

Department of Homeland Security Science and Technology Directorate Cyber Security Division

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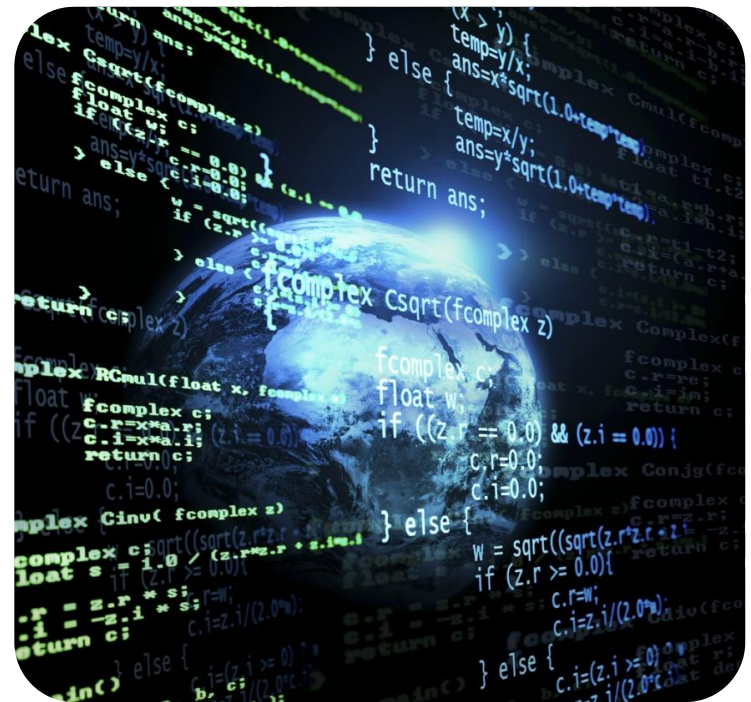
IMAM Program Manager

February 11, 2016



**Homeland
Security**

Science and Technology

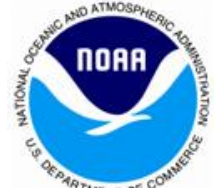


<http://www.dhs.gov/cyber-research>

The Office of the National Coordinator for Health Information Technology



US Federal Cybersecurity Research & Development



The Broad Homeland Security Enterprise

$$N = N_0 e^{-\lambda T}$$

$$P_{rest} = 8 \times (Z)^{-2.44}$$



PARKS
Departments
14,800



Utilities
16,960



Colleges &
Universities
6,900

Insurance
Companies
308,500

EMPLOYERS
7,601,160



Federal Agencies
16,960



Mental Health
Services
15,000



Doctors' Offices,
Nursing Homes
19,286



Social Services
210,427



and similar
health facilities
5,000



4,360



61



178



440



34 National
24K stations



47



10,000



Fire - 30,125



EMS - 21,283



COMM/911
6,153



LE - 17,985



3,479



1,120



170



19,902



Telematics
Providers
16,960



State, Tribal,
Local Govts
39,3130



327



Public Works
~24,000



Media
14,650



Transportation
217,926



Chemical, Oil
and Gas
2,500

NGOs
>1.5 million



Schools
132,656



Restoration
& Repair
402,440



Sports Facilities
1,965

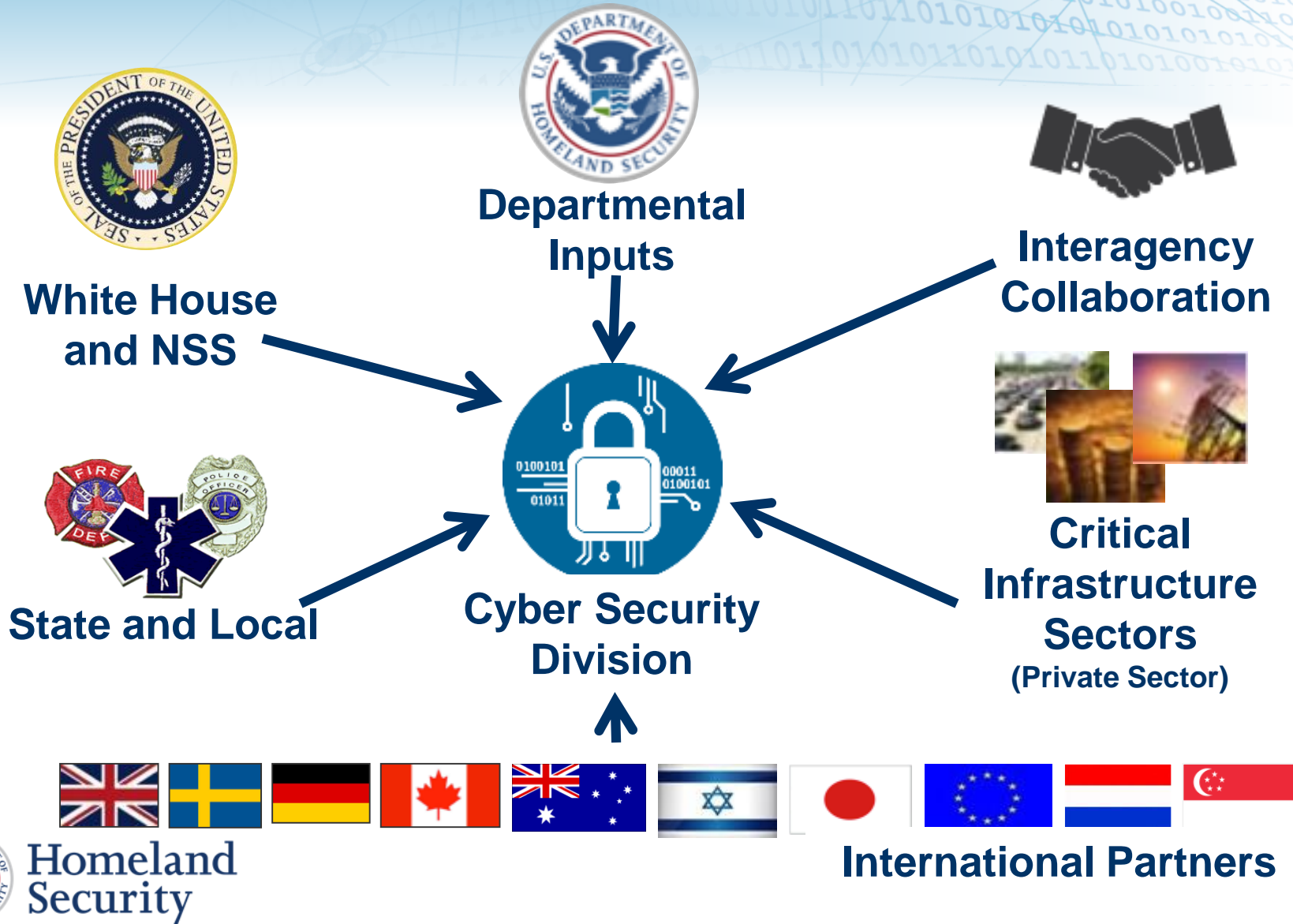


Veterinarians
21,731



Telecom & IT
11,000

RESEARCH REQUIREMENT INPUTS



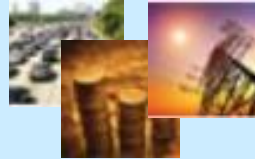
Homeland Security

Science and Technology



CSD Mission & Strategy

REQUIREMENTS



CSD MISSION

- Develop and deliver new technologies, tools and techniques to defend and secure current and future systems and networks
- Conduct and support technology transition efforts
- Provide R&D leadership and coordination within the government, academia, private sector and international cybersecurity community

CSD STRATEGY

Trustworthy
Cyber
Infrastructure

Cybersecurity
Research
Infrastructure

Network &
System
Security and
Investigations

Cyber Physical
Systems

Transition and
Outreach

Stakeholders

Government
Venture Capital
International

IT Security Companies
Open Source

Outreach Methods (Sampling)

Technology Demonstrations
Speaking Engagements
Program Reviews

Social Media
Media Outreach

S&T'S **VISIONARY** GOALS

- **Screening at Speed: Security that Matches the Pace of Life**
- **A Trusted Cyber Future: Protecting Privacy, Commerce and Community**
 - In a future of increasing cyber connections, underlying digital infrastructure will be self-detecting, self-protecting and self-healing. Users will trust that information is protected, illegal use is deterred, and privacy is not compromised. Security will operate seamlessly in the background.
- **Enable the Decision Maker: Actionable Information at the Speed of Thought**
- **Responder of the Future: Protected, Connected, and Fully Aware**
- **Resilient Communities: Disaster-Proofing Society**

2013/2014 Requirements

- 39 Priority Areas with 320+ Focus Areas
- Cybersecurity Research Infrastructure
- Software Assurance
- Network Security
- Mobile, Web, and Cloud Security
- Identity Management and Privacy
- Usability and Metrics
- Cyber Security Education and Training
- Comprehensive National Cybersecurity Initiative (CNCI)
- Securing Critical Infrastructure
- Law Enforcement Needs



References

- Cyber Security Division website:
 - <http://www.dhs.gov/science-and-technology/csd-resources>
- Updated NITRD web site:
 - <https://www.nitrd.gov/cybersecurity/>
- Science and Technology Directorate Strategic Plan:
 - <http://www.dhs.gov/science-and-technology/st-strategic-plan>



IMAM Portfolio Overview



MEASURING

- Efficient, optimized measurement techniques to reduced traffic load
- Obtain snapshots of current network traffic



MAPPING

- Global Networks are dynamic
- Identify network weak spots
- Protect Critical Infrastructure



MODELING

- 200K + unique malware attacks signatures per day
- Visualization graphics for cyber attack discovery and situational understanding



RESILIENCE

- Formal models to verify resilience and test the design before you build
- Improve security posture of open source community



EVALUATING

Enhanced Situational Awareness, Foundations for Resilience, “Help the Little Guy”

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For more information, visit

<http://www.dhs.gov/cyber-research>



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