

CyberTraining and SC�PE Program Webinar

Office of Advanced Cyberinfrastructure (OAC)

Nov 7, 2023

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Solicitation deadline: 18 Jan 2024



CyberTraining: www.nsf.gov/pubs/2023/nsf23520/nsf23520.htm

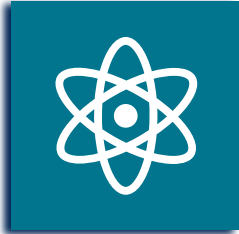
SC�PE: <https://www.nsf.gov/pubs/2023/nsf23521/nsf23521.htm>

Webinar Goals

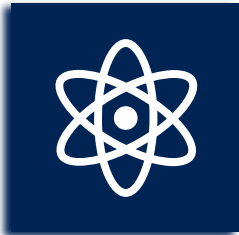
- Orient potential proposers
 - Provide the motivation for different OAC programs
- Summarize the CyberTraining and SC�PE programs and their review criteria
- Improve the alignment of proposals with the program goals
- Answer questions



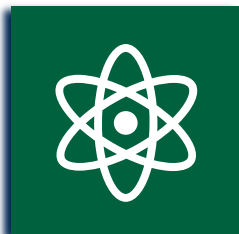
Webinar Outline



CyberTraining – Training-based Workforce Development for Advanced Cyberinfrastructure



SCIFE – Strengthening the Cyberinfrastructure Professionals Ecosystem



Questions and answers



Cyberinfrastructure (CI) includes **software, data**, services, etc., provided for a research community



CyberTraining

Motivation

- **Advanced CI** has a transformative impact on a variety of scientific **research** domains
- The research workforce will benefit from innovative discipline-appropriate training and curriculum materials
- There is a need to foster **broad adoption** of CI resources, tools, and methods by diverse research communities



Relevant CI-Related Programs

What will your project focus on?	Develop software or data repository	Perform research that will enable future CI	Deploy CIPs ; foster CIP careers	Provide training to any of the three target communities
What need will you fill?	Need for community CI for research or education	Need for knowledge required for CI	Need for supporting research by diverse groups & CIP careers	Need for workforce that can leverage CI for research
What will your project deliver?	Community-sustained CI	Techniques that will enable CI and a CI prototype	Support for research that uses CI; CIP career paths	Scalable and sustainable training program
	CSSI	OAC CORE	SCIFE	CyberTraining

Programs have specific purposes; however, are not necessarily mutually exclusive



CyberTraining Solicitation Goals

- **Long-term vision:** Computational and Data-driven Science for All scientists and engineers
 - Prepare, nurture, and grow the **scientific research workforce**, including students, instructors, and research CI professionals
- Ensure broad adoption of **CI** tools, methods, and resources
- Integrate CI and CDS&E skills into undergraduate and graduate curricula
 - Address emerging needs and unaddressed bottlenecks through innovative and scalable training
 - Catalyze research with training and educational activities
- **Broaden CI access** and adoption by varied institutions, scientific communities, and underrepresented groups.



NSF-Wide Participation

Directorate	Divisions
CISE	OAC (lead), CCF, CNS, IIS
ENG	CMMI, CBET
GEO	All
EDU	DGE
MPS	AST, CHE, DMR, PHY
SBE	SES

OAC contacts: Ashok Srinivasan, Juan (Jenny) Li, Sharmistha Bagchi-Sen, and Sheikh Ghafoor



Project Classes

- Pilot: Exploratory projects, \$300K over 2 years
- Small implementation: \$500K over 4 years
- Medium implementation: \$1M over 4 years

1. Identify challenges in research workforce development
2. (a) Broaden use of CI resources and/or (b) CI skills training – expected to coordinate with ACCESS ([access-ci.org](https://support.access-ci.org))
3. Scalability and sustainability of the training program
4. Recruitment and evaluation plans
5. Collective impact strategy
6. Fostering a suitable community

ACCESS coordination

- Share training material in ACCESS Knowledge Base (<https://support.access-ci.org/knowledge-base>)
- Register expertise in <https://support.access-ci.org/cssn>

Pilot

Small

Medium



Programmatic Areas of Interest

- **Common theme:** research and education-related projects in the science/engineering domain
- More effective use of CI to catalyze research advances and address fundamental knowledge gaps
- *See the solicitation for descriptions of each directorate/division's priorities and interests*



Computing Resource Opportunities

- HPC resources through ACCESS
 - <https://allocations.access-ci.org>
 - Apply independently for an allocation through a 1 – 10 page allocation proposal
- High-throughput computing resources
 - <https://path-cc.io>
 - May include a description in a supplementary document
- Cloud computing resources
 - <https://new.nsf.gov/funding/opportunities/enabling-access-cloud-computing-resources-cise>
 - May include a description and budget in a supplementary document



Computing Resource Opportunities

Four allocation opportunities to suit a variety of needs

- *Explore ACCESS (small)*
 - best-suited for endeavors with **light resource requirements**
 - graduate students can lead allocation for dissertation-related work with a letter of collaboration from their advisor
- *Discover ACCESS (medium)*
 - minimal effort to **perform mid-scale research** activities
 - small-scale research, growing Science Gateways
- *Accelerate ACCESS (large-ish)*
 - more **substantial resource requirements**
 - multi-grant research, Science Gateways, etc.
- *Maximize ACCESS (XL)*
 - for **large-scale research projects** with extreme resource needs
 - will largely resemble XRAC process

Proposal lengths: abstract, 1-page, 3-pages, and 10-pages, respectively.



SCIPLE

Motivations

- **Strengthening** \equiv democratizing, connecting, recognizing
- **CI** \equiv Systems, Software, Data, Services, Networking
- **Developers, Users, Admins, Mentors, Computational Scientists**
- **Ecosystem of interdependencies & interfaces**
- **Leveraging existing program investments**
- **Expanding institutional recognition of careers**



SCIPE Solicitation Goals

- **Long-term vision:** Research CI ecosystem with a scalable, agile, diverse, and sustainable network of CI Professionals that can ensure broad adoption of advanced CI resources and expert services, including platforms, tools, methods, software, data, and networks for research communities, to catalyze major research advances, and to enhance researchers' abilities to lead the development of new CI
- **Creation** of science-driven, researcher-facing CIP communities regionally or by disciplines which will collaborate with ACCESS Computational Science Support Network
- **Democratization** of involvement in the research CI profession
- **Institutional recognition** of career pathways that embed CI professionals more deeply into the research enterprise



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ENG	CMMI, CBET
GEO	AGS, EAR, OCE, OPP
EDU	DGE
MPS	AST, CHE, DMR, PHY
SBE	SES
TIP	RIE, PFI

OAC contacts: Tom Gulbransen



SCIPE Program Context

FUNDING

- Approximately \$15M for up to 4 awards
- Support for research CI professionals' services
- Up to 4 FTEs per year for up to 5 years
- NSF directorates co-funding based on relevance: CISE, ENG, GEO, MPS, EHR, SBE, TIP
- Longer term plans requested for sustaining CI professionals

WHO ARE CIP?

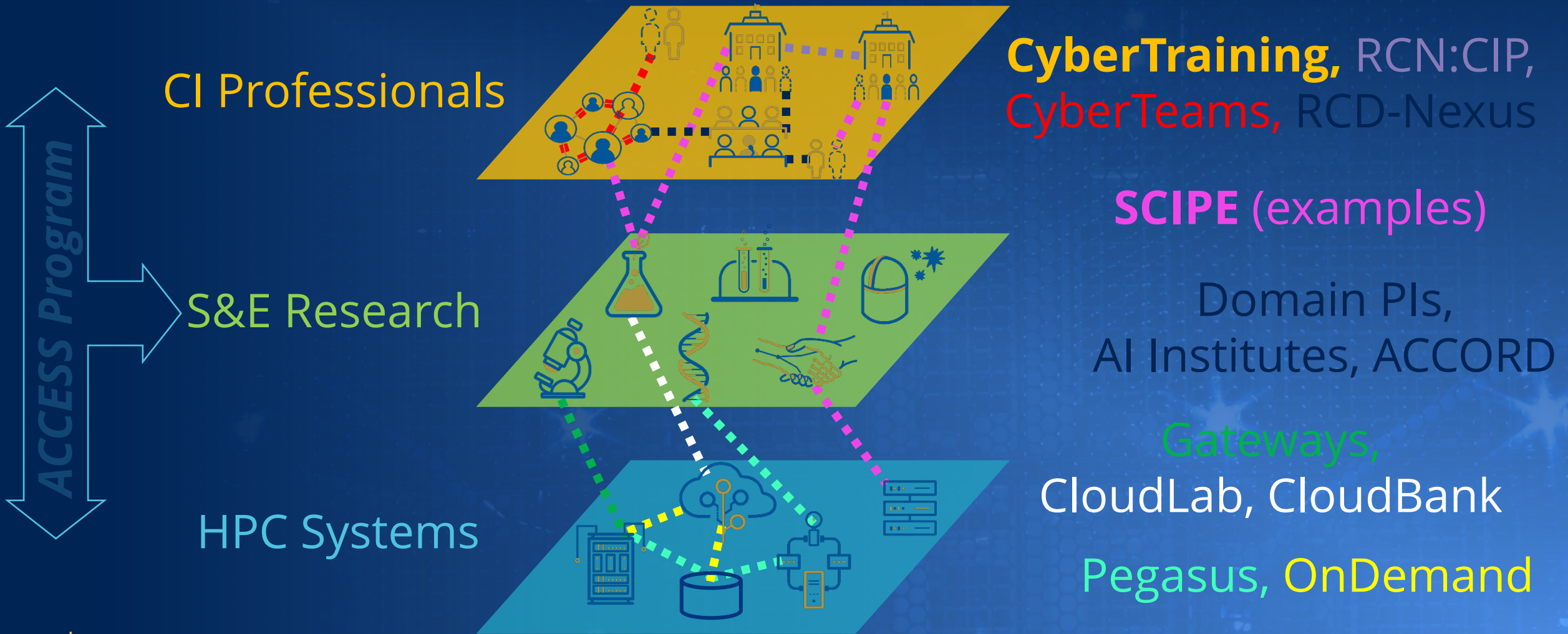
- Develop, manage, and support effective use of research CI
- Includes scientists, IT professionals, and engineers who research and develop new CI capabilities, approaches, and methods
- Various facings: CI system administrators, CI research staff, research software engineers, data curators, CI facilitators, Computational scientists

IDEAL FOR PIs WHO ...

- Want to accelerate the adoption of research CI
- Are ready to connect & coordinate with S&E research communities
- Seek to strengthen & broaden the diversity of the CIP workforce
- Whose institutions will develop sustainable long-term career paths for CIPs



Elements of the CI Ecosystem



Initial SC�PE Collaboration with ACCESS

<https://support.access-ci.org/scipe>

- CSSN of mentors & CIP to be “Matched” with researchers
- Knowledgebase content additions
- Testing
- Affinity Group participation
- Outreach with Campus Champions
- Additional ideas welcomed



Questions?

**Please post your questions in the
Question/Answer window**

- You may also email us later



Common Questions

- Q1. Is consultation with a Cognizant Program Officer required?
- No, but it is strongly encouraged that you consult with us (with OAC leading this solicitation) and any other Cognizant Program Officer at least a month in advance of the solicitation deadline, and note this in a **Single Copy Document**.



Common Questions

Q2. Can my project primarily train/re-train for jobs in the IT industry?

- No, all proposals, including cybersecurity proposals, must be relevant to
 - **Scientific Research** Workforce Development, and
 - **Advanced Cyberinfrastructure**
- Cybersecurity proposals must be relevant to the scientific research workflow
- This relevance will vary from undergrads, to grads, to CI professionals, and across disciplines.



Common Questions

Q3. Must you already have a Small-size Implementation award before seeking a Medium-size Implementation award?

- No



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