



NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

September 25-26 | College Park, MD



Award# 1547272

The Mission of Trusted CI is to lead in the maturation of a NSF Cybersecurity Ecosystem with the workforce, knowledge, processes, and cyberinfrastructure that enables trustworthy science and NSF's vision of a nation that is a global leader in research and innovation.

trustedci.org



ResearchSOC

Award #1840034

researchsoc.iu.edu



Scientific Workflow Integrity with Pegasus

Awards #1642070, 1642053, and 1642090

cacr.iu.edu/projects/swip/



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INDIANA UNIVERSITY
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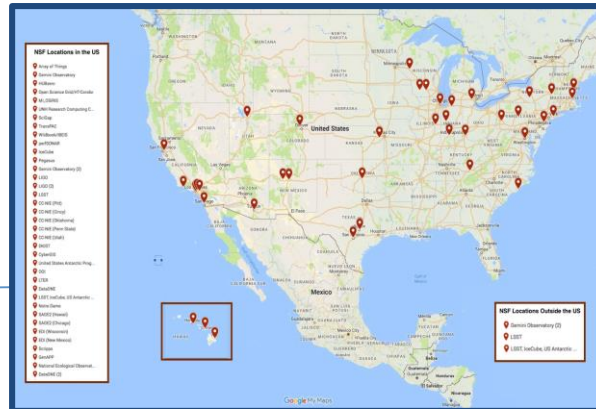
Challenge:

- NSF funds over \$7 billion of research each year highly dependent on computing for scientific productivity.
- How to apply cybersecurity to assure productive, trustworthy, reproducible scientific research is a complex technical and organizational challenge.

Mission:

The Mission of Trusted CI is to lead in the maturation of a NSF Cybersecurity Ecosystem with the workforce, knowledge, processes, and cyberinfrastructure that enables trustworthy science and NSF's vision of a nation that is a global leader in research and innovation.

Trusted CI NSF Engagements



Scientific Impact:

- Engaged with over thirty NSF project, including nine Large Facilities - see map at center.
- Trained over 250 members of NSF community in secure coding, federated identity management, developing a cybersecurity program, incident response, etc.
- Training, templates, suggested practices freely available.
- Annual Summits attended by over 100 members of community each year.

More information

- trustedci.org
- [Trustedci](https://twitter.com/Trustedci)
- ask@trustedci.org



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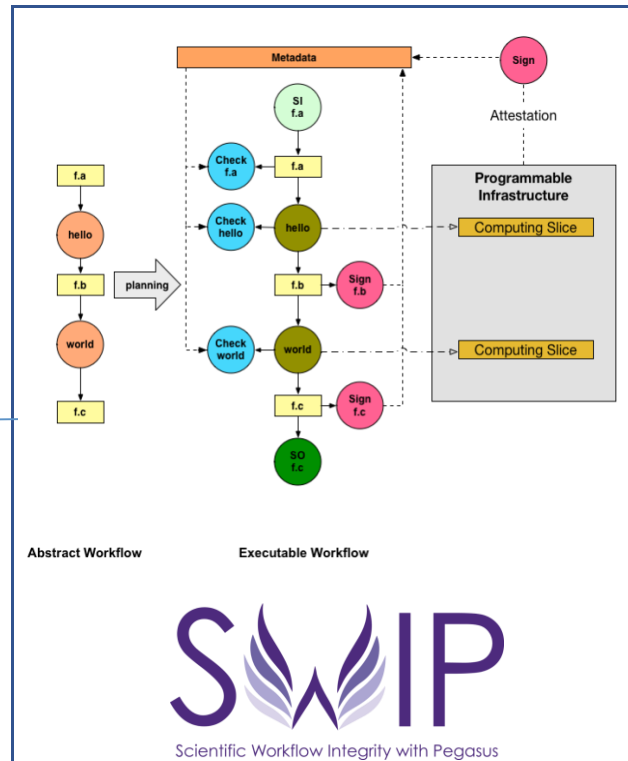
Scientific Workflow Integrity with Pegasus

Challenge:

- Modern IT systems are not perfect data managers – errors creep in.
- Malicious actors also also intentionally corrupt data.
- TCP, RAIDS, etc. have integrity protections, but these aren't end-to-end and science work flows have gaps.
- Stronger assurances against data corruption heighten society's trust in computational science.

Our Solution:

- Workflow management systems (WMSs) manage workflows end-to-end and understand context about data use and creation.
- Hence, we are integrating integrity protections into Pegasus WMS.
- "Chaos Jungle" virtualized infrastructure injects faults controllable for testing.



Scientific Impact:

- Pegasus WMS is already well used in scientific community.
- SWIP-Enhanced Pegasus being trailed in community and finding integrity errors.
- Our initial partners include Chameleon, NSFCloud, OSG, LIGO, CyberShake, FreeSurfer, SPLINTER

For more information:

cacr.iu.edu/projects/swip/

Got data integrity needs?

We're entering year three of our project and are looking for additional testers. Please contact vwelch@iu.edu if interested.



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Challenge:

Scientific computing needs operational cybersecurity services but is challenged by its particular, even unique, infrastructure, workforce challenges, and need for efficient, collaborative workflows.

Our Solution:

- Tailor existing cybersecurity services and couple them with a threat intelligence network for research and training for the research community.
- Outreach to higher education information security professionals to motivate and inform them on research engagement.
- Further cybersecurity researchers by making our operational data available to researchers.
- Build a community of practice around cybersecurity for research.



ResearchSOC

Research Security Operations Center



STINGAR



Tailoring Operational Cybersecurity Services for the Research Community

Scientific Impact:

- The reputation, availability and integrity of scientific instruments and data is critical to trustworthy, productive, reproducible science.
- The availability of real world cybersecurity data will advance research in cybersecurity.

For more information:

researchsoc.iu.edu

Seeking one more early adopter

Please contact vwelch@iu.edu if interested.

