Funding Opportunities at the Office of Advanced Cyberinfrastructure (OAC)

Computer and Information Science and Engineering Directorate (CISE)
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Disclaimer

- NSF website and publications are the only official source of information regarding NSF programs, solicitations, and other information.

- These slides and presentation is for non-official personal interpretation, illustration and demonstration by the presenter

Outline

- Overview of NSF/OAC

- OAC programs

- Q&A

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Challenges:
Significant ecosystem disruption across many fronts

Data	Growth of data from sensors, detectors and instruments creates new user requirements
Post-Moore	Specialized hardware and accelerators
AI	Rapid advance and integration of AI into scientific applications and workflows
Business Models	New business models and entrants for computing and data infrastructure
Scaling out	Cross-agency initiatives, global competition, and need to broaden access to resources
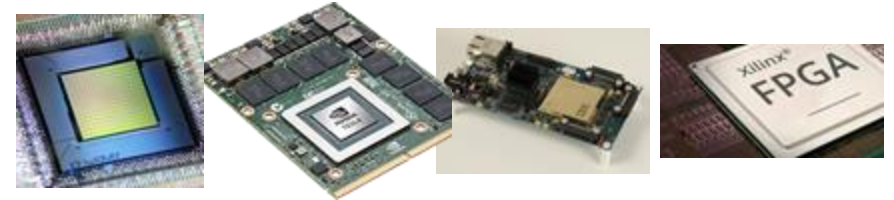
Opportunities and Strategic Priorities

Discovery through Integration
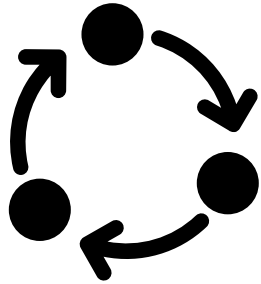
Enabling discovery through integrations of data, software and the infrastructure ecosystem

Building Workforce, Communities and Partnerships
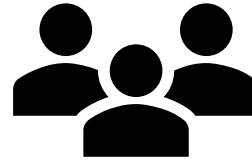
Growing and developing communities, workforce and partnerships

Advancing Infrastructure
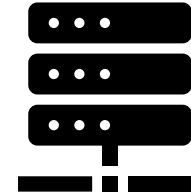
Investments in new technology adoption and scaling advanced infrastructure

Challenges | **Data** | **AI** | **Scaling out** | **Business Models** | **Post-Moore**

OAC investment areas

Advanced Computing	Production and operational level advanced cyberinfrastructure capabilities and services
Networking & Cybersecurity	Advanced networking capabilities that preserve security and privacy
Learning & Workforce Development	Foster a national research workforce for creating, utilizing, and supporting advanced CI
Software & Data CI	Develop a cohesive, federated, national-scale approach to research data infrastructure
Strategic Investments	Special opportunities, cross-cutting and national initiatives, CI for open science and public access

Types of Funding Opportunities

| Program Solicitations	Dear Colleague Letters	Supplemental Funding	EAGER
• Requests for proposals • Contains program goals, instructions for proposal prep, award information • Must also follos rules in the PAPPG (more on this later)	• Notifications of special opportunities • Elevate a specific topic area for existing solicitations • Competitions for supplements to existing NSF awards and/or conferences	• For existing awards • Up to 20% of original award amount to complete project activities • Must contact a PO before submitting	• High-risk, high-reward research proposal • Not aligned with existing opportunity • Can be solicited via DCLs, invited by a PO, or unsolicited • Must contact a PO before submitting

NSF Proposal and Award Lifecycle
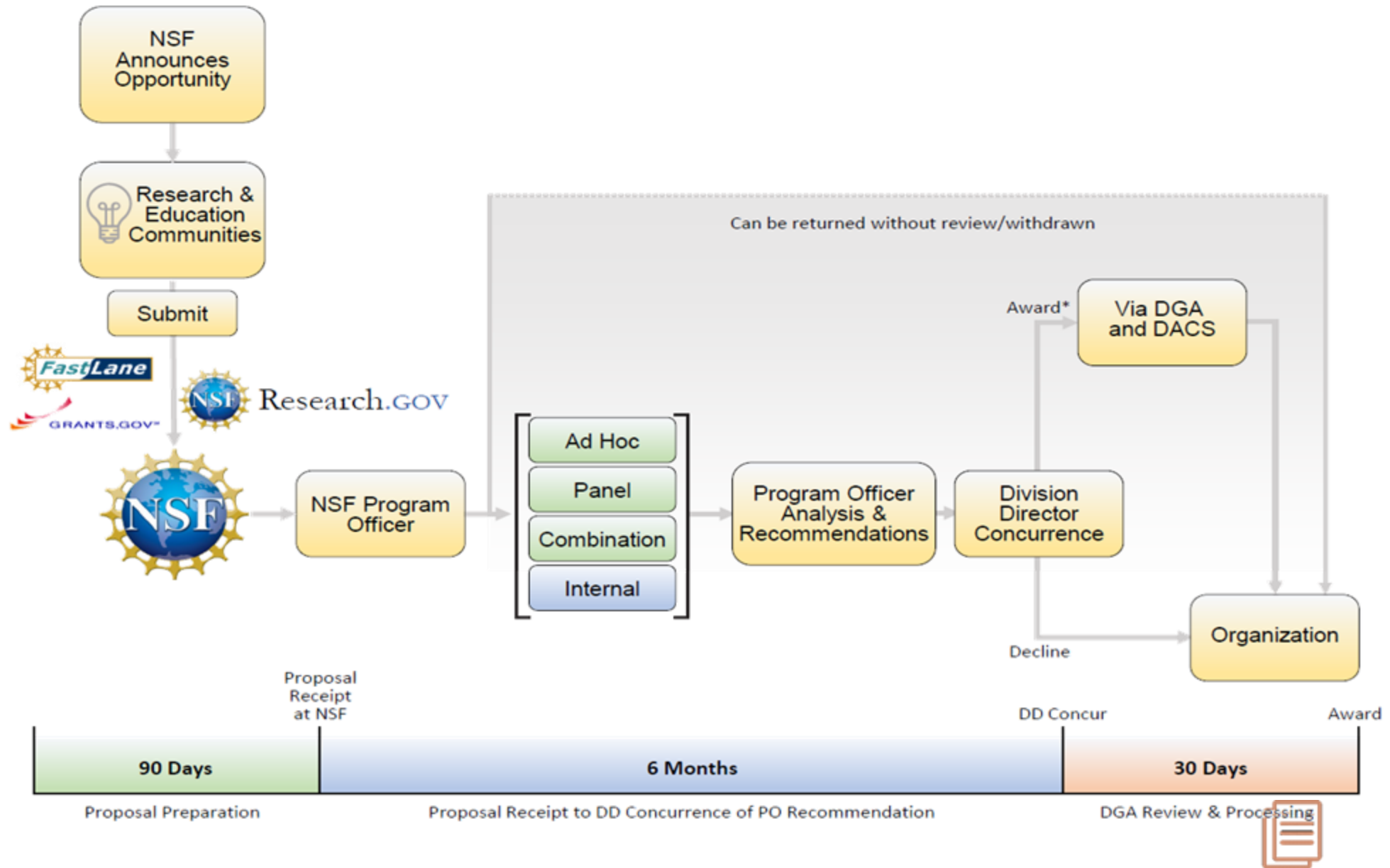
How do I find a program of interest?

1) Search nsf.gov/awardsearch to find an award relevant to your research:

Search award for: artificial intelligence   **Search** ➡

Use double quotes for exact search. For example "water vapor".

2) Identify a project that looks close to your idea and click on it.

PRIMES: ML-Enhanced Coupling and PDDO-Enhanced ML Approaches for Complex Problems
Award Number:2446826; Principal Investigator:Burak Aksoylu; Co-Principal Investigator:; Organization:Texas A&M University-San Antonio;NSF Organization:DMS Star
Date:04/01/2025; Award Amount:$329,432.00; Relevance:;

CAP: AI-Ready Institution Transforming Tomorrow's Research and Education with AI Focused on Health and Security (Jag-AI)
Award Number:2334243; Principal Investigator:Jeong Yang; Co-Principal Investigator:Young Lee, Zechun Cao, Gongbo Liang; Organization:Texas A&M University-San
Organization:IIS Start Date:01/01/2024; Award Amount:$385,475.00; Relevance:;

Collaborative Research: CISE-MSI: DP: SCH: Privacy Preserving Tutoring System for Health Education of Low Literacy Hispanic Populations
Award Number:2219588; Principal Investigator:Zechun Cao; Co-Principal Investigator:; Organization:Texas A&M University-San Antonio;NSF Organization:CNS Start
Date:09/01/2022; Award Amount:$113,439.00; Relevance:;

3) Identify the Program Officer and the program. **Read the solicitation!**

4) Email the PO and ask, "**Is my idea a good fit for your program?**"

Writing Successful Proposal

- Read the solicitation (carefully 3 times and then read again)

- Know about merit review criteria (IM, BI, & additional solicitation specific criteria)

- Talk with PDs about program fit (Never submit proposal without talking to a PD)

- You are writing to reviewers and program directors

  - Make the proposal contributions clear

  - Don't assume that all reviewers will know the jargon or everything about your topic

  - Make sure the most important things – the contributions, the plans – receive the most space

  - You are not there to explain

  - Have the proposal read by someone else

- Serve on panel

- Start early

Cyberinfrastructure for Sustained Scientific Innovation (CSSI)

NSF 22-632 (Dec 1, 2025)

Goals

- Supports the **development and deployment** of robust, reliable and sustainable **data and software cyberinfrastructure**

- Brings **innovative** capabilities towards sustained scientific innovation and discovery

- Provides a **cross-directorate** opportunity to advance common approaches to sustain and innovate research cyberinfrastructures

Project Classes

Panelist Survey

- **Elements:** Small groups that will create and deploy robust capabilities in one or more significant S&E areas. (Awards <= $600K, up to 3 years)

- **Framework Implementations:** Larger, interdisciplinary teams organized around the development and application of common infrastructure aimed at solving common research problems in one or more S&E areas. (Awards between $600K - $5 Million, between 3-5 years)

- **Transition to Sustainability:** Groups who will execute a well-defined sustainability plan for existing CI to impact one or more S&T. (Awards <= $1 Million, up to 2 years)

Before Starting on a CSSI Proposal ...

o Is the basic research leading to CI development done?

o Who is the CI for?

  ❌ o *Your research group only*

  ❌ o *Your home institution only*

  ✔ o A clearly identified research community

o Is there a "demonstrated need" in that community?

o How will you engage the community?

    o Not just as end-users but future contributors who will sustain the CI

o What are the plans to **sustain** the CI beyond the years of funding?

Cyberinfrastructure for Sustained Scientific Innovation (CSSI)

- Supports the development and deployment of robust, reliable and sustainable data and software cyberinfrastructure

- Three CSSI Award Classes:
  - Elements: Small groups that will create & deploy robust capabilities for one or more significant areas of S&E (up to $600k, up to 3 years)
  - Frameworks: Larger, interdisciplinary teams around development and application of common infrastructure aimed at common research problems in on or more areas of S&E. (Awards between $600k - $5M, between 3-5 years)
  - Transition to Sustainability: Groups who will execute well-defined sustainability plan that enables new avenues of support for long-term sustained impact of the CI (up to $1M, up to 2 years)
  - NSF 22-632 Proposal Deadline: December 1, 2025

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.

Project Classes

- **Pilot:** Exploratory projects, $300K over 2 years

- **Small implementation:** $500K over 4 years

- **Medium implementation:** $1M over 4 years

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

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)
3. Scalability and sustainability of the training program
4. Recruitment and evaluation plans
5. Collective impact strategy
6. Fostering a suitable community

NSF 22-520 Proposal Deadline: January 15, 2026

Pilot

Small

Medium

Closing

- Questions?
- Sheikh Ghafoor sghafoor@nsf.gov

National-scale CI resources and services

Access to advanced computing

ACCESS Advancing Innovation
ALLOCATIONS SUPPORT OPERATIONS METRICS
Advanced co...

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING
High Throughput

CloudBank
Commercial cloud access

Leadership Class Computing

SGX3
Science Gateways expertise

NAIRR Pilot National Artificial Intelligence Research Resource Pilot

CI services for NSF major and mid-scale RI

TRUSTED CI THE NSF CYBERSECURITY CENTER OF EXCELLENCE
Cybersecurity framework

ResearchSOC
Security Operations

CICompass
Facility data lifecycle

RRCoP
Regulated Research

Data-focused platforms, systems and services (examples)
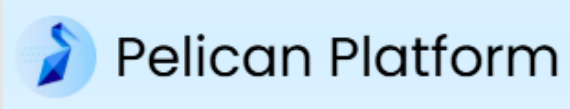
Sage

NATIONAL DATA PLATFORM

Open Science Data Federation OSDF

Pelican Platform

NRP NATIONAL RESEARCH PLATFORM

Pegasus

NSDF

FABRIC
& Fabric Across Borders

ACCESS resources available at no cost to US-based researchers and educators

- Computing systems
  - Varying core counts & memory sizes
  - Cloud resources (persistent services)
- Accelerators
  - GPUs, vector processors, FPGAs
- Data storage systems
  - Archival, object, tiered
- Data repositories
- Software & workflow managers
- High performance networking
- CI Professionals & support tools
- System performance monitoring

OPEN
OnDemand
available on many ACCESS machines

access-ci.org

Current ACCESS Resources
https://allocations.access-ci.org/resources

Name	Site	Description
ACES	Texas A&M	Test bed with GPUs and novel accelerators in a composable environment.
Anvil	Purdue	Supports traditional HPC and modern AI applications.
Bridges-2	PSC	Data-centric HPC, AI, and HPDA (High Performance Data Analytics) with a flexible software environment.
Delta	NCSA	Delivering a highly capable GPU-focused compute environment for GPU and CPU workloads.
DeltaAI	NCSA	Targets the computational needs of Artificial Intelligence/Machine Learning (AI/ML) workloads.
Derecho	NCAR	HPE Cray EX cluster 19.87-petaflops system for work in Earth systems science and related sciences.
Expanse	SDSC	5.16 peak petaflops, Composable Systems and Cloud Bursting.
FASTER	Texas A&M	Provisions CPUs, GPUs, and (Non-Volatile MemoryExpress-based storage in a composable environment.
Granite	NCAR	Tape archive system for long-term archive datasets
Jetstream2	Indiana U	Provides 8 petaFLOPS user-friendly cloud environment designed to allow "always on" interactive computing and data analysis resources on demand.
KyRIC	U Kentucky	Supports specialized disciplines such as Bioinformatics and System Biology, Large Graph and Network Analysis.
Launch	Texas A&M	Dell cluster with AMD EPYC Genoa 9654 processors and NVIDIA A30 GPUs, HDR100 InfiniBand for MPI, and storage.
Neocortex	PSC	Facilitates AI-powered scientific discovery and algorithm development for AI and graph analytics.
Ookami	Stony Brook	Access to the Riken/ Fujitsu A64FX processor.
Open Storage Network		Distributed data sharing and high bandwidth transfer service between research organizations, communities and projects.
OSG Open Science Pool	OSG Consortium	Distributed high-throughput computing (dHTC) and data capacity organized as a single virtual cluster.
Ranch Archive System	TACC	High capacity long-term storage via high performance file system and tape-based backing store.
Stampede3	TACC	Provides many-core processors and accelerated technologies, for simulation, data intensive computations, and beyond.
Voyager	SDSC	Supports AI and deep-learning based S&E research.

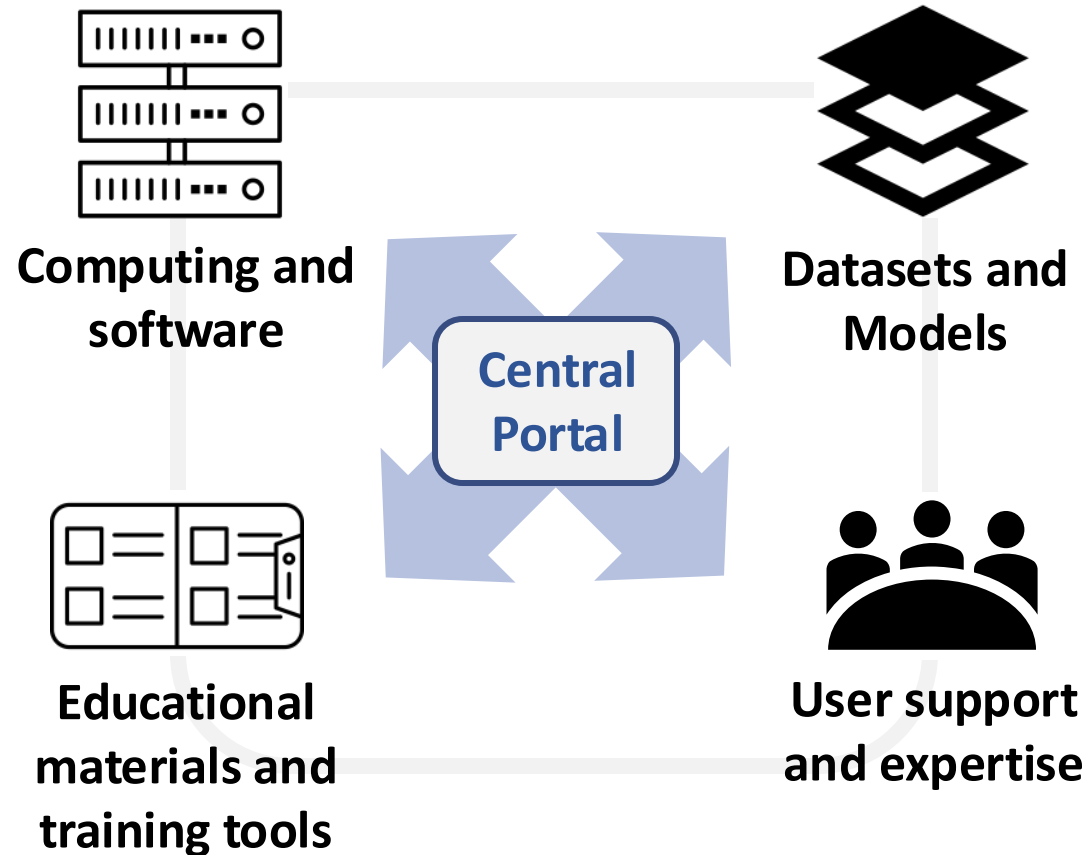| Name	Site	Description
FABRIC	RENCI	Distributed "in network" computing and storage resources at 35 national and international high-bandwidth connected sites enables new protocols, architectures and applications
MATCH Services	(ACCESS)	Connects researchers with professionals to help solve their research problems.
Sage	Northwestern	AI@Edge cyberinfrastructure - Field-deployed nodes enable advanced real-time, in-situ data analysis of various sensor data streams.
SGX3	Science Gateways CoE	Supports science gateways through both complementary and paid services.

>18,000 active users on ACCESS systems
(includes Frontera, Cloudbank and PaTh)

National AI Research Resource (NAIRR) - A vision to drive US AI innovation, discovery, and competitiveness

National goals

- Accelerate AI and AI-powered discovery and innovation.

- Expand the US AI R&D workforce and train the next generation of AI researchers and educators.

- Increase integration and use of world-class public and commercial AI resources.

- Advance public trust in AI.

Envisioned NAIRR Architecture

Computing and software

Central Portal

Datasets and Models

Educational materials and training tools

User support and expertise

NAIRR Task Force Report

[About NAIRR & NAIRR Pilot](#)

NAIRR Pilot
[nairrpilot.org](#)

NAIRR Pilot is now serving **hundreds of researchers and educators** with compute, data, model, and educational.

NAIRR Pilot

CLASSROOM AND EDUCATOR RESOURCES

Request access to educational platforms (such as computational notebooks).

Apply

RESEARCHER RESOURCES

Request access to advanced computing, cloud computing, models, software, platforms, and collaborations.

Apply

DATA, MODELS, AND MORE

Additional government and government-funded resources that do not require an application.

View