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Jim's career arc

- 1995-2001 UW-Madison Ph.D. in Computer Sciences (HTCondor)
- 2001- NCSA Cybersecurity
- 2001-2011 TeraGrid: distributed terascale facility
- 2001-2018 MyProxy: credential management service
- 2009- CILogon: federated identity service
- 2011- XSEDE: Extreme Science and Engineering Discovery Environment
- 2012- Trusted CI: NSF Cybersecurity Center of Excellence
- 2017-2021 SciTokens: capability-based access to scientific data



Trusted CI: The NSF Cybersecurity Center of Excellence

Our mission: to lead in the development of an 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.

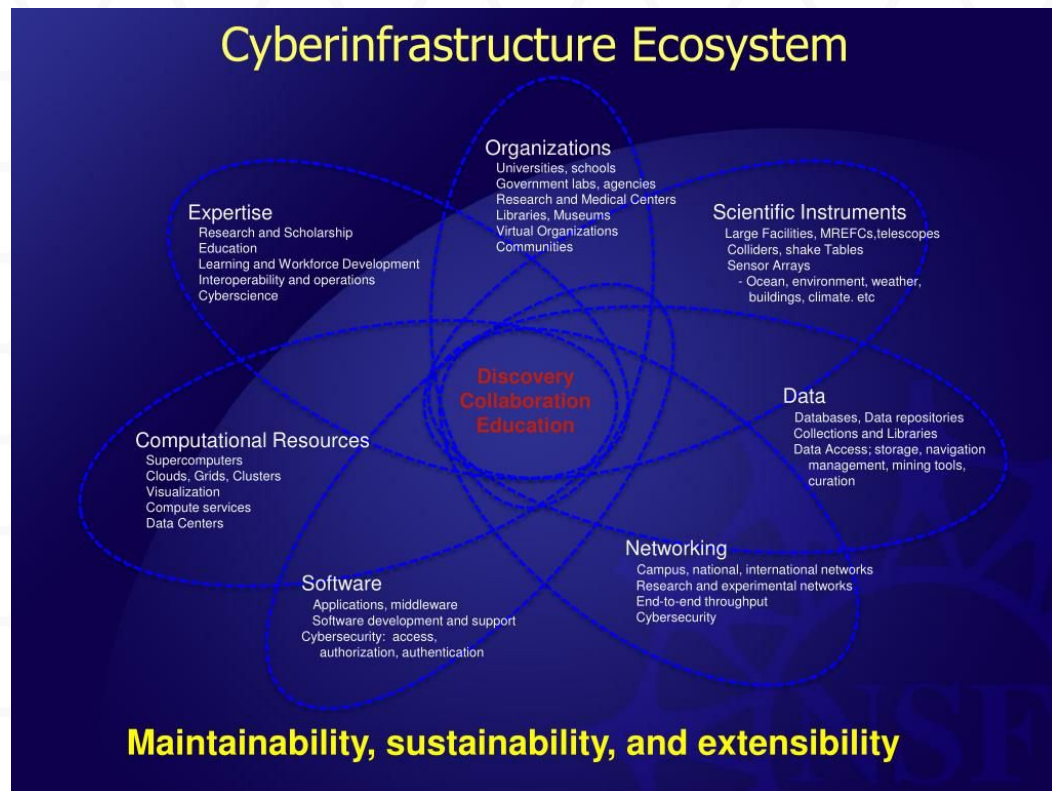


<https://trustedci.org/>

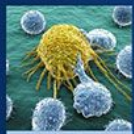
What is Cyberinfrastructure (CI)?

“The comprehensive infrastructure needed to capitalize on dramatic advances in information technology has been termed cyberinfrastructure (CI). Cyberinfrastructure integrates hardware for computing, data and networks, digitally-enabled sensors, observatories and experimental facilities, and an interoperable suite of software and middleware services and tools. ”

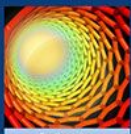
-NSF Cyberinfrastructure Vision for 21st Century Discovery



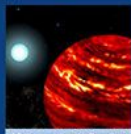
NSF Funds Research and Education across all Fields of Science and Engineering



Biological Sciences



Engineering



Mathematical & Physical Sciences



Computer & Information Science & Engineering



Geosciences (including Polar Programs)



Integrative Activities



Education & Human Resources



Social, Behavioral & Economic Sciences



International Science & Engineering

Awards > \$1m:
644 in FY20
4,283 active in 2021

NSF by the Numbers

\$8.1 billion

FY 2019 Appropriations (does not include mandatory accounts)

1,800

Colleges, universities, and other institutions receiving NSF funding in FY 2019

41,000

Proposals evaluated in FY 2019 through a competitive merit review process

11,300

Competitive awards funded in FY 2019

192,000

Proposal reviews conducted in FY 2019

306,000

Estimated number of people NSF supported directly in FY 2019 (researchers, postdoctoral fellows, trainees, teachers, and students)

60,000

Students supported by NSF Graduate Research Fellowships since 1952

NSF Community Benchmarking Survey

- Survey of 14 NSF Major Facilities & 9 other NSF projects (23 total)
- 10 of 23 employ 1 Cyber FTE or greater. Others <1 Cyber FTE.
- 9 of 23 respondents detected at least 1 incident, 4 of whom detected 3 or more incidents.

<http://hdl.handle.net/2022/24912>

Cybersecurity Threats to NSF CI Projects

- Ransomware
- Intellectual Property theft
 - Access to expensive Journal subscriptions
 - Disclosure of proprietary/sensitive information
- Abuse of resources
 - Cryptocurrency mining
 - Launch of attacks on others

Preparing for a CI Cybersecurity Career

- Broad coursework/experience/interest/skills:
 - Cybersecurity and
 - Programming or
 - System Administration or
 - Data Management or
 - Bio, Engineering, Humanities, Math, Science, etc.
- TrustedCI@PEARC21 workshop tomorrow morning
- NSF CyberCorps: Scholarship for Service program
- NSF Cybersecurity Summit student program

SFSCon

- Launched in 2017 by Cal Poly Pomona and Trusted CI
- Annual cybersecurity training and professional development event for CyberCorps Scholarship for Service (SFS) students nationwide
- Includes Capture-the-Flag Competition, Job Fair, Resume Clinic, and Professional Career Panel from Federal and State agencies
- In 2019, 105 students from 42 universities participated



Annual NSF Cybersecurity Summit

One day of training and workshops.

1.5 days of plenary sessions.

Lessons learned and success from community.

October 11-13, 2021 online.

No registration fee.

<https://trustedci.org/summit/>



Summit Student Programs

Each NSF Cybersecurity Summit has a Student Program matching students from across the country with mentors and connecting them with NSF science projects and cybersecurity challenges.

<https://blog.trustedci.org/search/label/students>



Acknowledgments

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Trusted CI activities are made possible thanks to the contributions of a multi-institutional team:
<https://trustedci.org/who-we-are/>

