Security of Cyber-Physical Systems
(A Case Study)

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Cyberspace, the ubiquitous collection of interconnected IP networks and hosts, has become the nervous system of the country. Healthy functioning of Cyberspace is essential for the proper operation of numerous critical infrastructures, such as telecommunication, energy and transportation. It is also necessary to support the ever expanding business infrastructure, including commerce and banking. The increasing reliance on Cyberspace has been paralleled by a corresponding increase in the variety, frequency and impact of attacks from a range of assailants. Both commercial companies and government agencies face continuous and increasingly more sophisticated cyber-attacks ranging from data exfiltration and spear phishing to sophisticated worms and logic bombs. The targets include not only computer information systems, but also the network communication infrastructure and power grids.

In this talk, I will discuss protecting cyber-physical systems from attacks, illustrating the issues with a case study of a worm that successfully attacked and sabotaged a supposedly impenetrable industrial control system.

About the speaker

Marek Rusinkiewicz is a computer scientist, an educator, and a former research executive. Currently he is a Courtesy Professor at the Florida International University, School of Computing and Information Sciences. He retired recently from his position as a Senior Group Vice President and the General Manager of Applied Research Laboratories at Telcordia Technologies (formerly Bell Communication Research), which included R&D centers in New Jersey, Texas, Taiwan and Poland.

Before joining Telcordia, Rusinkiewicz was the Vice President for Information Technology Research at the Microelectronics and Computer Technology Corporation (MCC) in Austin, a leading industrial R&D consortium, where he led a number of initiatives aimed at the development of next generation information management technologies, including web search, semantic agents, and collaboration management.

Rusinkiewicz has held academic positions at the University of Glasgow, the University of Michigan, and the University of Houston, where he was a Professor of Computer Science until 1999. His research interests include heterogeneous database systems, distributed computing, workflow management, and agent-based systems. He has published extensively in these areas.

He is Editor-in-Chief of the World Wide Web Journal and serves on advisory boards of several universities. He has consulted extensively for numerous industry and government organizations in the USA, Japan, Taiwan and Europe.