### ACSAC 2019

**NITRD Panel: Federal Cybersecurity R&D Strategic Plan**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
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<tbody>
<tr>
<td>Raymond Brown</td>
<td>Privacy R&amp;D Lead, National Security Agency</td>
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<td>Jeremy Epstein</td>
<td>Deputy Division Director, CISE/CNS, National Science Foundation</td>
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<td>Wei-Shinn Ku</td>
<td>Program Director, CISE, National Science Foundation</td>
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<tr>
<td>Tomas Vagoun</td>
<td>Cybersecurity R&amp;D Coordinator, NITRD</td>
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NETWORKING AND INFORMATION TECHNOLOGY R&D PROGRAM

Tomas Vagoun
Cybersecurity and Privacy R&D Technical Coordinator
National Coordination Office for NITRD
NITRD Overview

- Interagency program created in 1991
- Purpose: Coordinate Federal agency networking and IT R&D and foster the transition of research innovations into practical use
- Approach: Maximize coordination and collaboration for Federal IT R&D
- Summarized in annual NITRD Supplement to President’s budget request
- NITRD has 72 participating Federal agencies
NITRD Interagency Working Groups

• Artificial Intelligence R&D
• Big Data
• Cyber-Physical Systems
• Cyber Security & Information Assurance
• Health IT R&D
• High Confidence Software & Systems
• High End Computing
• Intelligent Robotics and Autonomous Systems
• Large Scale Networking
• Privacy R&D
• Software Productivity, Sustainability & Quality
• Wireless Spectrum R&D
FEDERAL IT R&D INVESTMENTS

Chart 1. Total NITRD Investment trend chart (2000-2020)

Fiscal Year/Total

0 1,000 2,000 3,000 4,000 5,000 6,000

$ Million


Total: 1,54 1,92 1,83 1,97 2,11 2,25 2,96 3,34 3,88 3,79 3,72 3,80 3,56 4,37 4,85 5,12 5,31 5,70 5,50

Chart 2. FY2020 Budget Request, as percentages of the total NITRD request, by PCA.

HCIA 24%
AI 12%
CSP 12%

EHCS 6%
LSN 8%
LSDMA 8%
CHuman 10%
IRAS 10%

CNPS 3%
SPSQ 4%
EdW 3%

CPSQ 4%
CNPS 3%
SPSQ 4%

Chart 3. FY2020 Budget Request, as percentages of the total NITRD request, by agency.

*Other: DHS, DOA, DOE/NNSA, DOI, DOT, FDA, NARA, NII, NOAA, and VA
### Selected Agency Budgets in Cybersecurity and Privacy R&D

<table>
<thead>
<tr>
<th>Selected Agencies</th>
<th>Cybersecurity and Privacy R&amp;D (Unclassified)</th>
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<tbody>
<tr>
<td></td>
<td>FY 2018 Actual</td>
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<tr>
<td>DARPA</td>
<td>$283M</td>
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<tr>
<td>DoD Research Organizations</td>
<td>$193M</td>
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<tr>
<td>NSF</td>
<td>$105M</td>
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<tr>
<td>NIST</td>
<td>$75M</td>
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<tr>
<td>DOE</td>
<td>$41M</td>
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<tr>
<td>DHS S&amp;T</td>
<td>$12M</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$709M</strong></td>
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2006 Federal Plan for CSIA R&D

• Prepared after the inception of the NITRD CSIA IWG (Aug 2005)
• Organized and prioritized Fed CSIA R&D into key areas
  • Functional Cyber Security and Information Assurance
  • Securing the Infrastructure
  • Domain-Specific Security
  • Cyber Security and Information Assurance Characterization and Assessment
  • Foundations for Cyber Security and Information Assurance
  • Enabling Technologies for Cyber Security and Information Assurance R&D
  • Advanced and Next-Generation Systems and Architectures
  • Social Dimensions of Cyber Security and Information Assurance
2011 Federal Cybersecurity R&D Strategic Plan

- Leap-ahead intellectual directive from the Comprehensive National Cybersecurity Initiative (CNCI 2008)
- R&D Coordination through Game-Change Research Themes
  - Tailored Trustworthy Spaces
  - Moving Target
  - Cyber Economic Incentives
  - Designed-In Security
- Science of Cyber Security
- Support for National Priorities
- Transition to Practice
Federal Cybersecurity R&D Goals
- S&T for effective and efficient risk management
- S&T for sustainably secure systems development and operation
- S&T for effective and efficient defensive deterrence

Critical Dependencies
- Scientific foundations
- Risk management
- Human aspects
- Transition to practice
- Workforce development
- Infrastructure for research
2019 Federal Cybersecurity R&D Strategic Plan

Advances
- Administration’s R&D priorities
- National Cyber Strategy (2018)

Updates
- 2016 Federal Cybersecurity R&D Strategic Plan
US Federal Cybersecurity R&D: Summary

Priority Goals
- Better understanding of human aspects of cybersecurity
- Effective and efficient organizational risk management
- Effective and efficient deterrence and countering of malicious cyber activities
- Integrated safety-security-privacy framework
- Sustainably secure systems

Priority Areas (2019)
- Artificial Intelligence
- Quantum Information Science
- Trustworthy Distributed Digital Infrastructure
- Privacy
- Secure Hardware and Software
- Education and Workforce Development

Critical Dependencies
- Human aspects
- Research infrastructure
- Risk management
- Scientific foundations
- Transition to practice

What research projects would align with the Strategy?
QUESTIONS?
&
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