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DoD Cyber Strategy Implementation

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Provide Insight to Prioritization, Mitigation & Resource Decisions

Examples of Non-IT / Control Systems on a Site



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Fire Protection

- Fire Alarm Reporting Systems
- Fire Suppression Systems
- Mass Notification Systems

Material Handling

- Programmable Logic Controllers
- Vertical Lift Modules
- Automated Weight and Offering System
- Conveyors

Building Control Systems

- Building Automation Systems
- Electrical Systems
- Building Lighting Systems
- Elevator Systems
- HVAC
- Vehicle Charging Systems

Utility Control Systems

- Central Plant Chilled Water Systems
- Central Plant Steam Systems
- Water Treatment Systems
- Waste Treatment Systems
- Utility (smart)
- Metering Systems

Petroleum, Oil & Lubricants

- Automated Fuel Handling Systems
- Automated Tank Gauging Systems
- Hydrant Fuel Automation Maintenance
- Automatic Fuelling Service Station

Security

- Electronic Security Systems
- Key Control

Other

- Marquees
- Mobile Range
- User Managed Device (UMD) – Mobile Trailer
- Drones

Estimated CS/OT

500 installations
4600 Sites
276,000 buildings
185,000 Structures
140,000 Linear Structures
Unknown # Devices

Estimated IT

15,000 Information Systems
2.3M Workstations & servers
105K Mobile Devices
58,000 Network Infrastructure Devices
50,000 IoT
25,000 Network User Support Devices

Which SME is Best to Cyber Secure Control Systems ... IT or Engineer?



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Control Systems Snapshot* 2020

**Each item is feedback from a separate Component – does not reflect entire Dept*

- Budget for Inventory, Assessments, Mitigate, Sustainment
 - ~\$20M in FY19; \$45-65 through FY26
- ATO Status: 115 obtained; 280 more needed
- Cyber Hygiene 57%; mitigations reqd: 138 (57% done); cost TBD
- Limited availability of qualified govt & ctr personnel that understand CS/OT environments. Also limits ability to execute funds.
- Lack of knowledge of CS/OT vs. IT environments; creates confusion



“Where are the RFPs?”

DoD IT Budget: ~\$30B

DoD Cyber Budget: ~\$10B



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EO Directive Requirement

Executive Takeaway

Exec Order 13870: America's Cybersecurity Workforce
Sec. 3: Secretaries of Defense, Transportation, Energy, and Homeland Security in coordination with the Secretary of Labor and the Office of Personnel Management provide a report to:

- Identify & evaluate skills gaps in Fed & non-Fed workforce / training for {Cyber-Physical Systems}
- Recommend curricula for closing skills gaps

Cyber-Physical and Control Systems need a dedicated governance structure - on par with Information Technology - with authority for oversight & ensuring accountability of impactful progress by the public / private infrastructure sectors to develop this specialized workforce protecting our national critical infrastructure.



Key Findings

- **CPS/CS Cybersecurity and workforce policy/guidance lacking**
- Negligible prioritization of cybersecurity on CPS/CS
- **Need better inclusion of CPS/CS in acquisition processes**
- **Desire for additional and enhanced on-the-job training**
- **Little to no cross-training and collaboration among CPS/CS operators and IT personnel**

*Need CIO, CISO, CRO Implementing Actions;
Beyond Paper Policy Ownership*

Recommended Actions

- **Strategic roadmap, more formal governance**
- **Representation in workforce & cyber guidance / initiatives**
- **Improved acquisition, contract, and personnel processes**
- **Industry partnerships, requirements for curricula/training**
- **Facilities programs for CPS/CS cyber evaluation and training**
- **Dual-front, work-based training opportunities**

*End State: Capable CPS/CS Cybersecurity Workforce
Reduces Mission Risk of Cyber Exploitation of CPS/CS*

Actions Align with Control Systems Interagency Working Group Standards, Incident, SCRM and Workforce