APTA Annual Meeting - October 2011

Controls & Communications Security Work Group

Recommended Practices for Securing Our Transit Systems

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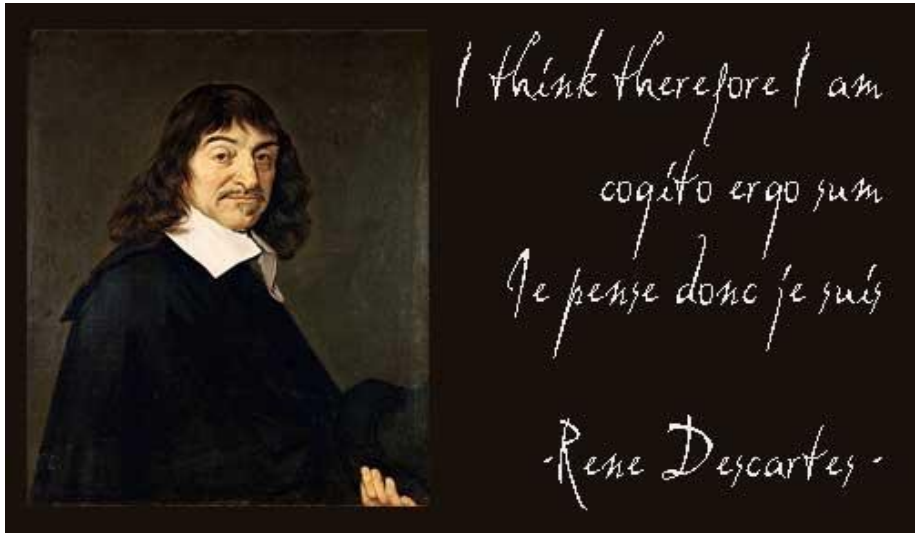
The New Cyber Security Philosophy For Transit Systems

"My Systems Exist,

therefore they are vulnerable."



Vulnerabilities: You Are Connected!
(even if you think you are not)

- **Supply chain** – undesirable software/functions may already be embedded or pre-loaded in off-the-shelf equipment. Vendor may deliver infected software.
- **Human factors –** irresponsible use of portable media (USB). Unauthorized data/program transfer.
- **Inadequate physical security –** Who is touching or can touch your “secure” equipment?
- **Inadequate Configuration Management –** You may not realize you have been connected through a change to the system!
- **Indirect methods** - malware infection

Vulnerabilities: **Off-the-shelf Components** Open Doors

- **Obscurity Doesn't Work**:
  - Can no longer rely on proprietary networks, hardware, and software for protection.
- **Large Body of Hacking Tools:**
  - Legitimate and malicious tools make it easy to attack
- **Entrez S'il Vous Plait:**
  - Once inside – an actor can do almost anything

Vulnerabilities: **Connections are Inevitable:** If you are not connected you will be □

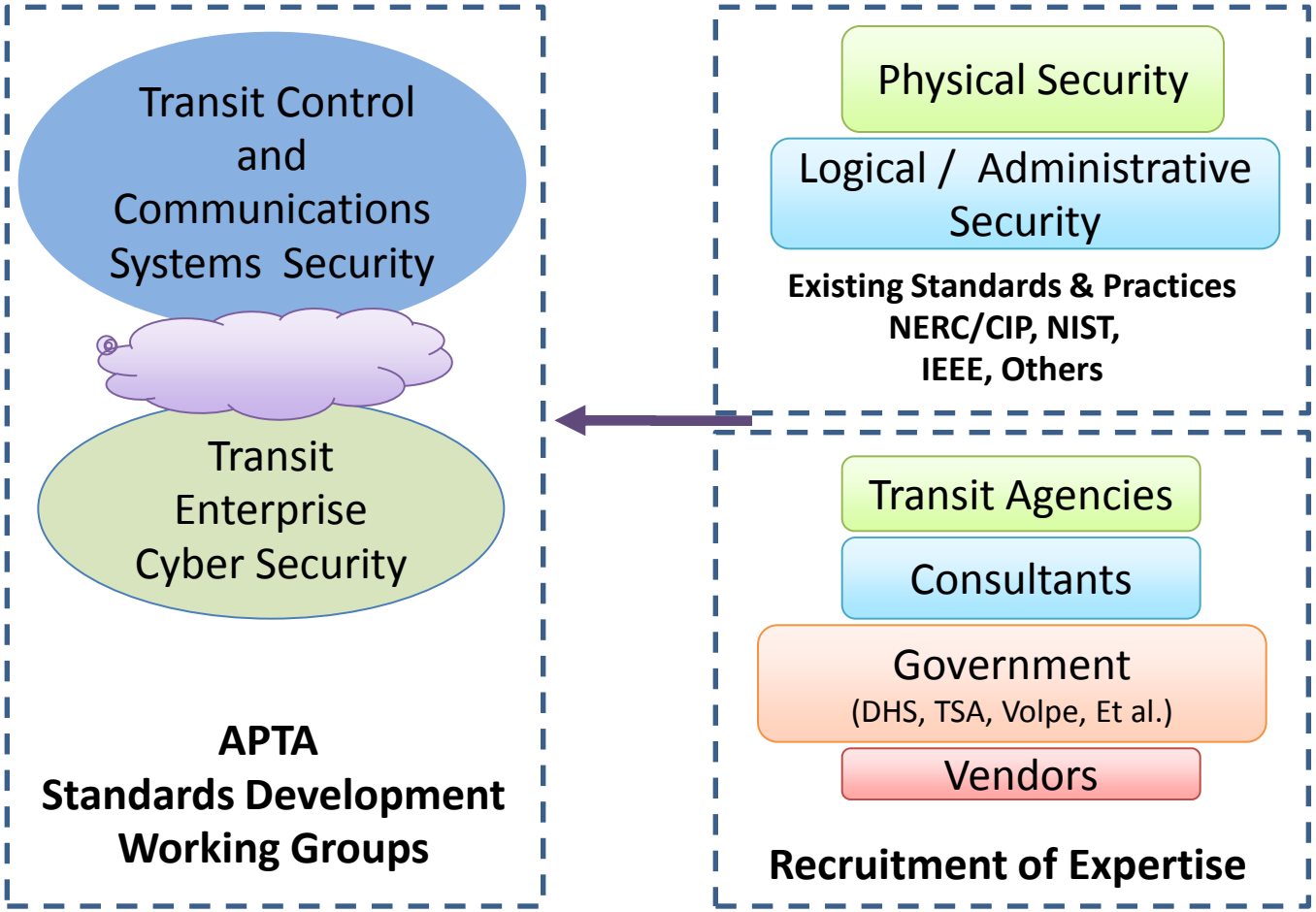
- **Share It:**
  - Internal: Increasing pressure from management to obtain and share data
  - Public: Web enabled Public Information Systems interfaces are a growing trend
- **Collaborate:**
  - FTA "*National Intelligent Transportation Systems Architecture Consistency Policy*" requires regional integration for certain funding eligibility

A Need For Control & Communications Security Standards

- **Guidance** is needed:
  - Migration path for existing systems to upgrade to new more secure systems
  - Procurement language for acquisition of new systems
  - Influence the Vendors to develop secure products
  - Integrate Security into the System Lifecycle

What is APTA Doing?

APTA Security Standards Landscape



What is APTA Doing?
Recommended Practices

- **APTA Recommended Practice** "Securing Control and Communications Systems in Transit Environments"
- **Part-1 published in 2010** provides guidance for organizing a successful control system security program and performing a risk assessment

What is APTA Doing?
Recommended Practice – Part 2

- **What?**
  - It will provide recommended practices for developing administrative, physical, and logical controls for Safety-Critical Systems
- **Where – When?** **You're INVITED to the**
  - **Control & Communication Security Working Group**
    - **Wednesday, 12:30 PM – 5:15 PM**
    - **Room 354**

What is APTA Doing?
Standards Development Approach

- **Experts:** Recruit expertise from Transit Agencies, Consultants, Vendors and the Government
- **Model:** Develop Generic Transit System Descriptions and Identify Potential Vulnerabilities
- **Diagram**: Block diagrams
- **Describe**: Functional descriptions
- **Communicate**: Communications conduits

What is APTA Doing?
Standards Development Approach

- **Prioritize:**
  - Classify Transit Control & Communications Functions into a Minimum of Two Zones of Criticality
- **Safety Critical Zone**
  - Signaling and Interlocking
  - Fire Life Safety Critical
- **Operationally Critical**

What is APTA Doing?
Standards Development Approach

- **Physical:** Consider the Various Physical Security Environments
- **Business:** Office systems / Head-end equipment
- **Signal & Control:** Remote Communications and Control Buildings/rooms
- **Wayside:** equipment huts
- **Operations:** Communication to trains

What is APTA Doing?
Standards Development Approach

- **Do NOT reinvent the wheel:**
  - Leverage existing standards and bodies of work from: NIST/FIPS; NERC/CIP; IEC; IEEE
- **Cross Reference:**
  - Map existing standards to generic transit systems and fill in gaps with new content.

Conclusion

- **We are Vulnerable**
  - Our Transit Systems are vulnerable to Cyber attacks
- **We Can Do It:**
  - The Transit Industry needs recommended practices for securing our Transit systems
- **APTA Leads the Way:**
  - commissioned a working group consisting of industry and government experts

Questions ?

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