



The NAIRR at 2 Years: What is new and Looking forward

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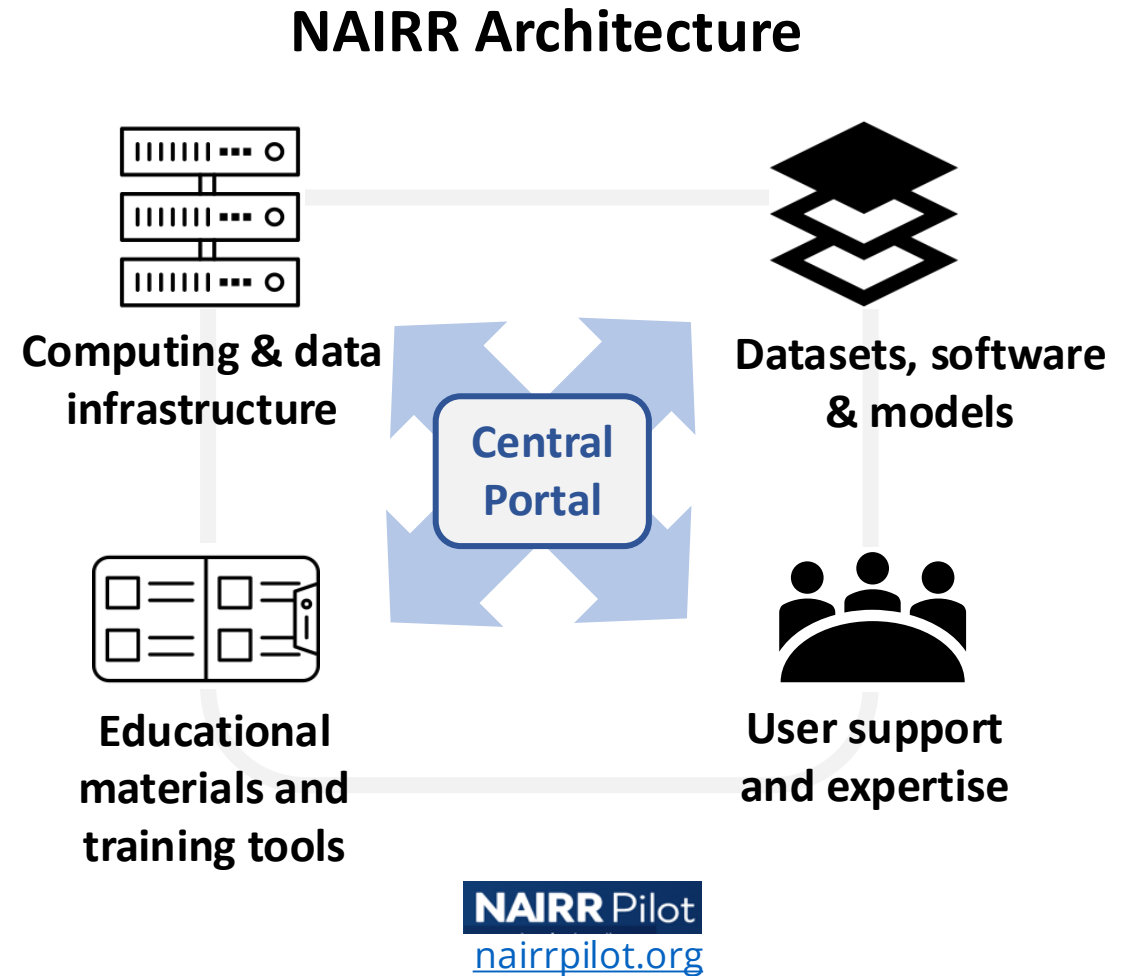
US National Science Foundation

March 10, 2026

National AI Research Resource (NAIRR) – An infrastructure to drive US AI innovation, discovery, and national competitiveness

Goals:

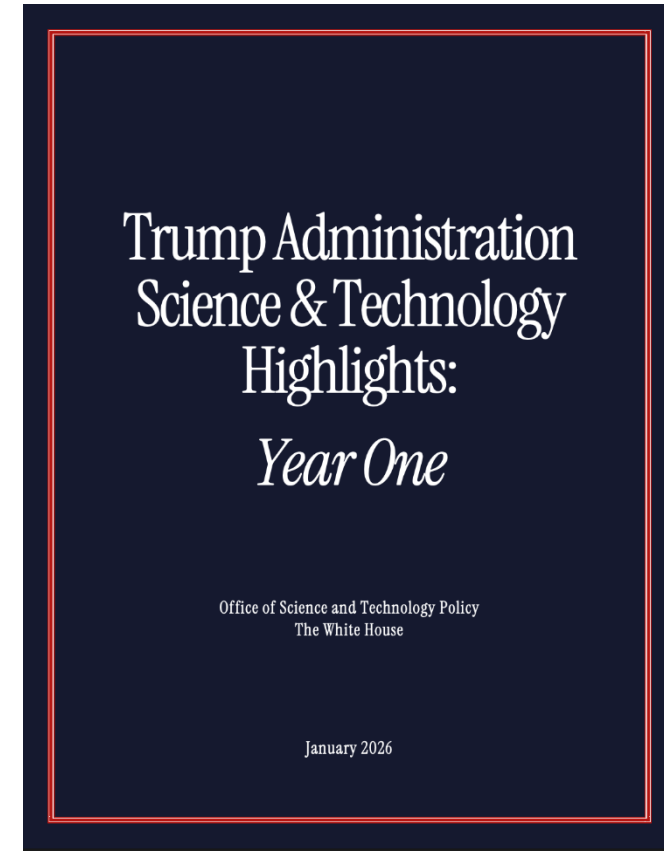
1. Accelerate AI and AI-powered discovery and innovation
2. Expand the AI workforce and train the next generation
3. Increase capacity, integration, and use of world-class public and private-sector AI resources
4. Advance AI interpretability, security, and trust.



NAIRR Priorities for Administration



- Build foundations for a lean and sustainable NAIRR operations capability.
- Expanding ACCESS to AI-ready datasets
- Partner with leading technology companies to increase the research community's access to world-class private sector ...resources



Pilot @ 2 years: Building NAIRR



**Establish strong gov-
industry partnership**

*In-kind contributions of
most advanced resources*

Results

14 agencies
>25 industry and non-profit
partners



U.S. National
Science Foundation



TWO YEARS IN NATIONAL AI RESEARCH RESOURCE **NAIRR**

*A National Public-Private Infrastructure
Advancing AI Innovation & Leadership*

Led by the U.S. National Science Foundation

nsf.gov/focus-areas/ai/nairr

for a scalable



**Lay foundations for
scalable NAIRR operations**

*Assess gaps, build out
operations and data
infrastructure*


**NAIRR Operations Center and
Integrated Data Systems and
Services solicitations released**

NAIRR has brought together 14 agencies and more than 25 industry and non-profit partners who are contributing state-of-the-art resources


DARPA
DOW
DOE
DoEd
FDA
NASA
NIH
NIST
NOAA
NSF
USDA
USGS
USPTO
VA

- AI2: Allen Institute for AI
- AMD
- Amazon Web Services
- Cerebras
- Databricks
- Datavant
- EleutherAI
- Google
- Groq
- Hewlett Packard Enterprise
- Hugging Face
- IBM
- Intel
- Lexset AI
- Meta
- Microsoft
- MLCommons
- NVIDIA
- Omidyar Networks
- OpenAI
- OpenMined
- Palantir
- Regenstrief Institute
- SambaNova Systems
- Vocareum
- Voltage Park
- Weights & Biases

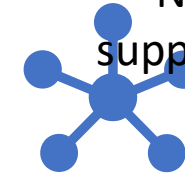
Resources Types A Strong Public-Private Partnership



	# of projects
Agency Supported	503
Industry	278



** Note that a project can be supported by more than 1 resource.
Models, software, platforms



Educational/training opportunities



Collaborations

Science Highlights



Foundation Model for Heliophysics

Roy, S. University of Alabama Huntsville. NAIRR240178, NASA 80MSFC22M0004

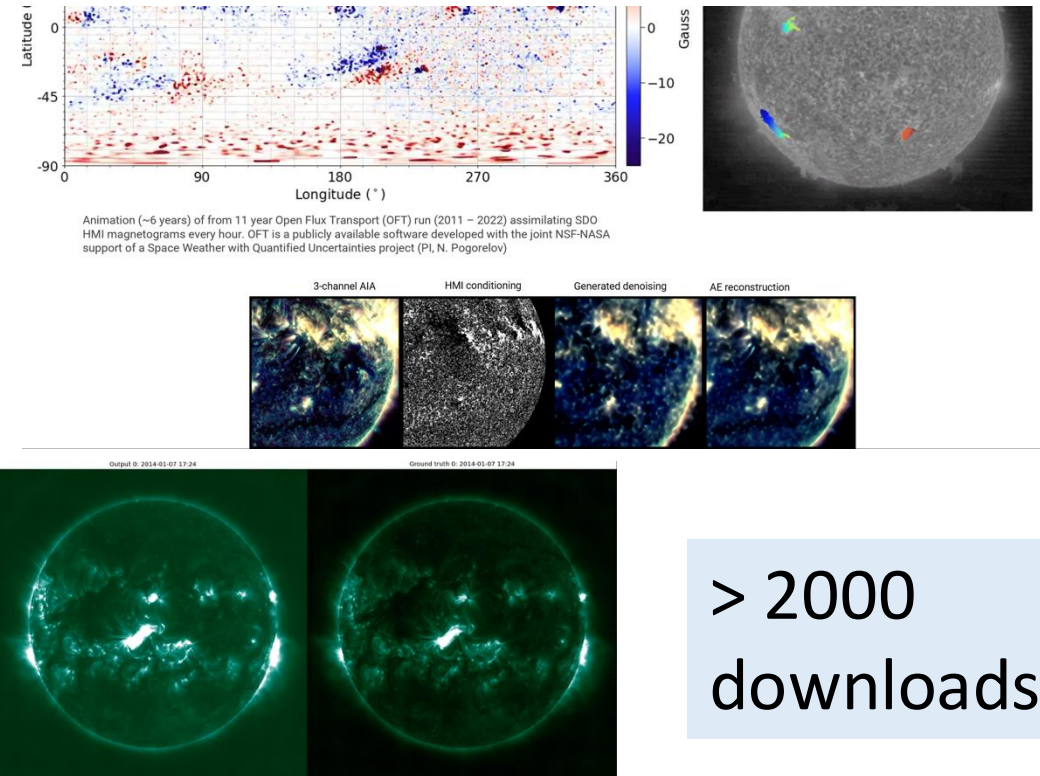
Research Challenge

- Improve the accuracy and reliability of space weather predictions, providing earlier warnings and better mitigation strategies.

Progress Results

- Enhance space weather forecasting but also push the boundaries of what is currently possible in predicting and studying solar activities and their effects on space weather.

NAIRR Pilot Resource: NVIDIA DGX Cloud



> 2000
downloads

<https://huggingface.co/nasa-ibm-ai4science>

Roy, Sujit, et al. "SuryaBench: Benchmark Dataset for Advancing Machine Learning in Heliophysics and Space Weather Prediction." *arXiv preprint arXiv:2508.14107* (2025). [Accepted in Nature Scientific Data]

KnotGym: A 3d simulation environment for spatial reasoning

Chen, Z. Cornell University. NAIRR250194

Research Challenge

- Create a knot manipulation environment to evaluate spatial reasoning and action prediction

Progress Results

- Tested various model, providing images to AI agents to determine how well agents can tie, untie and transform knots.
- Results show AI did well untying simple knots but tying and converting knots was more difficult and success rates decreased with complexity of knot.

NAIRR Pilot Resources: Frontera system at UT Austin and Delta system at University of Illinois Urbana-Champaign

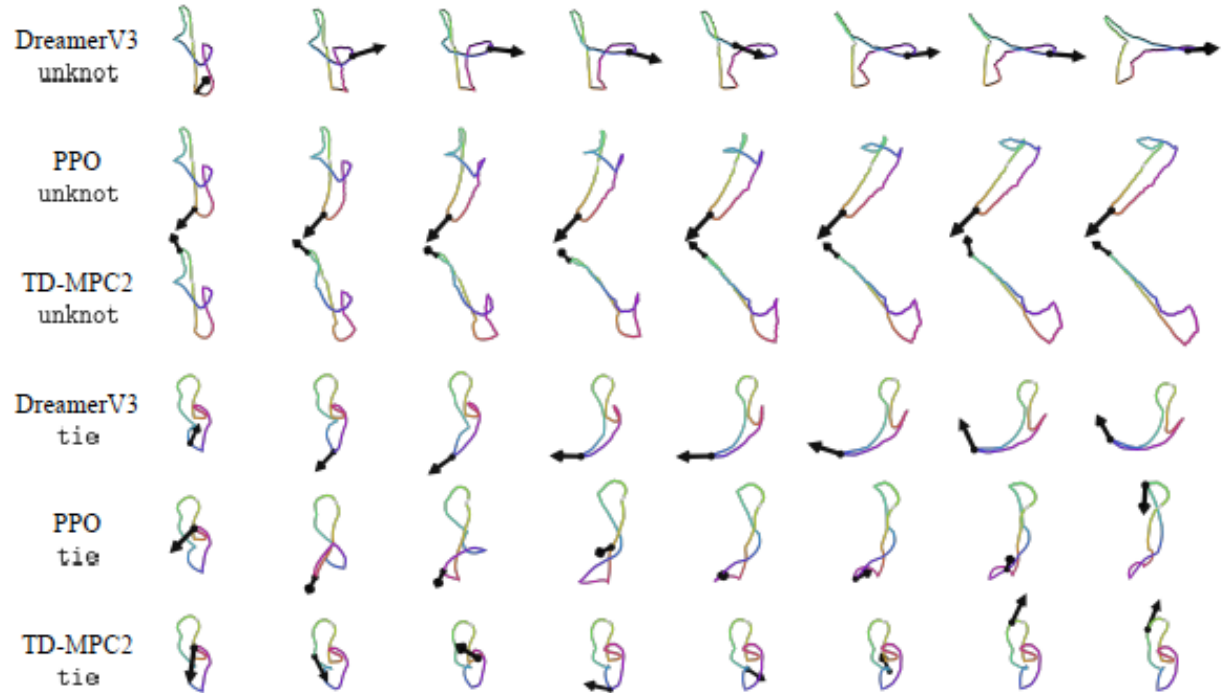


Figure 6: RL policy rollouts on unknot and tie. All methods find a solution to unknot by consistently pulling (black arrows) one segment of the rope. However, for tie the actions are more diverse and spread out without a consistent pattern, highlighting the difficulty of tie.

Chen, Z., and Yoav A. "Knot So Simple: A Minimalistic Environment for Spatial Reasoning." *Neurips* (2025).

Embodied Socratic AI Tutor: Physics Instruction

PI: M. Johnson-Glenberg (ASU) , C. Megowan-Romanowicz (AMTA), Co-PIs: R. Viera (PhET), D. O'Brien (Georgetown) , Developers: C. Viera, F. Chauhari (ASU student)



Project Goals and Significance

- There is promise in the field of **personalized education**, but more work needs to be done to help AI understand embodied learning and appropriate feedback responses
- Use data gathered from human participants to create a mobile tutor to teach students about position over time
- Via prompts and RAG create a Socratic Tutor using questions to guide the learner
- Refine a benchmark to assess the quality of the AI tutorial feedback

Specific Accomplishments and Highlights

- Used AWS Bedrock and Claude from NAIRR Pilot to develop tool and refine feedback to learner
- Worked with advanced model capabilities using a visual image of the graph

https://lern.edtechbooks.org/lern_2026/cvrgfcumye

What's new in the NAIRR in the last year?



What we heard from the inaugural NAIRR Annual Meeting

Your feedback

An easier and faster way to get started and experiment

More on-boarding support, office hours and opportunities to work with experts

Mentoring programs and support for smaller institutions in making competitive requests

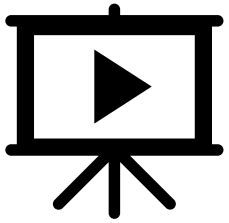
Data infrastructure and data access, including security and privacy concerns remain challenge

Move from a shopping cart approach to a more integrated ecosystem

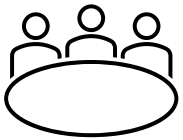


Expanded trainings, office hours and support

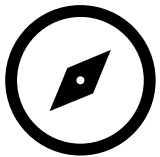
<https://nairrpilot.org/help/>
<https://nairrpilot.org/pilotevents>



Videos



Office hours



Getting started guides



Submit a ticket



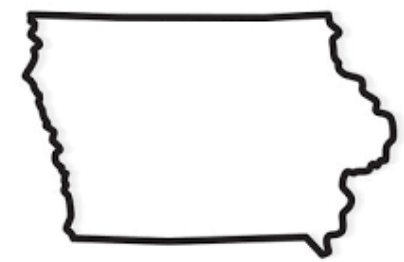
NAIRR Pilot *AI Unlocked* workshop at U of Colorado

Start-up requests available.

- Fast-turn around < 1 week
- 3-month duration

<https://nairrpilot.org/opportunities/startup-project>

Reaching new communities and providing mentoring and support: NAIRR Pilot Expansion Awards



Expanding Access to NAIRR Pilot Resources for Researchers in Iowa

PI: W. Xu, U of Iowa, H. Cai & T. George, Cornell College
2133205 partners with regional colleges summer programs shares how to use NAIRR resources

Sustainable Research Pathways

P.I. M. Leung - #2515632

matches students and faculty from smaller institutions and 1st generation scholars with awarded NAIRR projects for summer internships

Deep Partnership Opportunities

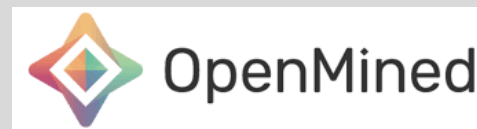
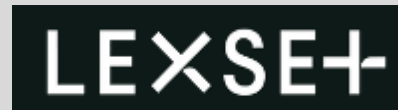
Opportunity to partner closely with a resource provider through dedicated opportunities

Awarded Deep Partnerships



See panel on: Thursday 11am

Open Deep Partnerships



Coming Soon! Large Scale Science



Horizon system includes
4000 Blackwell GPUs

Call opens April 15th

Community Provided Data for AI Research & Education

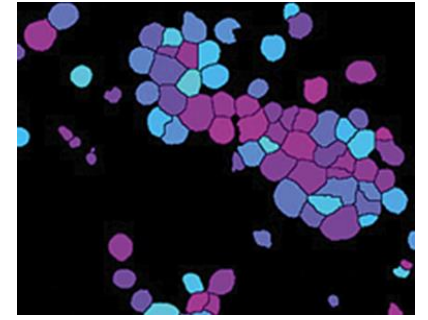
- With partner agencies, NSF solicited datasets from community that would advance AI education and training
- Initial set of 10 dataset were selected
- Being integrated into NAIRR infrastructure



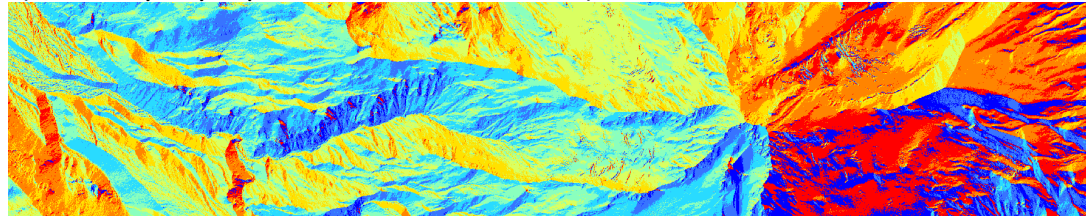
FathomNet
(Monterey Bay Aquarium Research Institute)



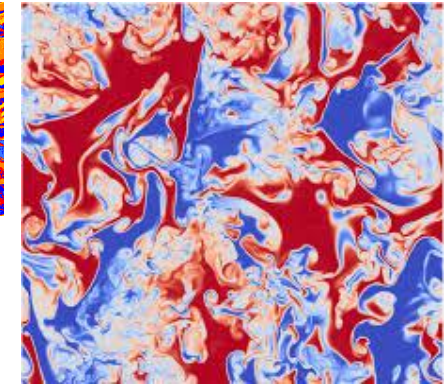
AI4Shipwrecks (U Michigan)



Cell Painting Gallery
(Broad Institute)



OpenTopography (UCSD, ASU, Earthscope Consortium)



Turbulence Database
(Johns Hopkins University)



Industry Documents (UCSF)



Microbiome Preterm
(The March of Dimes, UCSF)

purdue-hcss/
SecureChain



sunlab
/patch_db

NAIRR Secure Pilot – Interagency WG

To enable AI research with protections and sensitive data



U.S. DEPARTMENT
of ENERGY

Office of
Science



Components and Activities

- Exemplar **privacy/security-preserving infrastructure** (e.g., data enclaves, secure compute resources, and privacy preserving tools)
- High-quality **AI-Ready controlled-access data assets** for health, energy, and other research

Goals

- **Refine the requirements** and infrastructure design patterns for the future NAIRR Secure resources.
- **Investigate new opportunities** for combining data in ways that preserve privacy and security.
- Identify **research and training** use cases to inform the development of the future NAIRR Secure.

Demonstration Projects

Partners	Title
NSF-NCSES, NIH, DOE	<u>Synthetic Data Generation with Large Real-World Data</u>
NIH, DOE	<u>Democratizing AI for cancer with privacy preserving synthetic data generation for cancer case identification</u>
NIH, NSF, DOE	<u>Althena: Institutional LLM-Assisted Biomedical Question Answering</u>

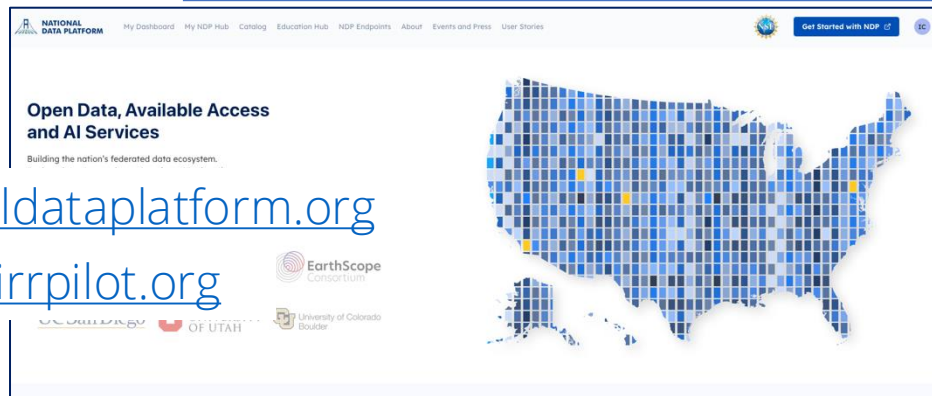
Hear about demo projects & lessons learned during
NAIRR Secure BoF
(Day 2 afternoon)!

Working Group Participating Agencies



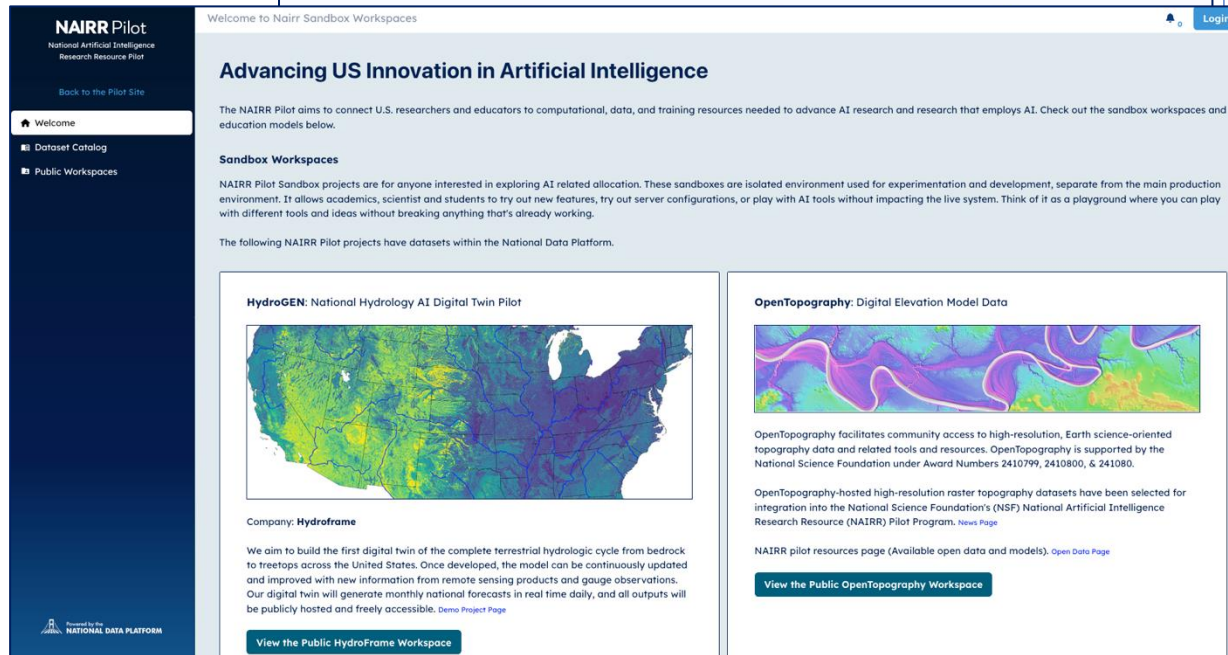
Example of resource integration: National Data Platform: Services for Open Access to Data

PI: I. Altintas (UC San Diego)



<https://nationaldatapatform.org>

<https://ndp.nairrpilot.org>



Progress in integrating resources

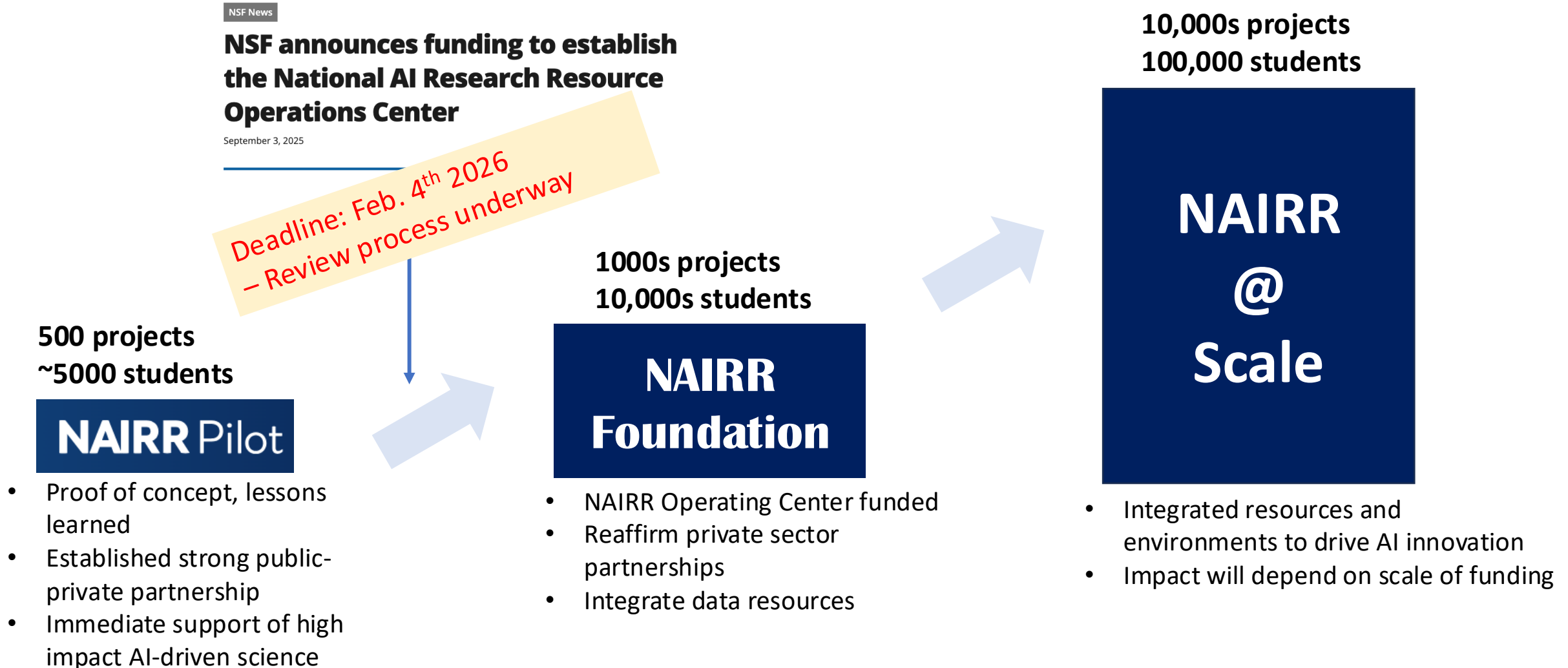
NDP is enabling cataloging, discovery and use of NAIRR resources for data, models and computing in AI research/education workflows

- Catalog NAIRR resources with example notebooks
- Use of NAIRR resources in teaching and training activities
- Integrate NAIRR CloudBank and National Research Platform resources in research workflows
- Utilization of NAIRR datasets (USPTO, NASA, OpenTopo) in classroom activities for teaching AI and in data challenges
- NDP Sandbox operational on the NAIRR Pilot Portal (with HydroFrame and OpenTopo as example NAIRR projects)

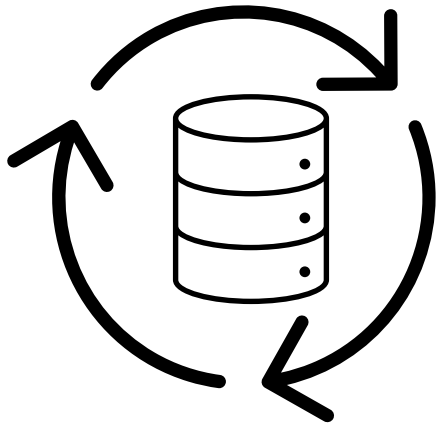
NAIRR Future Directions



We are setting the foundations for a sustainable NAIRR and are prepared to scale the NAIRR as funding allows



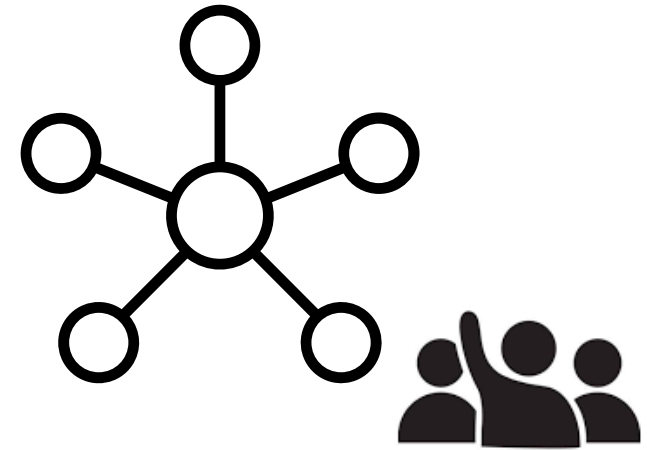
We envision growing a rich set of data services, available datasets and distributed educational hubs in the next year



Data services that support AI workflows



Community datasets that drive discovery and innovation

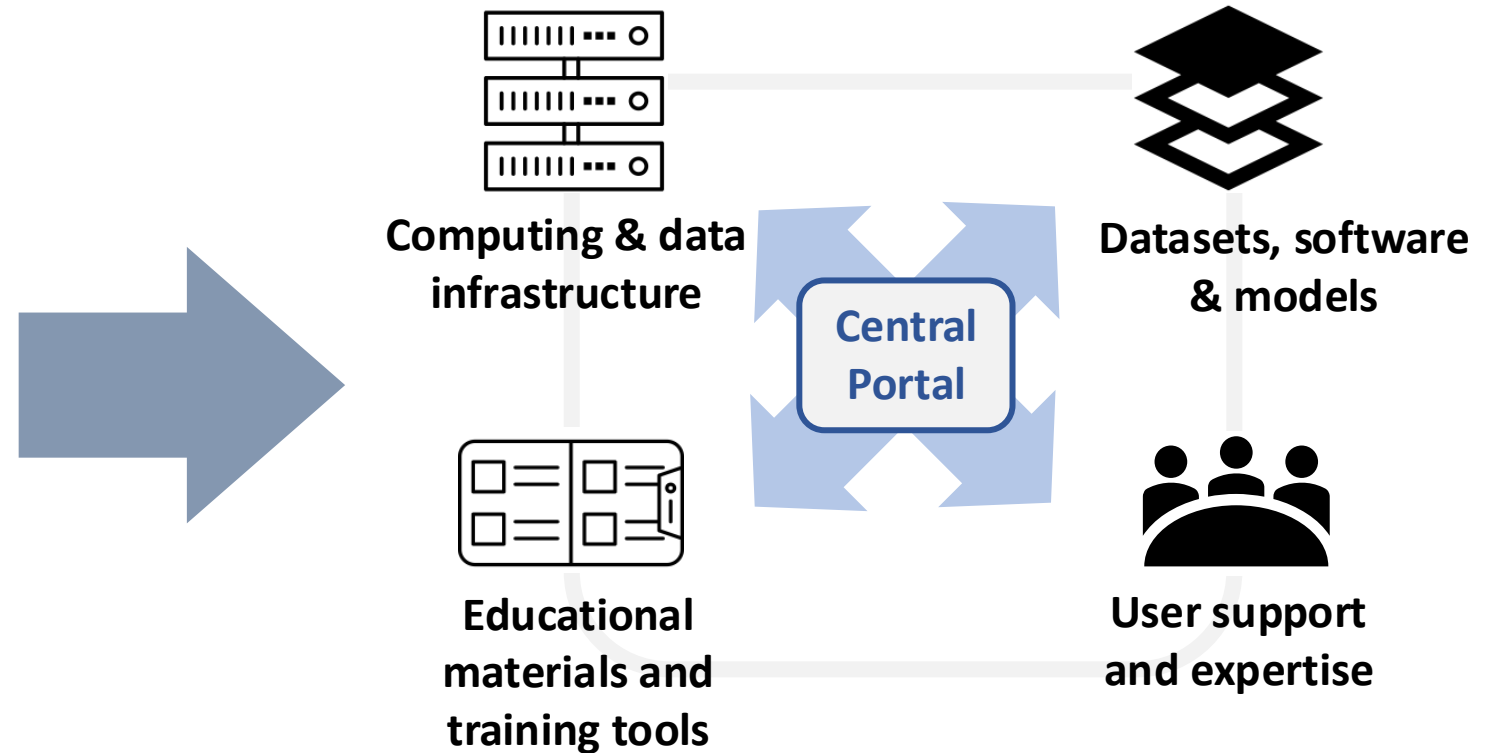


Educational hubs to engage post-secondary students early in their careers

Preparing for the future NAIRR at scale and speed

NAIRR Pilot Lessons Learned

- Public-private partnership model is very advantageous.
- Demand is high for the wide array of AI resources offered by the NAIRR Pilot.
- Need to build know-how and expertise through educational trainings and workshops is significant.
- Data access and integration with computing are central challenges.
- Both near-term and longitudinal data gathering mechanisms and metrics are needed to measure impact and success.



Questions



Envisioning NAIRR Education Hubs



INDUSTRY PHILANTHROPY
SUMMIT

CRA-NSF Industry/Philanthropy Summit on Potential NAIRR State Hubs for Educational Transformation

February 17, 2026

Santa Clara Marriott
2700 Mission College Blvd, Santa Clara, CA

Overview	Agenda	Speakers	Organizers	Eligibility
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On February 17, 2026, the **Computing Research Association** (CRA) and its **Industry Committee** (CRA-I), in partnership with the **National Science Foundation** (NSF), convened senior leaders from industry, philanthropy, and government for a focused, invitation-only summit in the San Francisco Bay Area.

NSF is supporting 2 meetings to gather input on a concept for NAIRR Educational Hubs

Coalition for Academic Scientific Computation

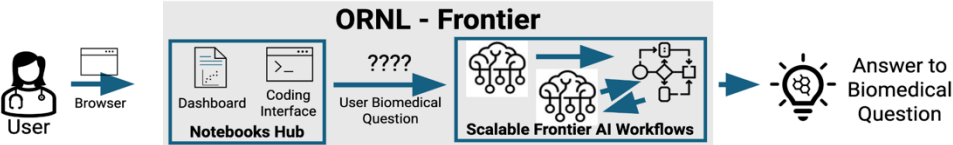
NSF–CASC Workshop on Envisioning NAIRR State and Regional Hubs for Educational Transformation

Mon Mar 9, 2026 → Mon Mar 9, 2026

NAIRR Secure Pilot

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Capturing Lessons Learned

WG investigated journeys within demonstration projects & across AI research community to reveal shared barriers

- **Granular lessons learned – based on demo projects**
 - Focused around two phases of work (1) front-end planning, (2) project implementation
- **Broader lessons learned – based on stakeholder interviews**
 - WG conducted 10 interviews with relevant stakeholders around their work of developing secure AI and/or using sensitive data:
 - Challenges encountered in developing secure AI systems,
 - Intractable issues faced, risk mitigation strategies,
 - Steps to engender trust in AI systems,
 - Exemplar projects that could be useful to NAIRR moving forward

Hear about demo projects & lessons learned during **NAIRR Secure BoF** (Day 2 afternoon)!

NAIRR Secure BoF (Day 2 afternoon)

Come to NAIRR Secure BoF to share your thoughts on the technical, policy, and sociological barriers for AI projects with sensitive data in the evolving landscape!

- **Session goal** – Consider opportunities and strategies for transitioning NAIRR Secure opportunities and infrastructure from the Pilot to the full NAIRR
 - *Highlights: brief overview of NAIRR Secure, demonstration project lightning talks, breakout discussions*
- **We want to hear from you!**
 - *What topics/functionalities/products (in the secure/privacy-preserving space) would be essential to include in the plan for the transition/full NAIRR implementation?*
 - *We want to aggregate needs and scale functionality*
 - *Your collective input (strategic or tactical) will help inform our roadmap moving forward*