



Cyber Risk to Transportation Control Systems

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**Transportation Technical Advisory Committee
February 1, 2012**

Control Systems

- Monitor, operate, and control major industrial systems
 - Power production
 - Power transmission and distribution
 - Water and wastewater control
 - Transportation systems such as the bridge tunnel systems
- Systems are connected through communications networks
 - Physical cable connection
 - Radio signals
 - Via Internet over LAN and WAN.
- Increasingly rely on open forms of communication

Vulnerability

- Experts believe that control systems are more vulnerable today due to
 - Increased standardization of technologies,
 - Increased connectivity of control systems to other computer networks and the Internet
 - Insecure connections
 - Widespread availability of technical information about control systems
 - Little authentication of the origin of the signals

The Need

- Knowledge gap among senior leaders and key stakeholders
 - Most information provided is 'bumper sticker' level
 - Level of abstraction impacts ability to make informed decisions when compared to other more well-known threats (knowledge bias)
- Control systems education is not part of typical computer sciences curriculum
 - IT professionals do not see control systems in the correct context with other IT systems.

A Way Ahead

- Grant received from Virginia Department of Emergency Management
- Short term project (Final report due July 2012)
 - Assess vulnerability of transportation infrastructure
 - Potential consequences of cyber tasks (including use of M&S techniques)
 - Identification of critical concerns
 - Risk mitigation method recommendations

Action

- Develop detailed study plan and implementation plan to conduct the study
- Conduct stakeholder analysis to focus study issues and essential elements of analysis
- Conduct modeling, simulation, and analysis to assess and compare risks
- Suggest methods of mitigation
- Conduct meetings/workshop focused on key stakeholders to identify knowledge and technology gaps

Expert Insight

- Who are the regional experts in transportation control systems?
- Where do these experts see vulnerabilities?
- How are vulnerabilities assessed and compared?
- What is level of preparedness?
 - How can it most effectively be improved?

Questions?