six-Step Model for Safety and Security Analysis of Cyber-Physical Systems. *Giedre Sabaliauskaite*. *Sridhar Adepu and Aditya Mathur*

10:10-10:30 A Methodology for Optimal Control Network Design. *István Kiss and Bela Genge*

10:30 - 11:00 Coffee break

11:00 - 12:30 Session 5b - Innovative technologies and procedures in cybersecurity

11:00-11:20 Cyber Targets Water Management. Pieter Burghouwt, Marinus Maris, Sjaak van Peski, Eric Luiijf, Imelda van de Voorde and Marcel Spruit

11:20-11:40 A Case Study Assessing the Effects of Cyber Attacks on a River Zonal Dispatcher. *Ronald Wright, Ken Keefe, Brett Feddersen and William Sanders*

1:40-12:00 Tamper Resistant Secure Digital Silo for Log Storage in Critical Infrastructures. Khan Ferdous Wahid. Helmut Kaufmann and Kevin Jones

12:00-12:20 Cyber Security Investment in the Age of Big Data: A Reassessment of the Gordon-Loeb Model and Application to Critical Infrastructure Protection (Short paper). Dimitri Percia David, Solange Ghernaouti, Marcus Matthias Keupp and Alain Mermoud

12:20-12:30 CYCA results debriefing and winner announcement

12:30 - 13:50 Lunch (UIC HQ)

13:50 - Take Seats

14:00 - 14:40 Session 5c - Innovative technologies and procedures in cybersecurity

14:00-14:20 Domain Specific Stateful Filtering with Worst-Case Bandwidth (Short paper). *Maxime Puys, Marie-Laure Potet and Jean-Louis Roch*

14:20-14:40 Securing SCADA critical network against internal and external threats (Short paper). *El Anbal Mounia, Abou El Kalam Anas, Benhadou Siham and Hicham Medromi*

14:40 - 15:20 Session 6 - Concluding remarks and end of CRITIS 2016

14:40-14:55 Round table with the Chairs and closing remarks

14:55-15:05 Synthesis and main future challenges. *Jerzy Wisniewski (Director of UIC Fundamental Values Department)*

15:05-15:20 Pre-announcement of CRITIS 2017

15:20 - End of CRITIS 2016

THURSDAY 13 OCTOBER 2016 10:00 - 17:00 IMPROVER Workshop Room 203 (Second floor) 9:00 - 17:00 CIPRNet Plenary Meeting Room 205 (Second floor) FRIDAY 14 OCTOBER 2016 9:00 - 15:00 CIPRNet Plenary Meeting Room 205 (Second floor)

KEYNOTE SPEAKERS

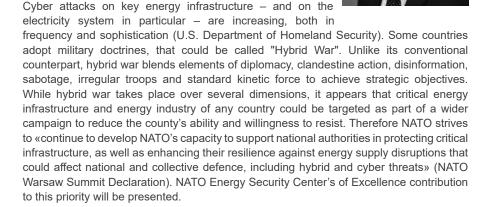




DR ARTŪRAS PETKUS

NATO Energy Security Centre of Excellence NATO ENSEC COE Lithuania

CEIP and Energy Security in Perspective of NATO Energy Security Center of Excellence (CIPRNet Lecture)



Dr. Artūras Petkus joined the Strategic Analysis and Research Division of the NATO Energy Security Centre of Excellence in 2015 as a Head of division. His main areas of responsibility are: performance of energy security related analysis on strategic level; development of methodology and theoretical approach for assessment of energy security risks and threats, contribution to development of NATO Strategic Foresight Analysis; research in field of Energy Security (contribution to NATO CMX scenario, etc.)

COMMANDER (FRENCH NAVY) CYRIL STYLIANIDIS

Ministry of Interior General Directorate for Civil Protection and Crisis Management France





The increasing use of the Crisis Interministerial Cell (CIC) in France demonstrates how most crisis situations are now quickly rated as joint, interministerial ones. This reveals the important need for a smooth strategic level coordination in order to bring a response as efficient as possible to these crises. After a brief introduction on how crisis management is organized in France, I will introduce the Crisis Interministerial Cell (CIC) in all aspects: When, What, Why etc. and will intend to show how this tool complements efficiently, from a strategic level perspective, the actions taken by local level crisis managers and decision makers. I will illustrate this presentation with examples picked up from relatively recent critical situations from France, ranging from Bataclan's terrorist attacks to large events such as COP 21, EURO 2016 and even... waves of farmers converging on Paris to protest.

CDR Stylianidis is currently appointed to the French ministry of interior, Directorate of civil security and crisis management in the office in charge of planning regarding crisis management. Amongst other tasks, he brings naval expertise to projects involving crisis management within a maritime environment and is a member of the coordination cell running the CIC. He is more specifically in charge of coordinating the activation of the anticipation CIC cell. He is also a naval liaison officer with the French Joint and Naval HQs in Paris. Surface warfare officer since 1989, he has been fulfilling numerous positions at sea on various ships as well as in joint and international HQs, including 7 years in NATO in England and Italy. He is an alumnus from the Cranfield (UK) and Paris VI (France) universities, from which he has respectively graduated with an MSc in "Resilience" and a degree in Biophysics.

KEYNOTE SPEAKERS

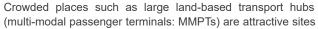


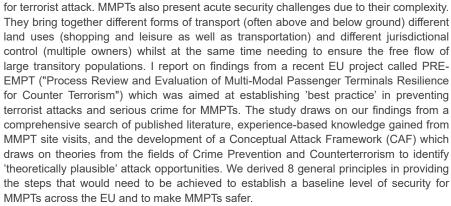


MR KRIS CHRISTMANN

University of Huddersfield
Applied Criminology Centre (ACC), UK

Findings from the PRE-EMPT Project: Establishing Best Practice for Reducing Serious Crime and Terrorism at Multi-Modal Passenger Terminals (MMPT)





Kris Christmann is an applied criminologist and Research Fellow at the Applied Criminology Centre (ACC) at the University of Huddersfield. His main research interests include the study of terrorism; radicalisation; and hate crime (for clients such as the: Youth Justice Board, Office for Security and Counter Terrorism, the Home Office, and the European Union's Fundamental Rights Agency). This work includes how to improve reporting measures and interventions to prevent and control violent extremism and terrorism. Kris and ACC colleagues have recently completed research in counter terrorism for the EU (DG Move - Directorate-General for Mobility and Transport) examining how to protect large, multi-modal transport hubs across Europe from terrorist attack as well as from serious crime. The suite of reports delivered are currently being studied by commissioners and it is anticipated that some of this material will be published in the near future.

DR PAUL THERON

Thales Communications & Security France

A way towards a fully bridged European certification of IACS cybersecurity

This presentation relates the work of DG JRC's ERNCIP Thematic Group on IACS cybersecurity certification. First we present the history of the TG, its goals and its methodology.

The 2014 first phase of its activity led to a report that established a 2015-2020 plan of action to help IACS cybersecurity certification progress in Europe. We mainly present the principles and levels of the European Compliance & Certification Scheme advocated by the TG. We also provide details about the 7 projects for the 2015-2020 period and we propose a review of its progress to date.

Paul Théron, PhD, FBCI, is Thales Communications & Security's cyber-defence bids manager (export) and expert on cyber resilience. He is co-head of the Aerospatial Cyber Resilience research chair. Former member of ENISA's Permanent Stakeholders Group, he also leads DG JRC's European Thematic Group on the "Certification of the cybersecurity of Industrial Automation & Control Systems". His work in cybersecurity includes cyber intelligence, C2 systems, cyber-attack strategies, awareness raising, the cyber resilience of massively collaborative systems such as the future European ATM system, and European studies of the resilience of telecommunications.





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