Secure and Trustworthy Cyberspace (SaTC) and Federal Cybersecurity Strategic Plan

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CISE Directorate

National Science Foundation

SaTC PI Meeting

November 27-29, 2012

SaTC

- Established in FY 2012 with CISE, MPS, OCI and SBE
  - Three perspectives (which can be combined):
    - *Trustworthy Computing*
    - *Social, Behavioral and Economic Sciences*
    - *Transition to Practice*
  - *Transition to practice* phase
- Added EHR and ENG in FY 2013
  - Added standalone perspective on *Cybersecurity Education*

FY 13 Participating Directories

- CISE
  - Technical approaches to security and privacy
  - Includes theoretical, systems and human-oriented computing
- OCI
  - Supports later stage activities in the research and development lifecycle such as prototyping and experimental deployment
  - Emphasis on activities that lead to potential impact on science and education environments – NSF cyberinfrastructure
- SBE
  - Cyber-economic incentives
  - Cyber-insurance research (economics)
  - Research on international norms and rules of engagement with respect to cyber-attacks
    - Fields: Political Science, Game Theory
- Engineering
  - Characteristics of Cyber-Security in Cyber-Physical Systems
    - Physical systems are involved
    - Security strategies that protect the computer and data systems alone would be insufficient
    - integrative security and reliability measures from both cyber and physical aspects
- Education
  - Supporting educational efforts
- Mathematics and Physical Sciences
  - Theory of cryptographic systems (creating and attacking)
  - Statistical vulnerabilities of cyber security
  - Quantum information Science

SaTC FY 2012

Category	Number
Frontiers	2
CAREER	7
Medium	28
Small	34
EAGER	13

- Frontiers
    - Projects are multi-disciplinary
    - Co-funded by multiple directorates
- Also co-funded proposals with
    - Cyberphysical Systems program
    - Computer Systems Research program
    - Algorithmic Foundations program
    - Software and Hardware Foundations program
   - Information Integration and Informatics program

SaTC FY 2012

(83 proposals / 56 projects total)
- Medical device security
- Browser security
- Anonymity
- Mobile device security & privacy
- Cloud security
- Hardware security
- Smart grid security
- Data privacy
- Network security (BGP, IDS)
- Software security
- Cybereconomics
- Censorship evasion
- Security data collection & analysis
- Social network security
- Biometrics
- Security usability

SaTC FY 2012 by NITRD Theme
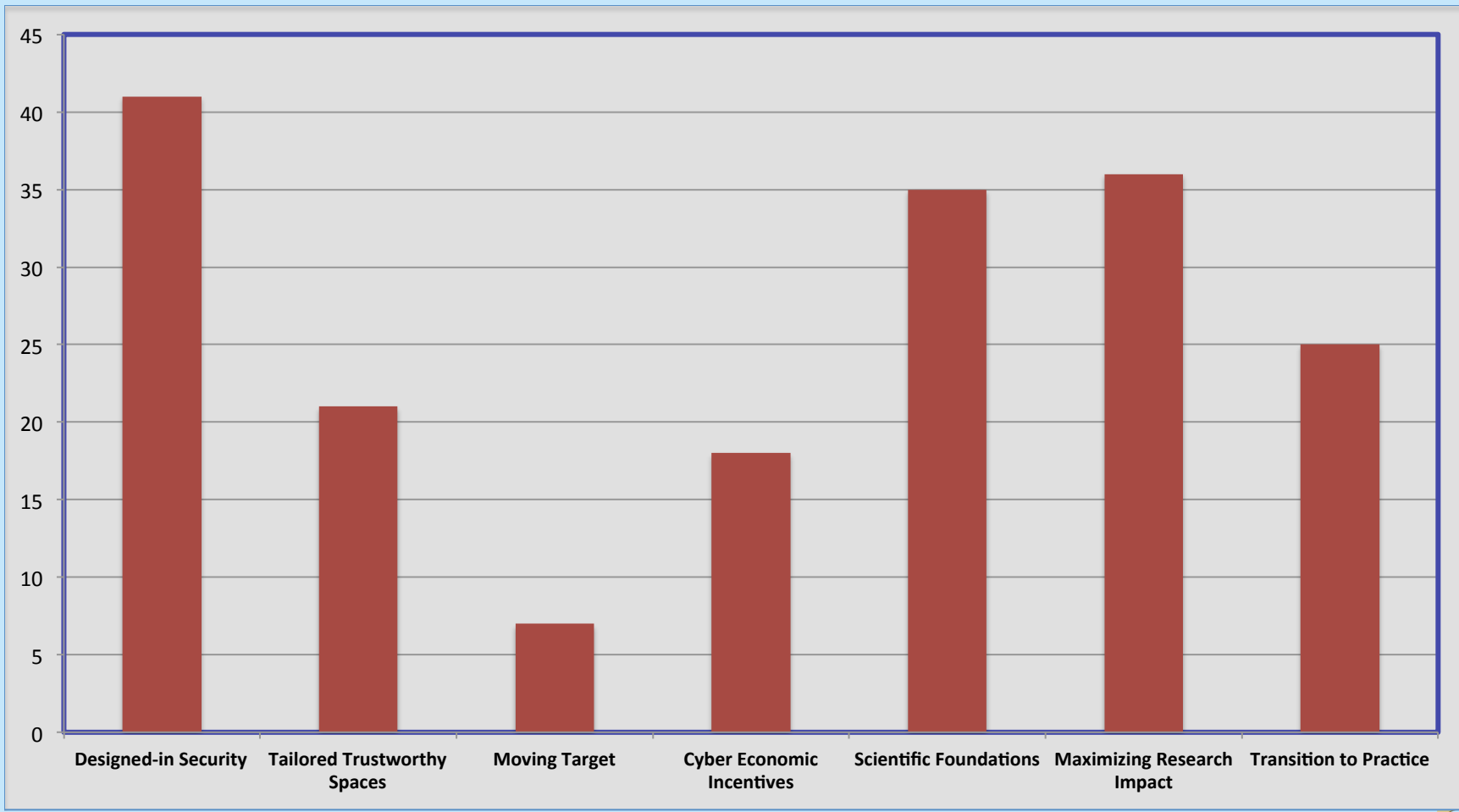
New Mediums

Sherwood, Timothy	UC Santa Barbara	SHF: Medium: Building Critical Systems with Verifiable Properties Using Gate Level Analysis
Kapadia, Apu	Indiana U	TWC SBES: Medium: Crowdsourcing Security
Goodrich, Michael T.	UC Irvine	TWC: Medium: Privacy-Preserving Distributed Storage and Computation
Boneh, Dan	Stanford U	TWC: Medium: Computing on Cryptographic Data
Kifer, Daniel	Penn State U University Park	TWC SBES: Medium: Utility for Private Data Sharing in Social Science
Kagal, Lalana	MIT	TWC: Medium: Policy Compliant Integration of Linked Data
Lee, Adam	U of Pittsburgh	TWC: Medium: Foundations of Application-Sensitive Access Control Evaluation
McDaniel, Patrick D.	Penn State U University Park	TWC: Medium: Extending Smart-Phone Application Analysis
Tinelli, Cesare	U of Iowa	TWC: Medium: Breaking the SMT bottleneck in symbolic security analysis
Jha, Somesh	U of Wisconsin Madison	TWC: Phase: Medium: Understanding and Exploiting Parallelism in Deep Packet Inspection on Concurrent Architectures

New Mediums

Hong, Jason	CMU	TWC: Medium: Capturing People's Expectations of Privacy with Mobile Apps by Combining Automated Scanning and Crowdsourcing Techniques
Rogaway, Phillip	UC Davis	TWC: Medium: Deconstructing Encryption
Memon, Nasir	Polytechnic U of NY	TWC: Medium: Towards Secure, Robust, and Usable Gesture-Based Authentication
Witchel, Emmett	U of Texas Austin	TWC: Medium: Trustworthy Programs Without A Trustworthy Operating System
Acquisti, Alessandro	CMU	TWC SBES: Medium: Evolutionary Approaches to Privacy and Information Security
Yang, Yaling	VA Tech	TWC: Medium: SDR Shield: A Hardware-based Security Solution for Software Defined Radio
Naumann, David A.	Stevens I of T	TWC: Medium: Flexible and Practical Information Flow Assurance for Mobile Apps
Shi, Zhijie	U of Connecticut	TWC: Medium: DoS Attacks and Countermeasures in Underwater Wireless Networks
Lerner, Sorin	UC San Diego	TWC: Medium: Towards a Formally Verified Web Browser
Boneh, Dan	Stanford U	TWC: Medium: Neuroscience Meets Computer Security: Designing Systems Secure Against Coercion Attack

New Mediums

Pytlik-Zillig Hayes Samal Soh Tomkins	U. Nebraska at Lincoln	SBES: Medium: Investigating the Role of Distrust in Unauthorized Online Activities Using an Integrated Sociotechnical Approach
McCabe Eil	George Mason U.	SBES: Medium: Economic Incentives and Organizations for a Trustworthy Cyberspace
Sahai, Amit	UC Los Angeles	TWC: Medium: Transformative New Approaches to Efficient Secure Computation
Whinston, Andrew B.	U of Texas Austin	TWC: Medium: Reputation as Public Policy for Internet Security
Demsky, Brian C.	UC Irvine	TWC: Medium: Safety in Numbers: Crowdsourcing for Global Software Integrity
Levitt, Karl N.	UC Davis	TWC: Medium: Towards Securing Coupled Financial and Power Systems in the Next Generation Smart Grid
Claffy, Kim	UC San Diego	TTP: Medium: Detection & Analysis of Large-Scale Internet Infrastructure Outages
Weber, Steven	Drexel University	TTP: Medium: Securing the Wireless Philadelphia Network

Frontiers

- Beyond Technical Security: Developing an Empirical Basis for Socio-Economic Perspectives
    - UC San Diego, ICSI, George Mason University.

- Privacy Tools for Sharing Research Data
    - Harvard University.

Thanks!