

NSF Transition to Practice Challenges

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³/₄ Large Scale Networking:

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‡ Multiagency workshops: SDN Network planning

³/₄ Cybersecurity:

‡ Accelerating Transition to Practice

‡ CyberPhysical Systems (CPS) Security

‡ Security for Cloud-based systems





SaTC FY14-15 Funding Areas

Access control

Anti-malware

Anticensorship

Applied cryptography

Authentication

Cellphone network security

Citizen science

Cloud security

Cognitive psychology

Competitions

Cryptographic theory

Cyber physical systems

Cybereconomics

Cyberwar

Digital currencies

Education

Forensics

Formal methods

Governance

Hardware security

Healthcare security

Insider threat

Intrusion detection

Mobile security

Network security

Operating systems

Personalization

Privacy

Provenance

Security usability

Situational awareness

Smart Grid

Social networks

Sociology of security

Software security

Vehicle security

Verifiable computation

Voting systems security

Web security



SaTC: Transition to Practice (TTP)

Supplement: FY14-15

- ™ 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
- ™ An add on to a basic research proposal. Reviewed with basic research proposals



SaTC: Transition to Practice (TTP) Perspective: FY16

- ™ FY16 Budget Supplement gives TTP more visibility due to NITRD/OSTP interest
- ™ FY16 Review Criteria (thanks to input from TTP workshop #1!)
 - ™ Impact on deployed environment
 - ™ Value in terms of needed capability and potential impact across the broad NSF community
 - ™ Feasibility, utility, and interoperability in operation
 - ™ Project plan including goals, milestones, demonstration and evaluation
 - ™ Tangible metrics to evaluate effectiveness of capabilities developed
- ™ Paneled with other TTPs not with basic research proposals. Reviewers from disparate communities



Transition to Practice FY12-13 Awards

TM UIUC/ICSI	Bro
TM Grammatech	Annotations for Software Assurance
TM Dakota St.	Access Control Testing
TM UC Berkeley	User Centric Mobile Privacy
TM Drexel	Securing the Wireless Philadelphia Network
TM UMinnesota	Tor Improvements
TM Polytech U of NY	Secure Python
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FY14 EAGERS

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TTP FY15 Awards



TTP Success: Bro Network Security Monitor

- ™ Bro provides a flexible, open network monitoring platform.
 - ™ Developed since 1995, now at ICSI & NCSA.
 - ™ Open-source with a BSD license.
 - ™ Fundamentally different from a traditional IDS.

- ™ Particularly well-suited for scientific environments.
 - ™ Comprehensive logging for forensics.
 - ™ Extensive standard library for typical, complex detection tasks.
 - ™ Domain-specific scripting language for custom analysis.

- ™ Bridges gap between academia and operations.
 - ™ Has helped transition research into practice for almost two decades.
 - ™ Deployed operationally by universities, research labs, Fortune 20.

- ™ *Bro Center of Expertise* supports NSF community.
 - ™ Provide assistance for operating and customizing Bro installations.
 - ™ Develop new functionality tailored to the NSF community.
 - ™ Support research community in transitioning technology into practice.





TTP Workshop #2 Goals

™ NSF role in TTP. Matchmaker/incentivize transition vs organic growth?

™ What practices can be leveraged from other Agencies and Industry?

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«while maintaining commitment to basic research mission

