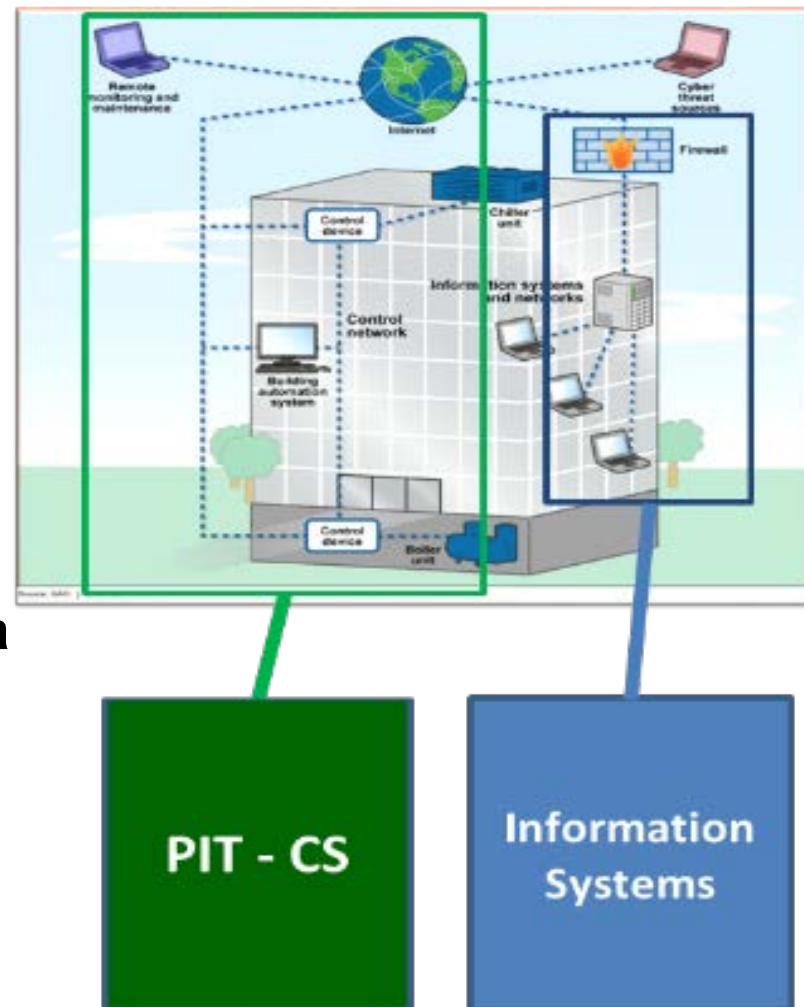




Same Meaning but Different: **PIT, CS, PIT-CS, ICS, OT, SCADA, CPS**

- PIT = Platform Information Technology
- CS = Control Systems
- PIT-CS = PIT Control Systems
- ICS = Industrial Control Systems
- OT = Operational Technology
- SCADA = Supervisory Control And Data Acquisition
- CPS = Cyber Physical Systems
- IoT = Internet of Things



Many Run by Unsupported Operating Systems, i.e. WIN XP

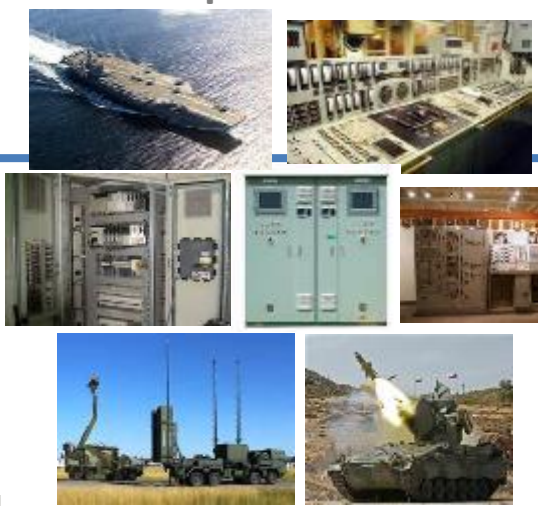
>500 Installations
>250K Buildings
>200K Structures

UNCLASSIFIED

Buildings



Weapon Platforms



Operational Energy



Electrical and HVAC



Pumps and Motors



Nuclear



Typical Controller

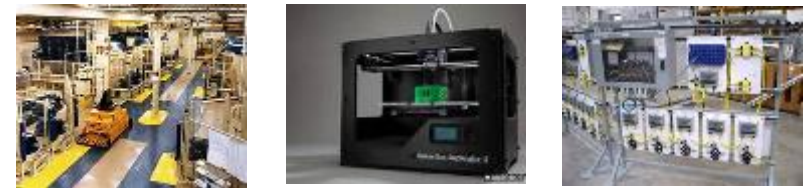
Vehicles/Charging



Medical

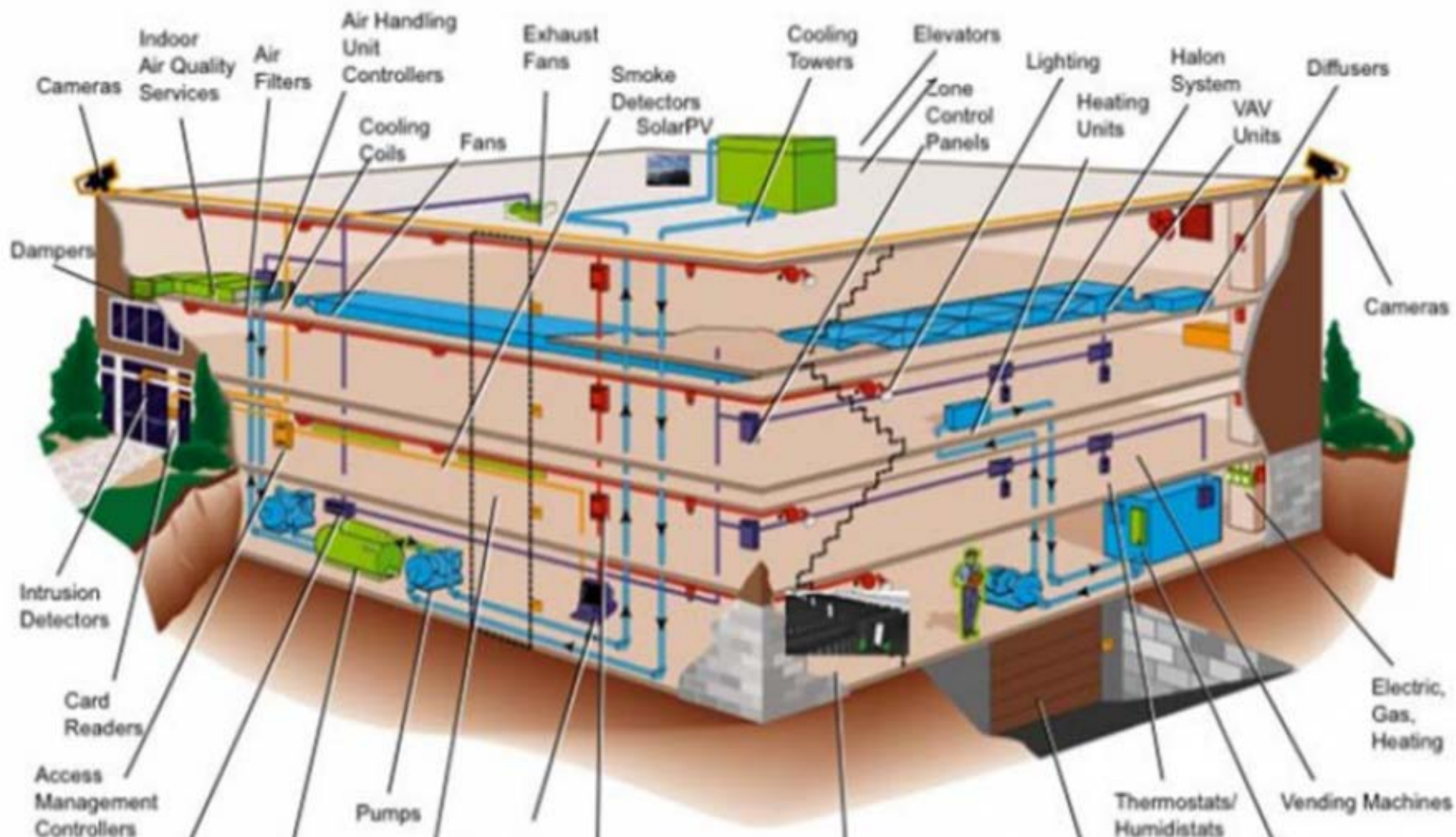


Manufacturing



Same Commercial Device Installed Across DoD Enterprise

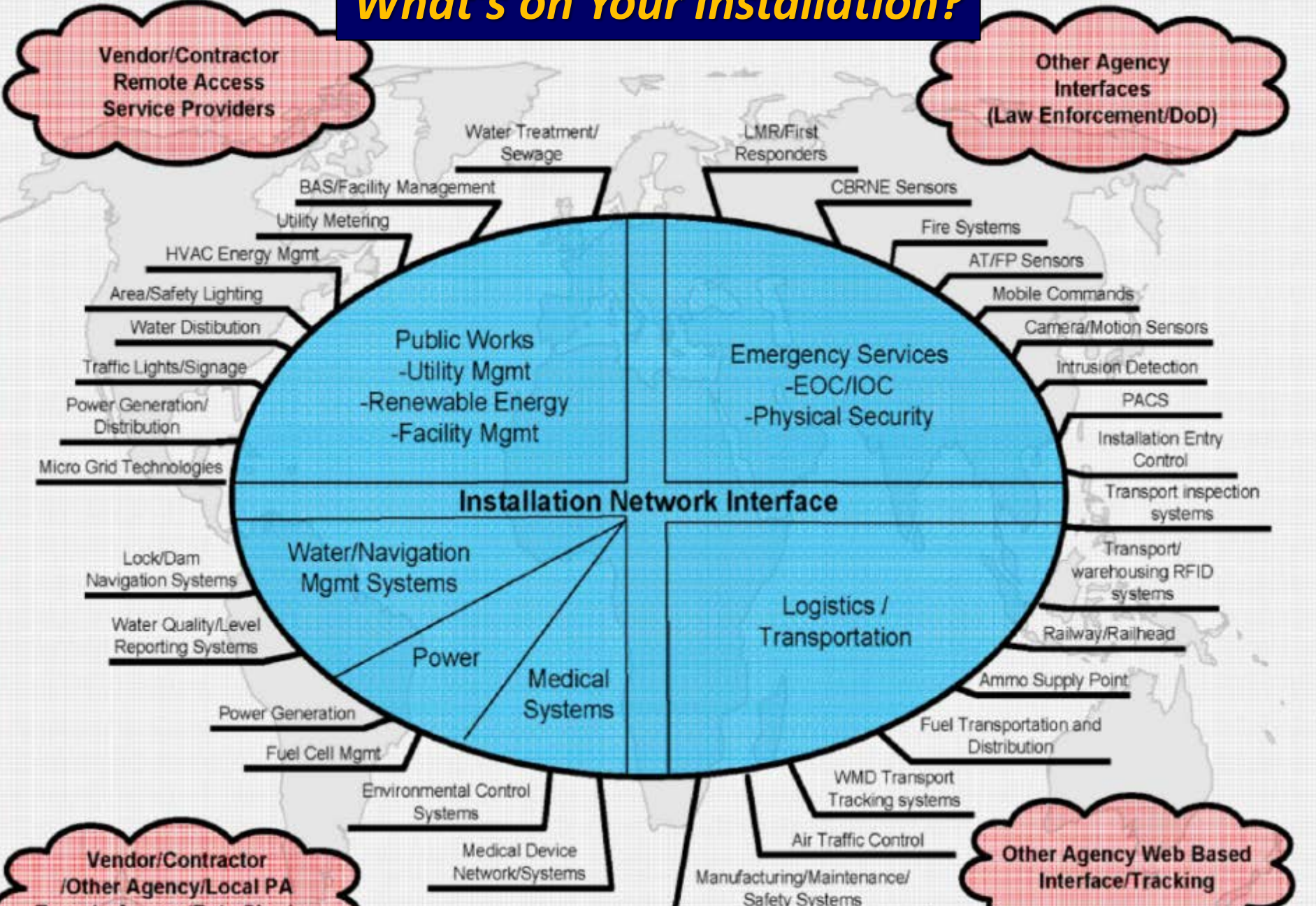
What's in Your Building?



245 = Avg # Days Undiscovered Adversary

DHS ICS CERT

What's on Your Installation?



UNCLASSIFIED



Existing Vendors & Integration Systems

Acquisition, Technology and Logistics

Acuity Brands Roam Advantage Controls ALC Alerton AIE Alerton BACtalk
 Alerton BCM-WEB American Auto-Matrix Auto Pilot American Auto-Matrix
 Andover Controls Continuum Asi controls Auto Matrix Sage Automated Logic
 WebCTRL Automated Logic Barber Coleman Network 8000 Bristol Babcock
 CAPRON Carrier Carrier Comfort Network Carrier Com-Trol Control
 Microsystems SCADAPack Cylon Unitron UC32 Daikin Data Aire Dell Vostro
 Delta Controls ORCA Distech Echelon i.Lon Emerson-Liebert EXHAUSTO
 Flygt ITT Industries APP 700 General Electric WESDAC General Electric
 Honeywell Excel 5000 Honeywell WEBs-AX HSQ Technology Invensys I/A
 Series Invensys Micronet Invensys Network 8000 Johnson Controls Facility
 Explorer Johnson Controls Metasys Johnson Controls M-Series KMC LANDIS
 Landis & Staefa Integral MS2000 Landis & Staefa Liebert SiteGate LOYTEC
 Electronics L-VIS Lynxspring JENEsys Merlin Gerin PowerLogic Microwave Data
 Systems Mitsubishi Motorola SCADA Systems Odessa Engineering
 OmniaPRO Orion Controls Paragon EC7000 Series Racco Reliable Controls
 MACH-ProWebSys Richards-Zeta Robert Shaw DMS RUGID Schneider
 Electric I/A Series Schneider Electric PowerLogic Siebe Network 8000 Siemens
 ACCESS Siemens Apogee Siemens Desigo PX Siemens Synco 700 Staefa
 Staefa/Siemens STULZ Air Technologies TAC I/A Series TAC Network 8000
 TAC Xenta TAC Vista Telvent Smart Grid Solution Trane Tracer Trane Tracer
 Summit Trane Varitrac TREND Trend Control Systems IQ2 Tridium Vykon

Existing Operating Software

Acquisition, Technology and Logistics

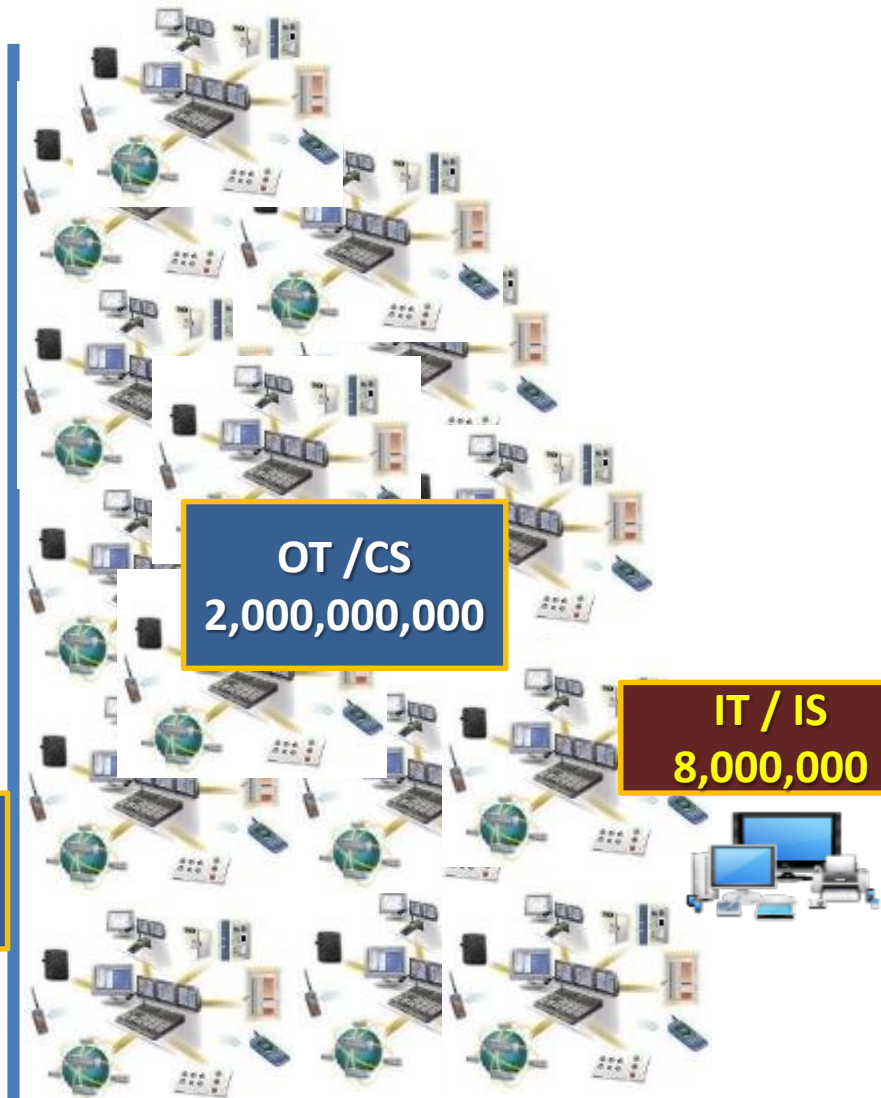
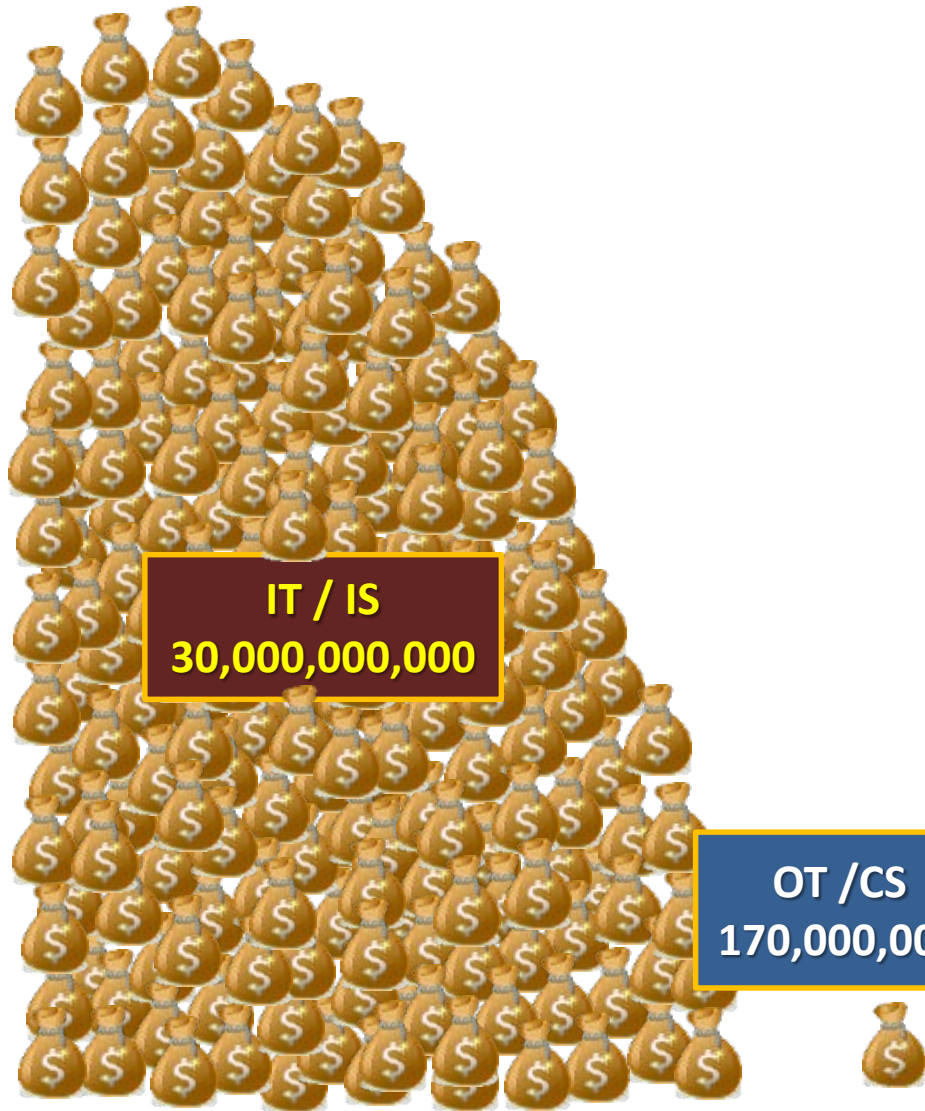
Axon CAT SARL Desigo Insight KNX STANDARD ABB Symphony Plus OptimaxRev 4 ABB Symphony Plus 800xA SV 5.1 ABB Symphony Plus Composer 6.0 ABB Symphony Plus S+ Operations 1.1 Alerton BACTalk Envision 2.0 Alerton BACTalk Envision 2.6 Alerton VisualLogic Allen-Bradley RSLogix 500 Allen-Bradley RSLogix 500, RSView32 Automated Logic ExecB 6.0 Automated Logic SuperVision WebCTRL 5.5 Automated Logic WebCTRL WebCTRL 3 Automated Logic WebCTRL WebCTRL 3.0 Automated Logic WebCTRL WebCTRL 5 Automated Logic WebCTRL WebCTRL 5.2 Automated Logic WebCTRL WebCTRL 4.1 SP1 Automated Logic WebCTRL WebCTRL Automated Logic ExecB 4.1 SP1 Automated Logic ExecB drv_lge_4-02-175 Automated Logic ExecB drv_melgr_vanilla_4-02-175 Automated Logic ExecB Automated Logic Supervision 2.6b Automated Logic WebCTRL 4 SP1B Automated Logic WebCTRL 4.1 SP1 Automated Logic WebCTRL 4.1 SP1b Automated Logic WebCTRL SVR 5.5 Calsense Command Center 4.15.11.20 Carrier Comfort Network Comfort Network 3.0 Control Microsystems ClearSCADA 2009 Ed. R.2.2 Data flow Systems HyperTAC 2 Data flow Systems HyperTAC HT3 Delta Controls ORCA ORCAView 3.30 Delta Controls ORCA ORCAView 3.40 Delta Controls Orcaview 3.22 Delta Controls Orcaview 3.30 Delta Controls OrcaView 3.3 Delta Controls Orcaview 3.33 Delta Controls Orcaview Delta Controls, TAC ORCA, I/NET ORCAView, Seven Rel 2.15 EFACAC Prism ERI Siemens Insight 3.6 GE, Intellution Proficy, iFIX, FIX Desktop _,_,4.0,_ General Electric Cimplicity Plant Edition 6.1 General Electric Multilin Config Pro 5.03 General Electric Proficy Cimplicity 7.0 General Electric Proficy iFIX 4.0 Honeywell Symmetre Station 3.5 Symmetre 3.5 Honeywell Webstation-AX Niagara Niagara 3.5.40.1 HSQ Miser 6.06 HSQ Miser HSQ Sun Microsystems Miser, Xview 6.06 Iconics Genesis32 Genesis32 8.3 Iconics Genesis32 Genesis32 9.13 Iconics HMI SCADA Solutions Genesis 32 3.12.005 InduSoft Web Studio Intellution 7 Intellution iFIX32 3.5 Intellution iFIX32 Intellution iFIX 3.5 Intellution iFIX Reporter ITT Flygt AquaView AquaView 1.50 Johnson Controls Metasys 6.0.0.9000 Johnson Controls Metasys GX9100 7.05A Johnson Controls Metasys Metasys 5 Johnson Controls Metasys Metasys 5.1 Johnson Controls Metasys Project Builder 5:1 Johnson Controls Metasys Project Builder 3 Johnson Controls Metasys 5 Johnson Controls Metasys 12.04 Johnson Controls Metasys 2.0.0.70.0 Johnson Controls Metasys 5.2.0.5400 Johnson Controls Metasys Johnson Controls M-Graphics 5.3 Microsoft Explorer N/A N/A N/A Pneu-Logic Pneu-Logic RACO RACO 3.14 Rainbird MAXICOM2 Central Control 4.3 ReLab Software ClearView-SCADA 7.2.8 Reliable Controls MACH ProWebSys RC-Studio 2.0 Robert Shaw Digital Management System Operator Interface 11.0 Rockwell FactoryTalk Service Platform 2.30 Rockwell FactoryTalk View, Rsview Site Edition, Supervisory 6.0, 6.0 Rockwell FactoryTalk 6.0 Rockwell Automation FactoryTalk View Machine Edition 5.1 Rockwell Automation FactoryTalk View Site Edition 4.0 Rockwell Automation FactoryTalk View Site Edition 5.1 Rockwell Automation FactoryTalk View Site Edition Rockwell Automation RSView Supervisory Edition 4.0 Rockwell Automation RSView Supervisory Edition Rockwell Automation RSView32 7.600.00 ScadaTEC SCADASIS 5.8.14.213 Schneider Electric PowerLogic ION Enterprise 5.6 Schneider Electric PowerLogic ION Enterprise Siebe Network 8000 Signal 4.4.1 Siemens S7 300 STEP 7 Siemens Apogee Insight Siemens Desigo Insight Siemens Desigo Insight 2.31 Siemens Insight Desigo Insight 2.35.021 Siemens WinPM.Net 3.2 SP3 SUBNET Solutions SubSTATION Explorer 1.3.0 SUBNET Solutions SubSTATION Explorer 1.5.7 Sun Microsystems Xview 3.2 Symantec Backup Exec 2011? TAC I/A Series WorkPlace Tech 5.7 TAC I/A Series Workbench TAC I/A Series WorkPlace Tech 5.7.2 TAC 4.1 TAC Signal, XPSI & ZPSIPC Teletrol eBuilding Telvent OaSys DNA 7.4.* Trane Tracer SC Tracer 3.5 Trane Tracer Summit Tracer 11 Trane Tracer Summit Tracer 16 Trane Tracer Summit Tracer 17 Trane Tracer Summit V14 Tracer 14 Trane Tracer Summit V16 Tracer 16 Trane Tracer Summit V17 Tracer 17 Tridium Vykon Niagara 2.301.428 Tridium Vykon Niagara 2.301.430.v1 Tridium Vykon Niagara 2.301.431.v1 Tridium Vykon Niagara 2.301.514 Tridium Vykon Niagara 2.301.514.v1 Tridium Vykon Niagara 2.301.522 Tridium Vykon Niagara 2.301.522.v1 Tridium Vykon Niagara 2.301.522.v2 Tridium Vykon Niagara 2.301.522V1 Tridium Vykon Niagara 2.301.527.v1 Tridium Vykon Niagara 2.301.529 Tridium Vykon Niagara 2.301.532 Tridium Vykon Niagara 2.301.532.v1 Tridium Vykon Niagara 3.3.31 Tridium Vykon Niagara 3.5.34 Tridium Vykon Niagara Workbench 3.6.31 Tridium Vykon Niagara Tridium Vykon Niagara AX 3.3.22.0 Tridium Vykon Niagara AX 3.5.25.0 "Tridium Vykon Niagara AX 3.5.25.0 3.3.22.0" "Tridium Vykon Niagara AX 3.5.25.0 3.4.51.0" Tridium Vykon Niagara AX 3.5.25.1 Tridium Vykon Niagara AX 3.5.34.0 Tridium Vykon Niagara AX 3.5.34.2 Tridium Vykon Niagara AX 3.5.39.0 Tridium Vykon Niagara AX 3.5.40.7 Tridium Vykon Niagara AX 3.5.7.0 Tridium Vykon Niagara AX 3.6.31.0 Tridium Vykon Niagara AX 3.6.31.4 Tridium Vykon Niagara AX 3.6.47 Tridium Vykon Niagara AX 3.6.47.0 Tridium Vykon Niagara AX Tridium Vykon Niagara R2 2.301.522 Tridium Vykon Niagara R2 2.301.522.v1 Tridium Vykon Niagara R2 2.301.529.v1 Tridium Vykon Niagara R2 2.301.532.v1 Tridium Vykon Niagara R2 R2.301.529 Tridium Vykon Niagara R2 Tridium Vykon Niagra 3.5.34.7 Tridium Vykon Workplace Pro 2.301.428 Tridium Vykon Workplace Pro 2.301.514 Tridium Vykon Workplace Pro 2.301.522 v2 Tridium Vykon Workplace Pro 2.301.532 Wonderware Intouch WindowViewer 10.1.200 Yokogawa Exaquantum EXAOPC R3.21 Yokogawa Exaquantum Exaquantum Server R2.60 Yokogawa DAQOPC for DARWIN R3.01 2 6.0 ACS Alerton 3.5.34 Alerton Apogee 2.8 BACnet CSView 11.5.0 build 121 DAQ Works V1.03 Delta-V 7.4 Delta-V DOS 6.2 ERI Excel add-in I/Net 1.02 I/Net 5.1.3-57 I/Net 5.1.4-59 I/Net INET 2000 1.11 build 170 Insight Metasys Power Xpert Software PR970 Prism Protech Siemens 11 SteamEye Symmetre Station 3.5 Tracer Summit 15.0 Versaterm, Crystal Reports VMware WEstation WIN UPM2 Workbench 2.301.522 Workbench 2.310.514



DoD Budget \$M

DoD # of Devices

Acquisition, Technology and Logistics

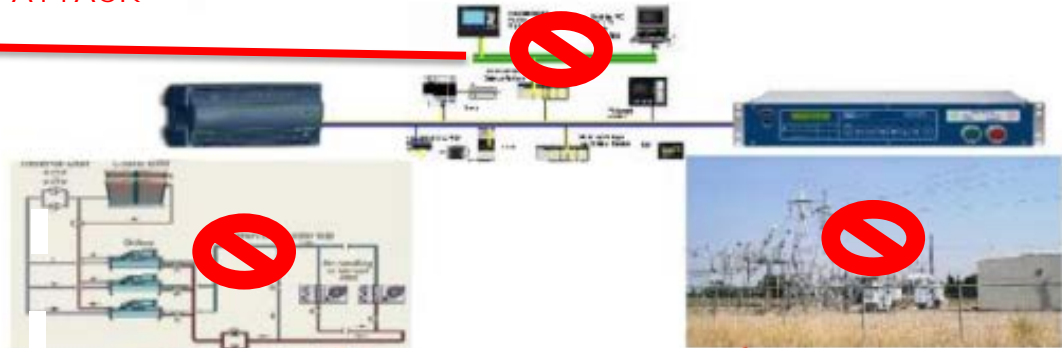


Protecting DoD Mission



ICS Network

CYBER
ATTACK



Cooling

Power

ICS Dependent
Hardware

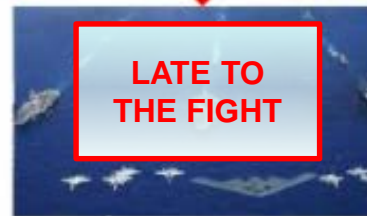


Dependent Systems

Command & Control
Communications
Logistics



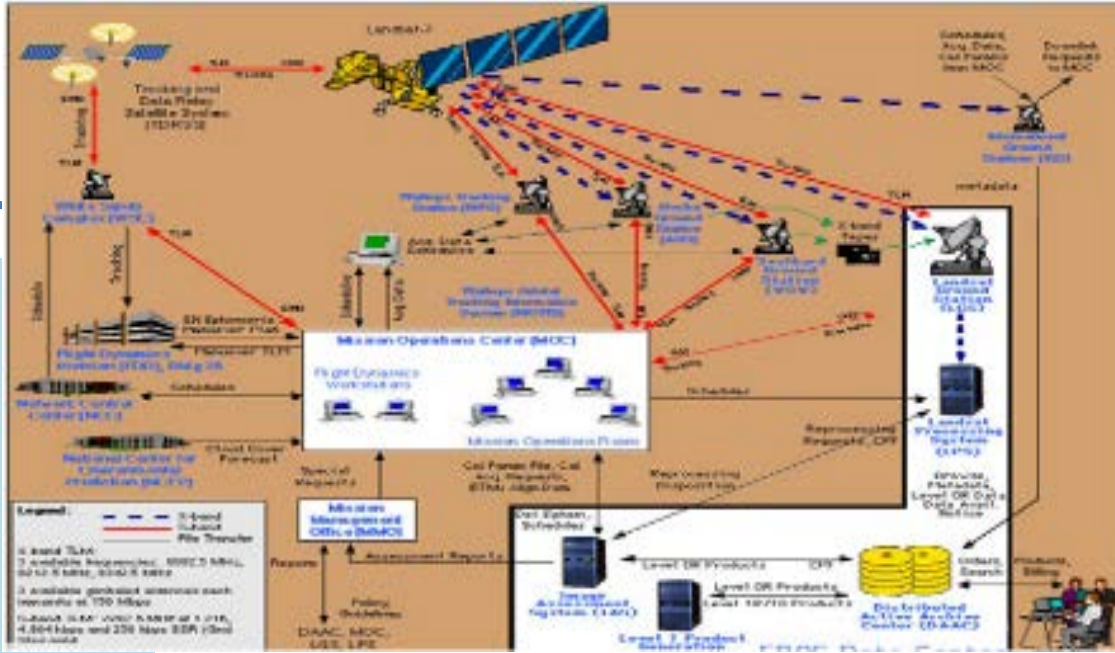
Force Employment



Cyber-Landscape Includes Facility Related Control Systems

Where Does Cyber Terrain End?

Information Systems



Control Systems



Who's Role? Detect, Mitigate & Recover from Cyber Exploit