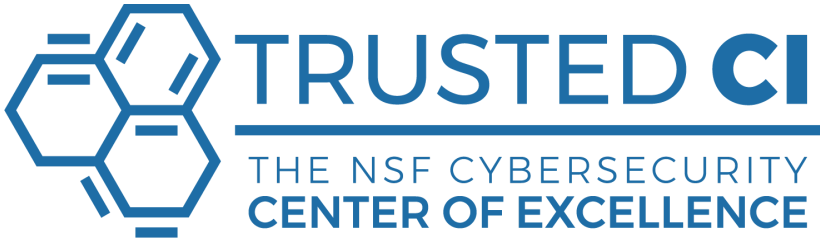

Annual Report for 2020

Trusted CI
The NSF Cybersecurity Center of Excellence

NSF Grant ACI-1547272

January 1, 2020- December 30, 2020

For Public Distribution

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About Trusted CI

Trusted CI is funded by NSF's Office of Advanced Cyberinfrastructure as the NSF Cybersecurity Center of Excellence (CCoE). In this role, it provides the NSF community a coherent understanding of cybersecurity's role in producing trustworthy science and the information and know-how required to achieve and maintain an effective cybersecurity program. Trusted CI achieves this mission through a combination of one-on-one engagements with NSF projects, transition-to-practice guidance, training and best practices disseminated to the community through webinars, a fellows program, and the annual, community-building NSF Cybersecurity Summit for Large Facilities and Cyberinfrastructure.

For information about Trusted CI, please visit the project website: https://trustedci.org

To reference the Trusted CI project, please reference the following paper:

> Andrew Adams, Kay Avila, Jim Basney, Dana Brunson, Robert Cowles, Jeannette Dopheide, Terry Fleury, Elisa Heymann, Florence Hudson, Craig Jackson, Ryan Kiser, Mark Krenz, Jim Marsteller, Barton P. Miller, Sean Piesert, Scott Russell, Susan Sons, Von Welch and John Zage. Trusted CI Experiences in Cybersecurity and Service to Open Science. PEARC'19: Practice and Experience in Advanced Research Computing, 2019. https://doi.org/10.1145/3332186.3340601

About This Report

This report represents project year 5 (PY5) of Trusted CI under NSF grant 1547272, which was aligned with calendar year 2020. The award received a no cost extension, extending the period of performance. Trusted CI continues operating under funding from a new NSF award (1920430). Prior to grant 1547272, Trusted CI was supported under NSF grant 1234408.

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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https://trustedci.org/reports/

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1 Period of Performance

Trusted CI was funded under grant 1547272[1] starting January 1, 2016. The award was granted a no cost extension to enable the spend down of remaining participant funds, caused by disruptions to the program by the COVID-19 pandemic. In parallel to the NCE, Trusted CI began operating under funding from a new cooperative agreement, 1920430[2], on October 1, 2019.

2 Progress Under Award in 2020

Trusted CI activities, accomplishments, and metrics for the first 3 quarters of 2020 are included in the annual report for 1920430.[3] The remaining funds from 1547272 were spent implementing the transition to the new award.

3 Current Financial Status

3.1 Direct Funds

All direct funds for the prime and sub-awardees have been spent and we have fully transitioned financially to the current award. There are no funds remaining to carry over into 2021.

3.2 Participant Support

We have $10,746.29 remaining in participant support from this award. The COVID-19 pandemic prevented us from spending the funds as anticipated for student travel to the Summit as the event was held online. We will carry these funds over into 2021 and will look to identify ways to use them to support activities in the first half of the year, likely for the 2021 Fellows program. In the event we are unable to spend the funds prior to the end of the current NCE in June, we will consult with NSF regarding whether we should rebudget the funds to other activities or submit another NCE to use them in 2021-22.

[1] https://www.nsf.gov/awardsearch/showAward?AWD_ID=1547272
[2] https://www.nsf.gov/awardsearch/showAward?AWD_ID=1920430
[3] https://scholarworks.iu.edu/dspace/handle/2022/25800

4 List of All Trusted CI Engagements

Table 1. All Trusted CI Engagements (in progress and completed) under current award

Engaged Project	NSF Award # or Category	Engagement Subject
Array of Things	1532133	Assisting in crafting a privacy policy and reviewed cybersecurity program
American Museum of Natural History	1547272	Review policies, procedures, and configuration details for securing new Science DMZ.
Cal Poly Pomona SFS	1504526	Assist the Cal Poly Pomona Scholarship for Service Program in providing SFS students experience and training in securing cyberinfrastructure. Provide mentoring to CPP on developing campus cyberinfrastructure, including developing cybersecurity plans.
Cloud Security Best Practices: Agave Platform, Cornell University Center for Advanced Computing, CyVerse, Jetstream (1H2018)	1450437, 1541215, 0735191, 1265383 and, 1445604	Develop cybersecurity best practices for cloud operators.
DataOne	ACI #1430508	Cyber checkup
Design Safe	NHERI: CI-1520817	Cybersecurity review of Design Safe's CI.
DKIST Data Center	AST-0946422	Assisting in the development of an information security program and providing training for staff.
Environmental Data Initiative	NSF DBI Award #1565103 and NSF DEB award #1629233	Reviewed current authentication and authorization mechanisms, identify features and requirements for a future version of the EDI Data Portal and associated backend API, and document currently available authentication and authorization solutions.
Gemini Observatory	Large Facility	Reviewing and updating core policy processes and documentation, as well as a close unified look at ICS/SCADA, technical, and physical controls at Gemini North
Gen App (1H2018)	1740097	Assisting in developing information security program. In collaboration with SGCI.

Table 1 (continued). All Trusted CI Engagements (in progress and completed) under current award

Engaged Project	NSF Award # or Category	Engagement Subject
Globus Auth	1835890, 1541450, 1445604	In-depth vulnerability assessment (code review) of Globus Auth.
HUBzero (2016)	Used by multiple NSF projects.	Assisting in writing a Master Information Security Policy and Procedures document to lay out the project's overall strategy, roles, and responsibilities
LIGO (2016)	Large Facility	Assisted in search for CISO.
NRAO (1H2018)	1647378	Evaluation of existing information security program.
Multi-Institutional Open Storage Research Infrastructure (MI_OSiRIS)	1541335	Federated identity and access management.
Open OnDemand	1534949 and 1835725	We are applying our First Principles Vulnerability Assessment (FPVA) methodology to perform an in-depth vulnerability assessment of Open OnDemand
Open Science Grid/HTCondor-CE	1148698	Cybersecurity review of HTCondor-CE
Polar Geospatial Center	1614673, 1559691	Development of a cybersecurity program
REED+	1840043	Protecting CUI
SAGE2	ACI Award 1441963	Identity Management consultation
SciGaP	1339774	Assisted with the design of security and identity management functionality of services that support science gateways
Scripps Institute of Oceanography (SIO)	1327683, 1212770, 1556466	Evaluated cybersecurity program based on the PACT
Singularity	1234408, 1547272	In-depth vulnerability assessment (code review) of Singularity.

Table 1 (continued). All Trusted CI Engagements (in progress and completed) under current award

Engaged Project	NSF Award # or Category	Engagement Subject
SLATE	1724821	Supporting development of cybersecurity program.
TransPAC	1450904	Supporting development of cybersecurity program.
UNAVCO		
United States Antarctic Program	Operated by National Science Foundation's Office of Polar Programs	Reviewed processes and policies relevant to polar science information security.
United State Academic Research Fleet (ARF)	1823600, 1824571, 1827383, 1827415, 1827444, 1822574, 1822670, 1824508, 1829214, 1830845, 1823566, 1822532, 1823567, 1823042, 1822954, 1827437, 1822905, 1827654, 1834650	Evaluated existing cybersecurity practices in use across fleet and made recommendations for improvement and to help comply with the IMO 2021 requirements.
University of New Hampshire Research Computing Center	1541430	Assistance in developing an information security program. Quick evaluation of information security program with recommendations for improvement. Training for staff.

Table 2. CTSC (Trusted CI) Engagements under prior award (1234408)

Engaged Project	NSF Award # or Category	Engagement Subject
perfSONAR	Extensively used by R&E community and numerous CC-NIE awardees	Reviewed vulnerability management practices and performed code review of bandwidth controller (BWCTL)
AARC	EU Project	Collaborated to gather input from US cyberinfrastructure projects on AARClead activities, disseminate training and other AARC project outputs to US cyberinfrastructure projects, and facilitate EUUS pilot project activities.
HUBzero (2014-15)	Used by multiple NSF projects.	Review of Web Server Security Model and Disaster Recovery Plan documents.
OOI	Large Facility	Assisted in developing cybersecurity program.
LSST	Large Facility	Assisted in developing cybersecurity program.
NEON	Large Facility	Performed cybersecurity risk assessment on the NEON network of sensors and data servers.
CC-NIE (U. Cincinnati & U. Pittsburgh)	1440646 and 1541410	Facilitated peer-to-peer review of cybersecurity programs.
CC-NIE (U. Oklahoma)	1341028	Cybersecurity program review and guidance. Determined engagement was too early and suspended.
NTP	Core Internet infrastructure	Assisted in migration of source code to open source repository, modernization of build and test infrastructure, creating documentation suitable for onboarding new developers, and pruning old code.
DKIST	Large Facility	Assisted in development of a cybersecurity program. Cybersecurity Program Guide was key output.
Globus	Used by many NSF projects.	Conducted cybersecurity review of the architecture and design of the new sharing functionality.

Table 2 (continued). CTSC Engagements under prior award (1234408)

CC-NIE (Penn State and U. Utah)	1245980 and 1341034	Facilitated peer-to-peer review of cybersecurity programs.
LTER Network Office	0832652	Assisted in developing a risk-based cybersecurity plan.
LIGO (2013)	Large Facility	Assisted in supporting international identity federation.
DataONE	1430508	Design-level review of the DataONE IdM system implementation.
Pegasus	Multiple	Reviewed practice of securely supporting data staging.
IceCube	Large Facility	Assisted in developing a cybersecurity plan.
CyberGIS	1047916	Performed risk assessment of the CyberGIS Gateway system architecture.