

Office of Advanced Cyberinfrastructure Update

CSSI/CyberTraining/SCIPE PI Meeting

Katie Antypas, Senior Advisory for Cyberinfrastructure

US National Science Foundation

September 15, 2026



Stewarding OAC through many changes at NSF

- **New** priorities
 - **New** CISE organization and leadership
 - **New** funding opportunities
 - **New** colleagues
 - **New** location
-
- NSF is committed to maintaining its long-standing, high standard of merit review
 - Investigators are encouraged to continue submitting proposals with their best science ideas

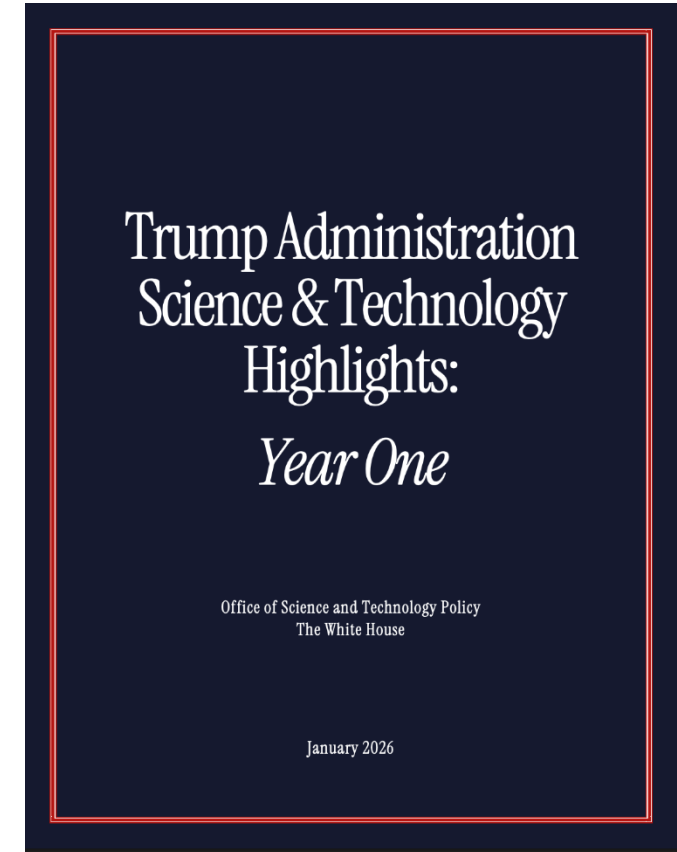


NSF's new Alexandria Location

OAC Initiatives Align with Administration Priorities



- Expanding access to AI-ready scientific datasets
- Partner with leading technology companies to increase access to world-class private sector computing, models, data, and software resources
- Supporting regional innovation ecosystems
- Expanded access to computing, unified portals, data and software environments that facilitate science
- Reduce barriers to entry for students, individual investigators and small teams



NSF CISE's reorganization



Six science sections

Human Centered
Computing and
Education (HCCE)

Computing and AI
Foundations
(CAIF)

Cyber, Physical and
Intelligent Systems
(CPI)

Software and
Systems Foundations
(SSF)

Center-Scale and
Testbeds
(CST)

Office of Advanced
Cyberinfrastructure
(OAC)

Transforming Scientific Discovery through integrated Cyberinfrastructure

National scale
cyberinfrastructure

**IDSS
ACSS**

Regional Cyberinfrastructure

**AI Infra Hubs
CC***

Software and Data

**CSSI
AI Datasets (NSF wide)**

Learning and Workforce
Development

Cybertraining

Cybersecurity

CICI



OAC Program Staff



Ed Walker



Katie Antypas (IPA)



Andrey Kanaev



Marlon Pierce



**Dan Massey
(IPA)**

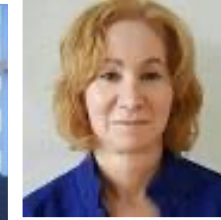
Transitioning
to permanent
Fed position in
TIP in Oct.



**Sharmistha
Bagchi-Sen**



Bob Chadduck



Sharon Geva



Wen-Wen Tung (IPA)



**Alejandro
Suarez**



**Kevin
Thompson**



**Adam
DiBattista**



**Sheikh Ghafoor
(IPA)**



**Plato
Smith (IPA)**

New opportunities



Unlocking Dataset Value for AI-Enabled Scientific Discovery (AI Datasets)

[View guidelines](#)

[NSF 26-512](#)

Key Goals of the Program:

Increase the value that can be derived from existing scientific datasets by leveraging novel methods and artificial intelligence (AI) to unlock new AI-driven insights, enable interdisciplinary research and investigations outside of the original motivation for data collection and analysis.

Deadline Nov. 4th

U.S. National Science Foundation State and Regional Artificial Intelligence Infrastructure Hubs:

[View guidelines](#)

NSF 26-513

Goals: a) Expand access to compute, b) Accelerate AI-Enabled Scientific Discovery c) Develop an AI for Science Workforce

A proposal must address:

NSF Supported

1. Hub consortium stakeholders, vision, and key deliverables.

Hub Responsibility

2. Computing, data, and AI infrastructure.

NSF Supported

3. Partnerships with regional stakeholders.

4. Development of an AI infrastructure workforce.

5. Faculty training and instructional material development to leverage AI infrastructure for scientific discovery.



Deadline Nov. 4th

Updates and Award Highlights



Integrated Data Systems and Services awards (\$83M)

Program supports operations-level national scale data infrastructure advancing open, data intensive, and AI-driven science and engineering research, innovation, and education.

Award	Institution	Description
Fabric for AI-Driven Science (FabAID)	Morgridge Institute for Research	Will scale a national data fabric that connects large scale data repositories & computing resources to enable data caching and services across facilities
National Data Platform (NDP)	UCSD	Will scale a data infrastructure ecosystem that integrates distributed data with computing facilities and AI agents and resources across the U.S.
Interactive Discovery Laboratory (iDLab)	UCLA	Will provide a unified web-based platform that connects researchers to computing and data resources across NSF-supported high-performance computing sites and cloud systems
National Science Data Fabric (NSDF)	U. of T Knoxville	Will transition a pilot into a national service that connects researchers to distributed scientific data through standardized frameworks that make data easier to find, access, and reuse.
Multidisciplinary Env. for Scientific Advancement	U. of Arizona	Will develop an AI-driven data platform that uses metadata automation and intelligent agents to connect and organize scientific data across disciplines
BRIDGE National Center	UC Irvine	Will deliver an open, cloud-based infrastructure for reusable data science workflows, datasets and machine learning models to improve reproducibility and accelerate AI-driven discovery.



Domain repositories
& data commons



Integrated data +
computing environments



APIs & developer
services

EXAMPLES OF IDSS
AWARD OUTCOMES



Federated networks
& portals



Secure and reusable
workflows



Workforce development
& training

LCCF nearing operations phase

DELL Technologies



Phase 1: GPU deployment

2000 PowerEdge dual-socket "Blackwell" nodes
Delivery: Spring 2026, Early Users: June 2026

- Horizon will deliver **10x improvement** in sim capabilities, and **100x improvement** in AI capabilities, over the current system (Frontera).
- Primary partition will be **batch-based** resource
- Secondary partition will support **interactive use** and **persistence services**
- Software stack for this system will support **containers** and "**cloud-like**" programming models as well as more traditional scientific computing
- **400PB** of **flash** disk will provide both scratch storage and a space for publishing data collections.
- **800PB archive** system will provide long-term storage.

Horizon System Deployment Status

- Delivered and deployed:
 - 4,000 Nvidia GPUs (28 racks)
 - 25 VAST storage/management racks
 - 3 Switch racks
- All GPUs are powered up, with in-rack cooling, and rear door cooling active.
- Early users on the system
- All 400PB of flash storage installed



SeisSol		
baseline		
Machine	Frontera	Horizon
# of nodes	4000	100
Node type	Cascade Lake CPU, 56 cores	2 Grace CPUs + 4 Blackwell GPUs
Simulation time (secs)	394.19	394.26



Advanced Computing Systems and Services

Bridges -3 Hardware Architecture



**CPU Compute
Node Pool**

AMD EPYC 9555



**GPU Compute
Node Pool**

NVIDIA GPUs

All-Flash Parallel File System



Hewlett Packard
Enterprise

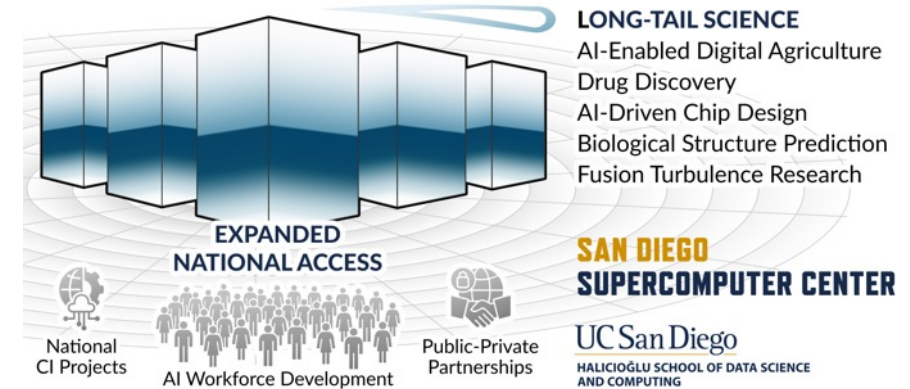


AMD



OAC #2614022

EXPANSE **2** OAC - #2614012



AMA27



**Stony Brook
Supercomputing Center**



iACS INSTITUTE FOR ADVANCED
COMPUTATIONAL SCIENCE



Arm-based large memory processors

AMA27 NSF OAC-2505376



Advanced Computing Systems and Services Testbeds



**Quantum
Interface &
Control Node Pool**



Rigetti Novera QPU



**Bluefors Dilution
Refrigerator**



TangleLab A quantum-
classical testbed OAC
#2537076



**Sagebrush AI Inference
Engine** UT Austin OAC #
2537075



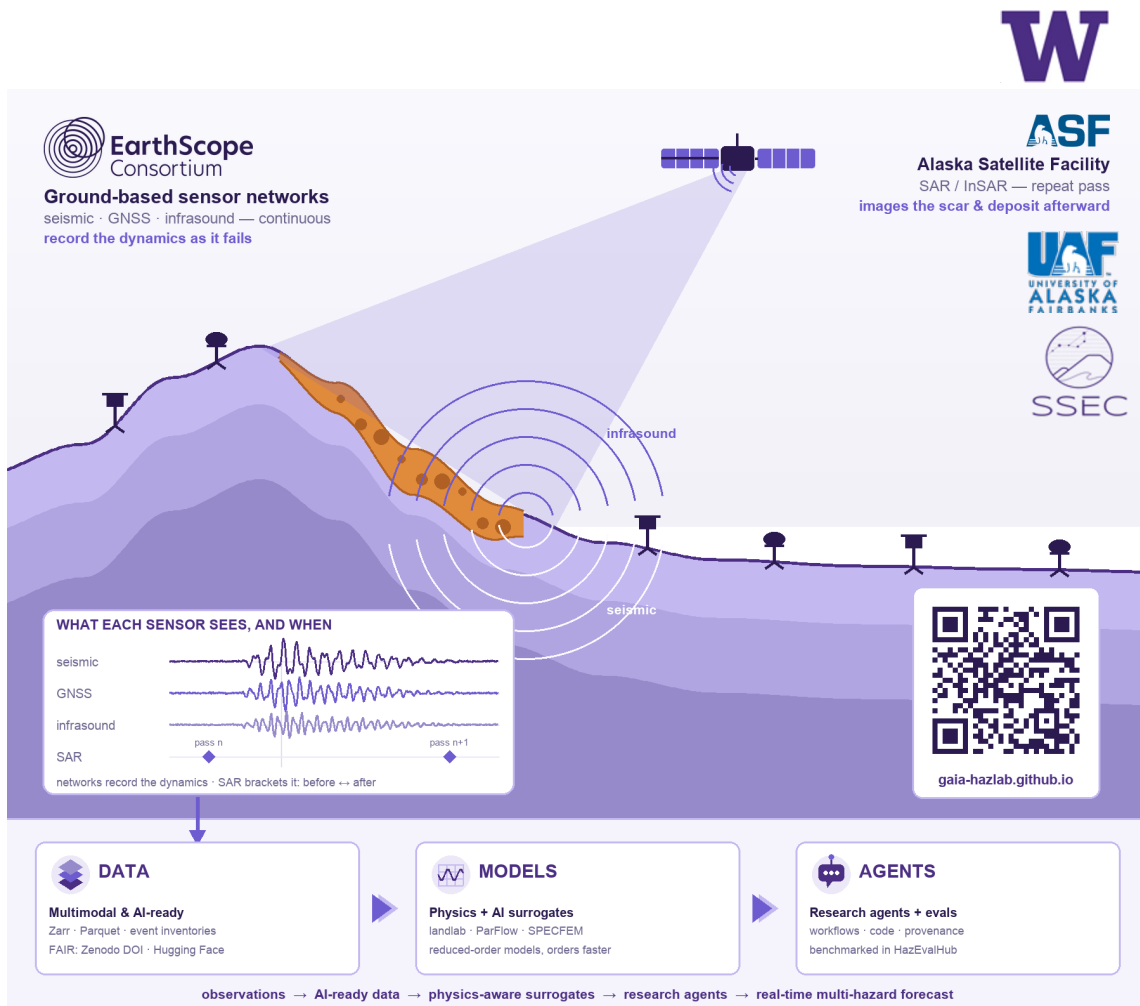
San Diego State
University



**PARAPET: Prototype Architectures for
Privacy Enhancing Technologies** San
Diego State U OAC # 2537035

GAIA — Geophysical AI-driven Integration & Assimilation

PI: Marine Denolle (U of Washington). Co-PIs: Carl Tape, Ronni Grapenthin, Franz Meyer, Michael West (U. of Alaska Fairbanks); David Mencin (EarthScope Consortium); Vikram Iyer, Vani Mandava (U. of Washington)



Intellectual Merit

- Delivers open, agentic, multi-hazard cyberinfrastructure that fuses seismic, hydrologic, and weather data with physics-aware AI surrogate models and AI agents.
- Science thrusts: soil hydromechanical memory from seismic velocity change, and landslide initiation and co-event dynamics from fused observations.

Broader Impacts

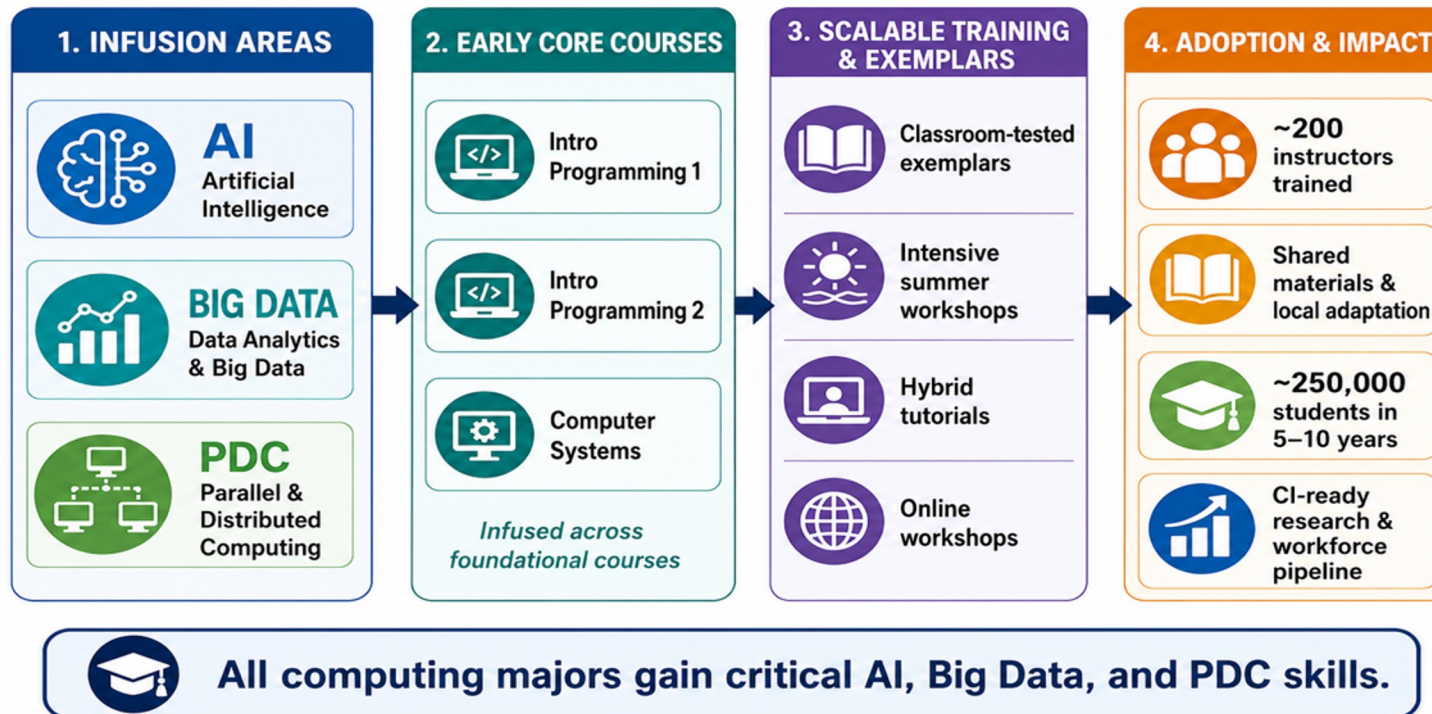
- Broadens access to AI-integrated geoscience through open, containerized, platform-agnostic workflows
- Establishes community standards and shared benchmarks for trustworthy agentic AI in the geosciences.
- Improves multi-hazard forecasting (earthquakes, landslides, floods) with a focus on Alaska and the Pacific Northwest;



ACAI-Train: Scalable Instructor Training for Infusing AI and Advanced CI Concepts Into Early Computing Courses

Lead Institution: Sushil Prasad (UTSA) Collaborating Institutions: Alan Sussman (UMD), Chip Weems & Neena Thota (UMass), R. Vaidyanathan (LSU) April Crockett & Jerry Gannod (TTU), David Bunde & Jaime Spacco (Knox). CyberTraining | Award #2612357

AI-Enhanced Core Computing Education



Intellectual Merit

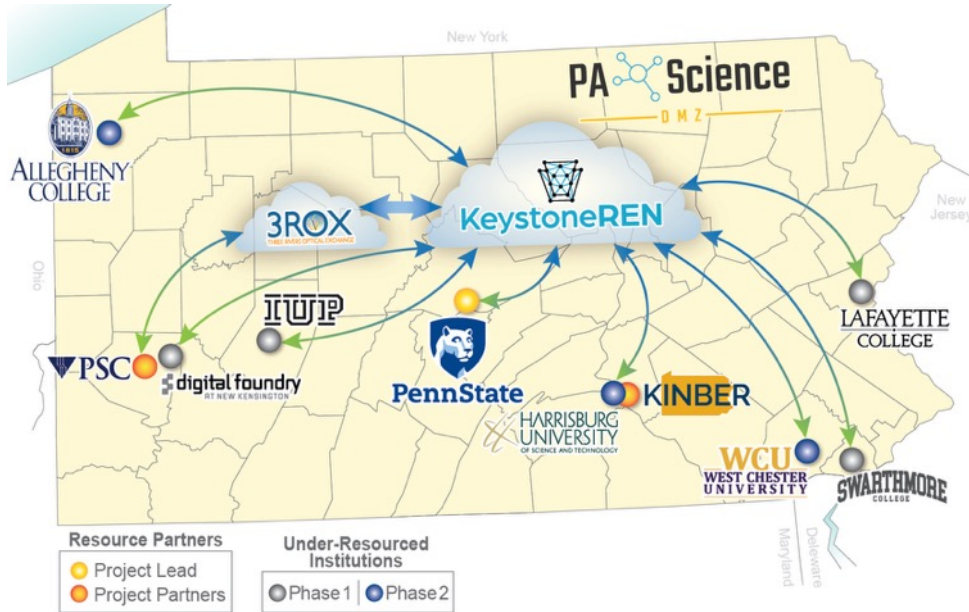
- Classroom-tested AI/Big Data/PDC course exemplars
- AI-enabled pedagogy for early exploration of modern software, data, and systems
- Evaluation across ~60 institutions to generate evidence-based adoption models

Broader Impacts

- Train ~200 current and future instructors through summer workshops, hybrid tutorials
- Shared materials, recorded lectures, and local adaptations for national and international adoption
- Potential reach: ~250,000 students in 5–10 years;



CC* Regional Networking Awards



CC* Network-Region: Expanding the Pennsylvania Science DMZ Supporting Under-Resourced Colleges and Universities (PA-Science-DMZ) - NSF Award #[2503025](#)



Enabling Data-Driven Research and Education in Florida Universities through Advanced Regional Networking Award# 2503608



Cybersecurity Innovation: AgenticSCI: Cyber Threat Triage and Investigation for Scientific Institutions via Adaptive Deployable Provenance Analysis and Agentic AI-Based Threat Intelligence

PI: Xusheng Xiao (Arizona State University) Co-PI: Adil Ahmad (Arizona State University)

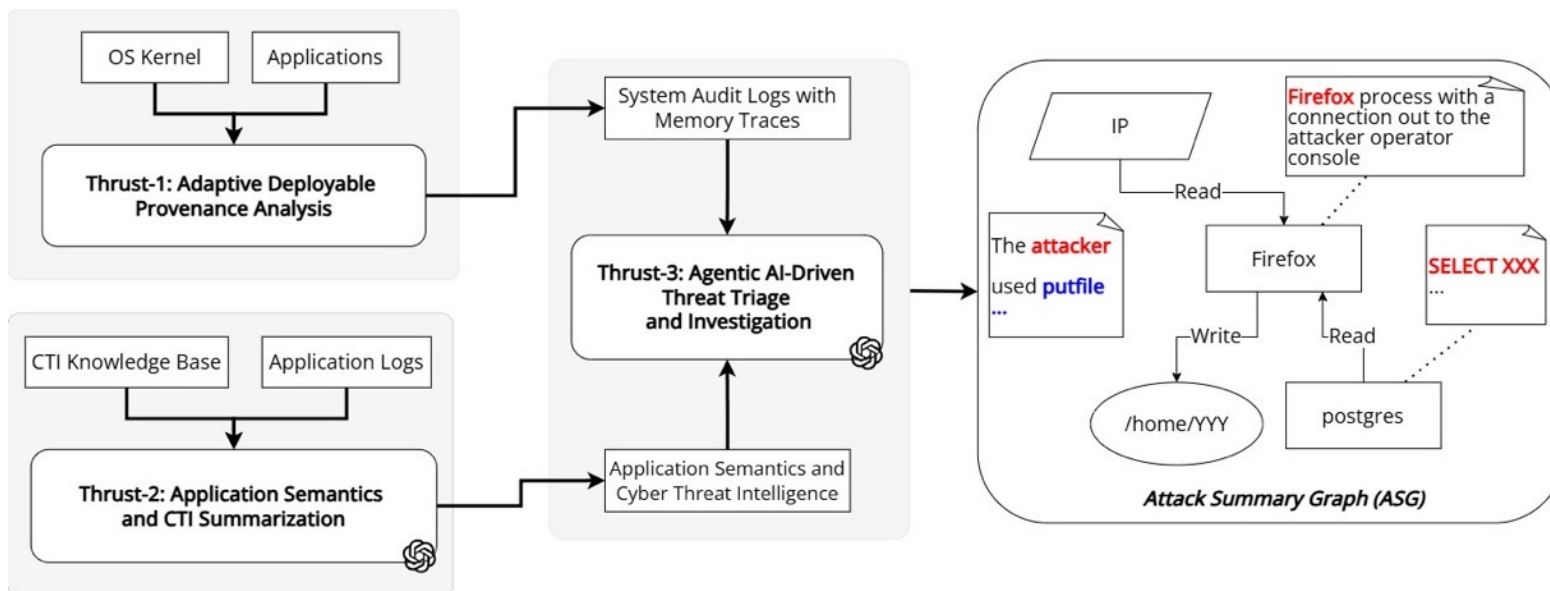


Illustration of Proposed AgenticSCI Framework

Potential Impact: AI-assisted cyber defense framework that advances explainable and practical cybersecurity, while improving threat response and reducing costs

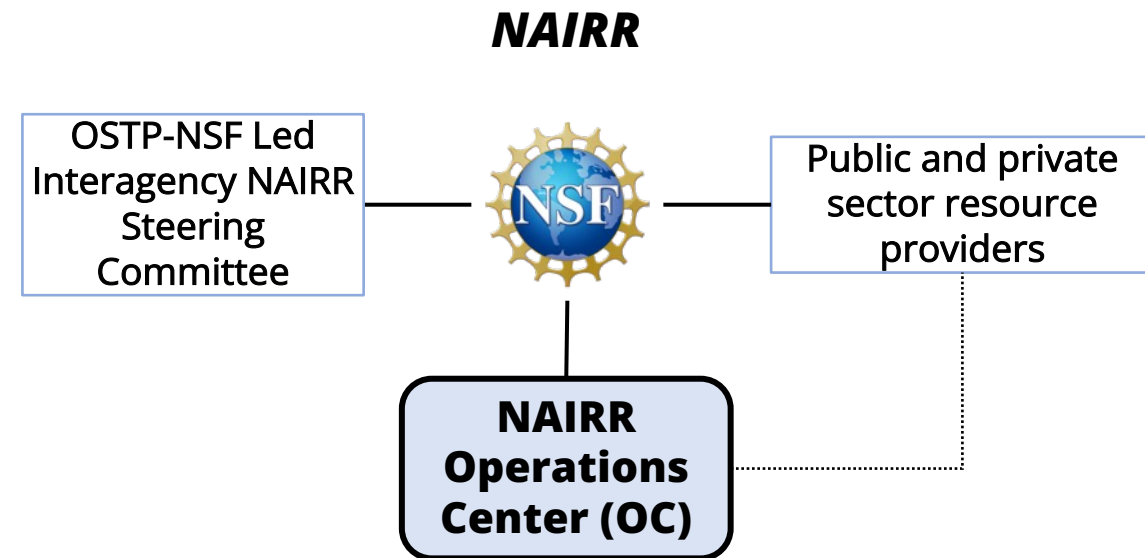
Cybersecurity Innovation

- Adaptive provenance collection framework that combines lightweight anomaly detection with selective memory monitoring at OS/applications
- Knowledge extraction techniques that derive application semantics from system logs and structured knowledge from threat intelligence reports
- Collaborative AI agentic workflows that integrate system audit data, application context, and CTI for cyber threat triage and investigation

NAIRR Operations Center Awarded



- UC San Diego with subaward to UT Austin
- 5-year \$35M award
- Builds a unified and coordinated approach to operations
- Accountable third party will work closely with NSF
- OC integrates new data capabilities, interactive services and scales to support up to 1M students



Programmable Cloud Laboratories

TIP program
aligned with OAC

NSF announces \$400M investment in new national network of AI-programmable cloud laboratories in alignment with the U.S. government's Genesis Mission

July 22, 2026



Awardees will test, scale and demonstrate new methods and tools that advance automated science and engineering for discovery and translation



Wrap-up

- **OAC plays a critical role both within NSF and for the research community**
- **OAC will work with NSF to support new grand challenges and administration priorities to drive innovation and discovery through an integrated cyberinfrastructure**

