Technology Transition Pathways

USA Cybersecurity TTP Workshop

January 13, 2023

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“What has not worked for TTP?” -> “What are the challenges in TTP?”

- **Yield**: some transitions fail; doesn’t mean system isn’t working as intended
- **Time-scales**: transition requires time and continuity of effort; a failure on one time scale may be a success on another
- **Incentives**: creators of technology may not be incentivized, or even able, to transition technology
- **Funding**: time + continuity required for success requires significant funding

How not to write a TTP proposal

- Don’t identify the technology or innovation being transitioned
- Don’t discuss the current level of technology readiness
- Don’t provide evidence that the technology is novel and promising
- Don’t identify a transition target / platform / partner
- Don’t describe the expected state of the technology after the transition

SaTC Transition Success Stories

NSF/OAC-funded Zeek (formerly Bro), a leading (open-source) network security monitoring platform, *deployed on more than 1B global endpoints. Vern Paxson, 10/12/22.*

- rge-scale Outage Detection
- engineering solutions on ubiquitous logic
- asy Email Encryption
- uring Software Supply Chain
- ng Container Security
- re Password Store
- AR honeypot
- ty of Connected Automated Vehicles
- 1929701/Yao Secure Use of Cryptographic Implementations
- 1718135/Varia Secure Mutli-Party Analytics
- 1817248/Egelman Mobile Privacy and Security Analysis
- 1718116/Uluagac Wearable Continuous Authentication
- 1619454/Dingledine Anti-website Fingerprinting
- 1656268/Rasin Database Forensics
- 1564102/Juels Secure Password Management
- 1562376/Sion Privacy-Enable Cloud Storage

IODA Production Censorship/Outage Reporting

In-Toto / TUF Supply Chain Framework, Linux Foundation, Microsoft, IBM, VMWare, Docker…

ResearchSOC production product for threat intel

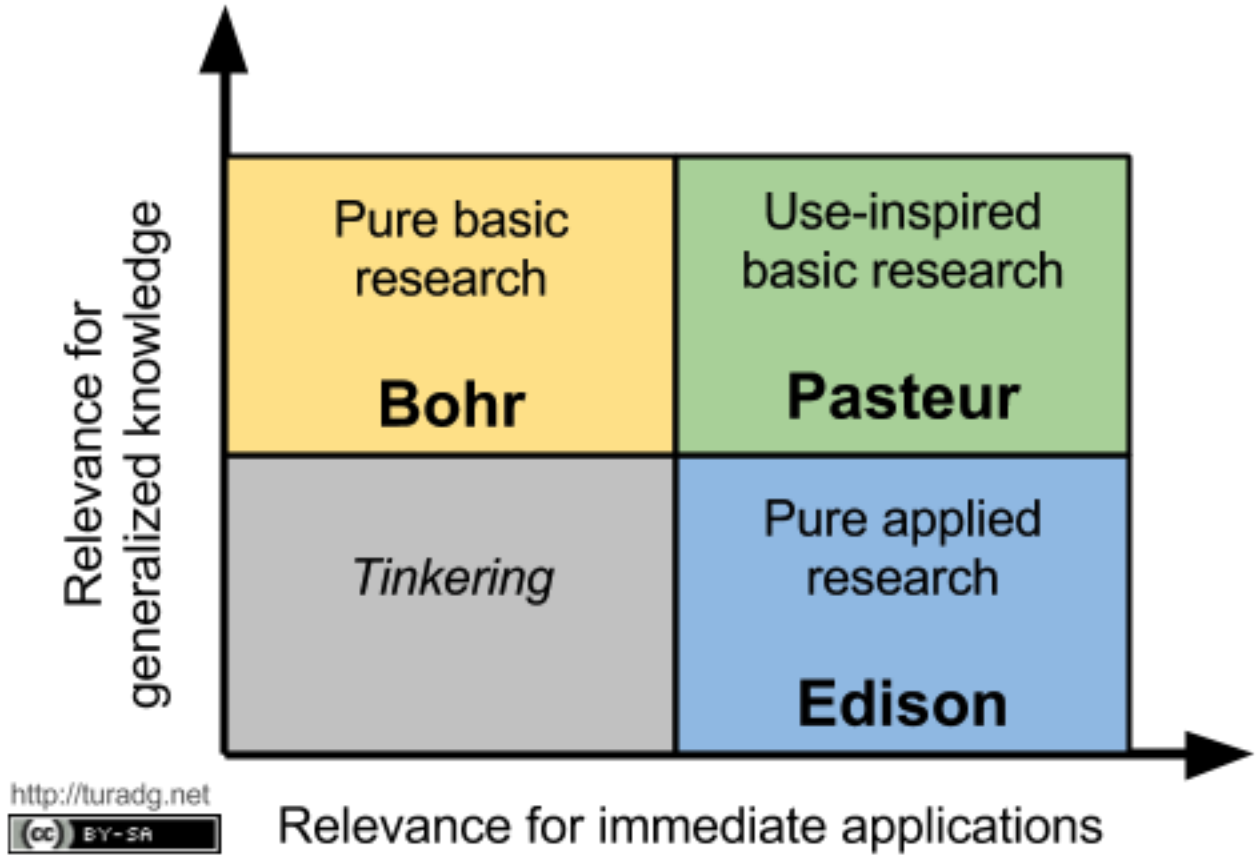
Appcensus (company) for mobile app privacy compliance

Improvements to production Tor

Oso (company) authentication framework

NSF and Technology Transition

- NSF's core mission is basic research
- Ideal TTP is "use-inspired" and "translational":
  - Experience from tech maturation / deployment should feed back into the basic research



New NSF Transition Initiatives

- TIP Directorate
- POSE program
- ACCESS Track 5
- CICI transition

NSF'S MISSION

To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.

Director's Vision

- Advance the frontiers of research into the future
- Ensure accessibility and inclusivity
- Secure global leadership

We are in a **DEFINING MOMENT**

- Intensity of global competition
- Urgent need for domestic talent
- Broad support for science as path for solving global grand challenges

We can accomplish this vision with:

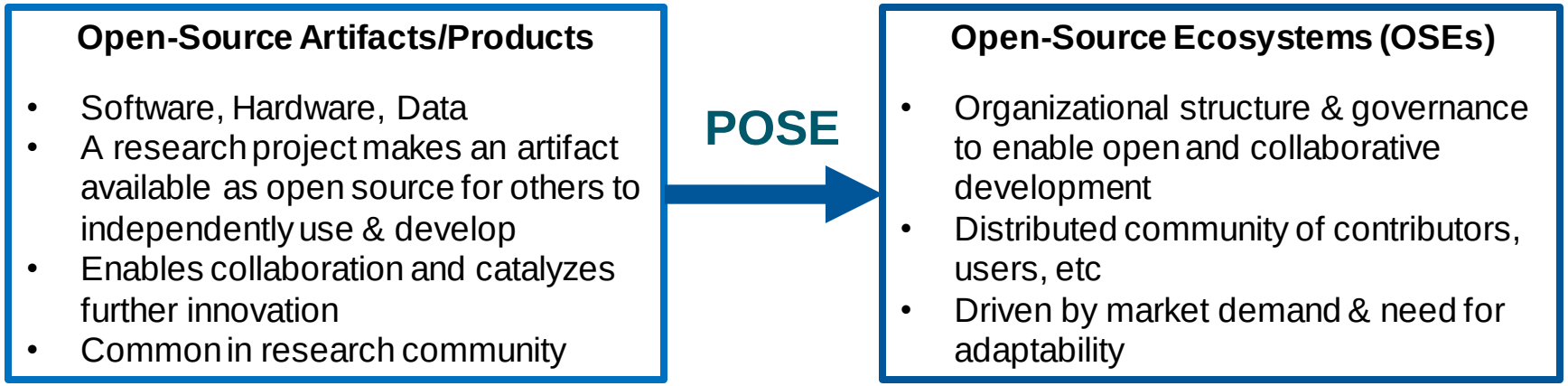
SPEED AND SCALE

- PEOPLE
- PARTNERSHIPS
- TRANSLATION

NSF

A New “Horizontal” to Enhance Use-inspired and Translational Research

New TIP program: Pathways to Open Source Ecosystems (POSE 22-572)



POSE is intended to enable the early and intentional transition from an open-source product to an OSE

NSF 23-517: CICI Program Areas

Usable and Collaborative Security for Science (**UCSS**)	Facilitate scientific collaboration, adopt security into scientific workflows. Overcome security and usability obstacles to data and resource sharing.
Reference Scientific Security Datasets (**RSSD**)	Capture science-specific workflow/workload behavior. Gather and curate canonical science workload datasets that can facilitate techniques to help secure science CI.
Transition to Cyberinfrastructure Resilience (**TCR**)	Improve the robustness and resilience of scientific cyberinfrastructure through testing, evaluation, hardening, validation, and transition of novel cybersecurity research