Fostering and expanding collaboration opportunities everywhere

Dilma Da Silva

Acting Lead, Computing and Information Science and Engineering (CISE)

CISE by the Numbers

$1,035.9 M
Enacted budget for fiscal year 2023

6,401
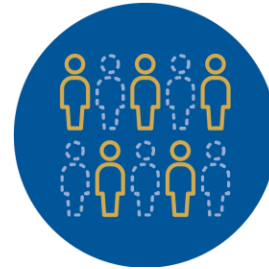Proposals evaluated

29%
Funding rate

1,847
Awards made

371
Institutions supported

6,647
Grad students

21,623
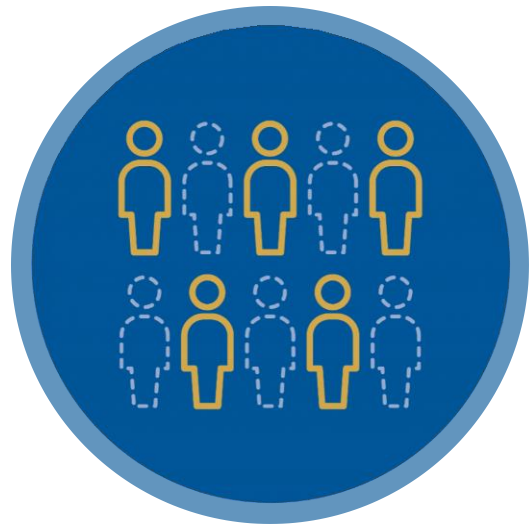Individuals from senior researchers to undergrads

48 + D.C. + 1 territory

89
Minority-serving Institutions

All data depicted is for fiscal year 2023.

NSF's STRATEGIC THEMES

Advancing Emerging Industries for Economic and National Security

Creating Opportunities Everywhere

Building a Resilient Planet

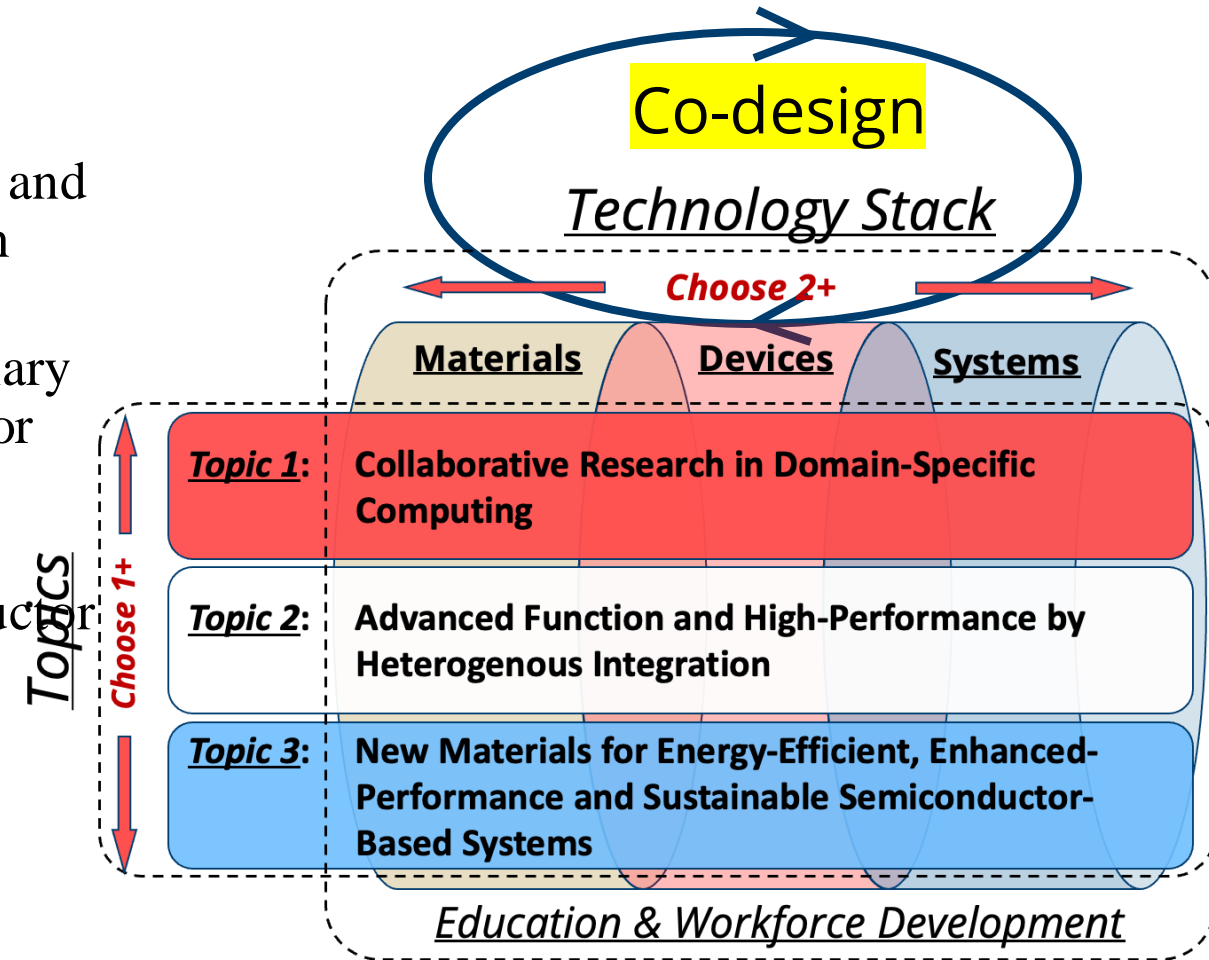**Strengthening Research Infrastructure**

FuSe: Future of Semiconductors

❑ Key components:

➢ <u>Research and Development</u>: new materials, processes, and designs for future devices and systems; co-design is an essential element

➢ <u>Education and Workforce Development</u>: Interdisciplinary preparation of students for careers in the semiconductor industry

➢ <u>Industry Collaboration</u>: highly encouraged to address the current and future challenges facing the semiconductor industry

❑ Solicitations

➢ NSF 23-552 with partners:
Ericsson, IBM, Intel, Samsung

➢ NSF 24-521 with partners:
Ericsson, Intel, Micron, Samsung

Co-design

Technology Stack

Choose 2+

Materials   **Devices**   **Systems**

Topics   *Choose 1+*

Topic 1:   **Collaborative Research in Domain-Specific Computing**

Topic 2:   **Advanced Function and High-Performance by Heterogenous Integration**

Topic 3:   **New Materials for Energy-Efficient, Enhanced-Performance and Sustainable Semiconductor-Based Systems**

Education & Workforce Development

National AI Research Institutes

- NSF has funded **25 multi-organization AI Institutes**

- **~$500 million** investment to advance fundamental and use-inspired AI

⭐ **LEAD ORGANIZATION**

● **SUBAWARD**

FEDERAL AGENCY AND INDUSTRY PARTNERS

amazon   accenture   DEPARTMENT OF DEFENSE   DEPARTMENT OF EDUCATION   U.S. DEPARTMENT OF HOMELAND SECURITY
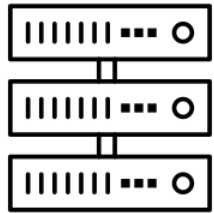
Google   intel.   IBM   NIST   USDA

RINGS

- Goal: Resilient, Intelligent and Secure NextG Edge-to-cloud Systems

- The first program making RESILIENCY as a key focal area for NextG
  - In addition to intelligence, security, and reliability

- Multi-sector partnership:
  - $40M program, the partners contributed half of the funds
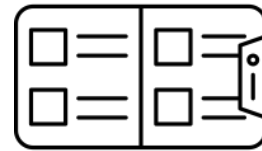
Vision for the National AI Research Resource

A widely-accessible, national research infrastructure that will advance the U.S. AI R&D environment, discovery, and innovation by empowering a diverse set of users through access to:

Secure, high-performance, privacy-preserving **computing**

High-quality **datasets**

Catalogs of **testbeds** and **educational materials**

Training tools and **user support** mechanisms

Goals:

Spur **innovation**

Increase the **diversity** of talent in AI

Improve U.S. **capacity** for AI R&D
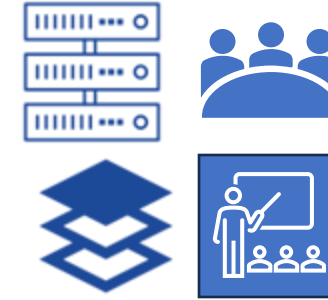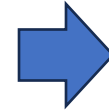
Advance **trustworthy AI**

NAIRR Pilot Organization

User Journey

US-based Researchers, Educators & Students → **NAIRR Pilot Portal** https://nairrpilot.org → **Pilot Resources and Opportunities**

The NAIRR Pilot provides infrastructure and resources; it does not fund end-user research.

Operations

NAIRR Open	NAIRR Secure	NAIRR Software	NAIRR Classroom
Enable open AI research and access to diverse AI resources via a central portal and coordinated allocations	Enable AI research needing privacy and security-preserving resources. Assemble exemplar privacy preserving resources.	Facilitate use of AI software, platforms, tools and services across platforms	Reach new communities through education, training, user support and outreach

Governance

Community Design Process

Agencies

- US National Science Foundation
- Defense Advanced Research Projects Agency
- Department of Agriculture
- Department of Defense
- Department of Energy
- Department of Veterans Affairs
- National Aeronautics and Space Administration
- National Institutes of Health
- National Institute of Standards and Technology
- National Oceanic and Atmospheric Administration
- US Patent and Trade Office (USPTO)

➢ More Joining!

Non-governmental orgs

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

➢ More Joining!

Expanding AI Innovation through Capacity Building and Partnerships (ExpandAI)

View guidelines
NSF 23-506

Expanding TRIPODS through Partnerships (XTRIPODS)

View guidelines
NSF 23-591

Expanding Capacity in Quantum Information Science and Engineering (ExpandQISE)

View guidelines
NSF 24-523