Resilience of Cyber-Physical Energy Systems: The Devil is in the Models

Abstract

Electrical utility infrastructures have become largely computerized, remotely/automatically controlled, and interconnected, amongst each other and with other types of critical infrastructures, and we are witnessing the explosion of new paradigms: distributed generation, smart grids. In this accelerated mutation of power grids to cyber-physical systems, may it be that some things are “lost in translation”? Are we using the right models to represent, design, build and analyze cyber physical energy systems? Especially when what used to be an electrical infrastructure became quite susceptible to computer-borne problems such as digital accidental faults and malicious cyber-attacks? This talk will challenge the audience with some reflections and points for discussion along these topics.

Bio

Paulo Esteves Veríssimo is a Professor of the University of Luxembourg Faculty of Science, Technology and Communication (FSTC), since fall 2014, and head of the CritiX group (Critical and Extreme Security and Dependability) at SnT, the Interdisciplinary Centre for Security, Reliability and Trust at the same University (http://wwwen.uni.lu/snt). He is adjunct Professor of the ECE Dept., Carnegie Mellon University. Previously, he has been a Professor of the Univ. of Lisbon, member of the Board of the same university and Director of LaSIGE (http://lasige.di.fc.ul.pt). Veríssimo is Fellow of the IEEE and Fellow of the ACM, and he is associate editor of the Elsevier Int’l Journal on Critical Infrastructure Protection. He is currently Chair of the IFIP WG 10.4 on Dependable Computing and Fault-Tolerance and vice-Chair of the Steering Committee of the IEEE/IFIP DSN conference. He is currently interested in secure and dependable distributed architectures, middleware and algorithms for: resilience of large-scale systems and critical infrastructures, privacy and integrity of highly sensitive data, and adaptability and safety of real-time networked embedded systems. He is author of over 170 peer-reviewed publications and co-author of 5 books.