U.S. National Science Foundation
Directorate for Technology, Innovation and Partnerships

Accelerating Technology, Innovation and Partnerships

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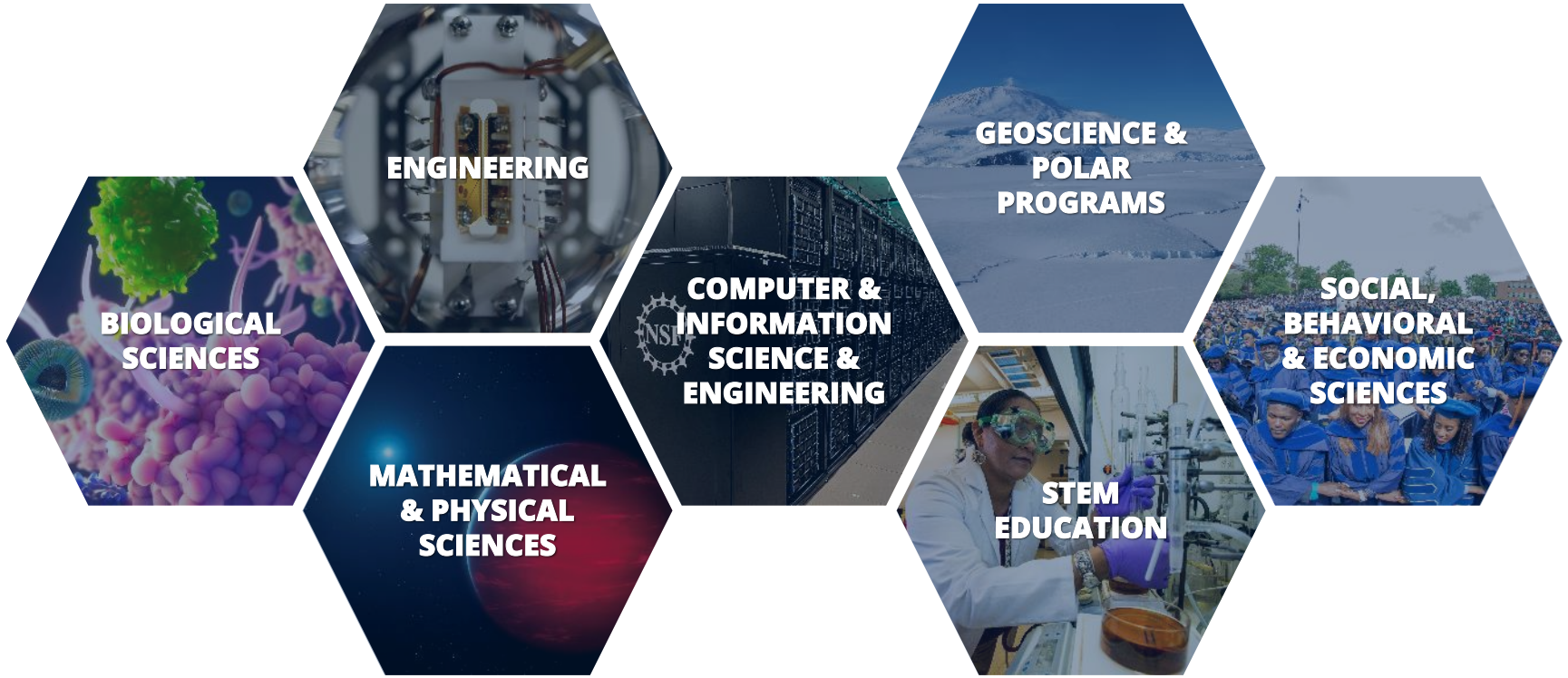
NSF Assistant Director for Technology, Innovation and Partnerships

EPSCoR Webinar
February 12, 2024

NSF's Mission

NSF Supports All Areas of Science and Engineering



Integrative Activities

International Science & Engineering

A Pivotal Moment for the Nation and Society

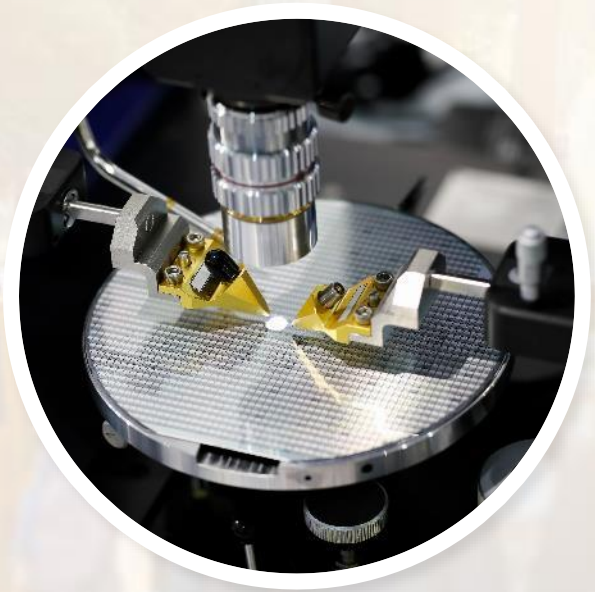
Climate change

Equitable access to education, health care

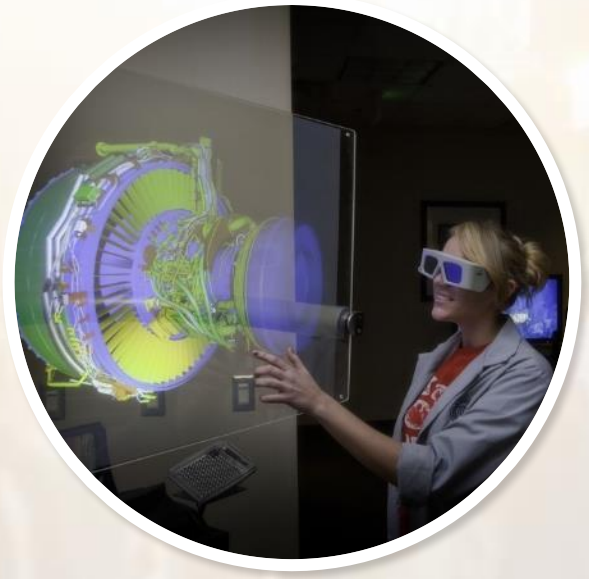
Critical and resilient infrastructure

A Changing Landscape

A Changing Science and Engineering Enterprise Can Meet This Moment



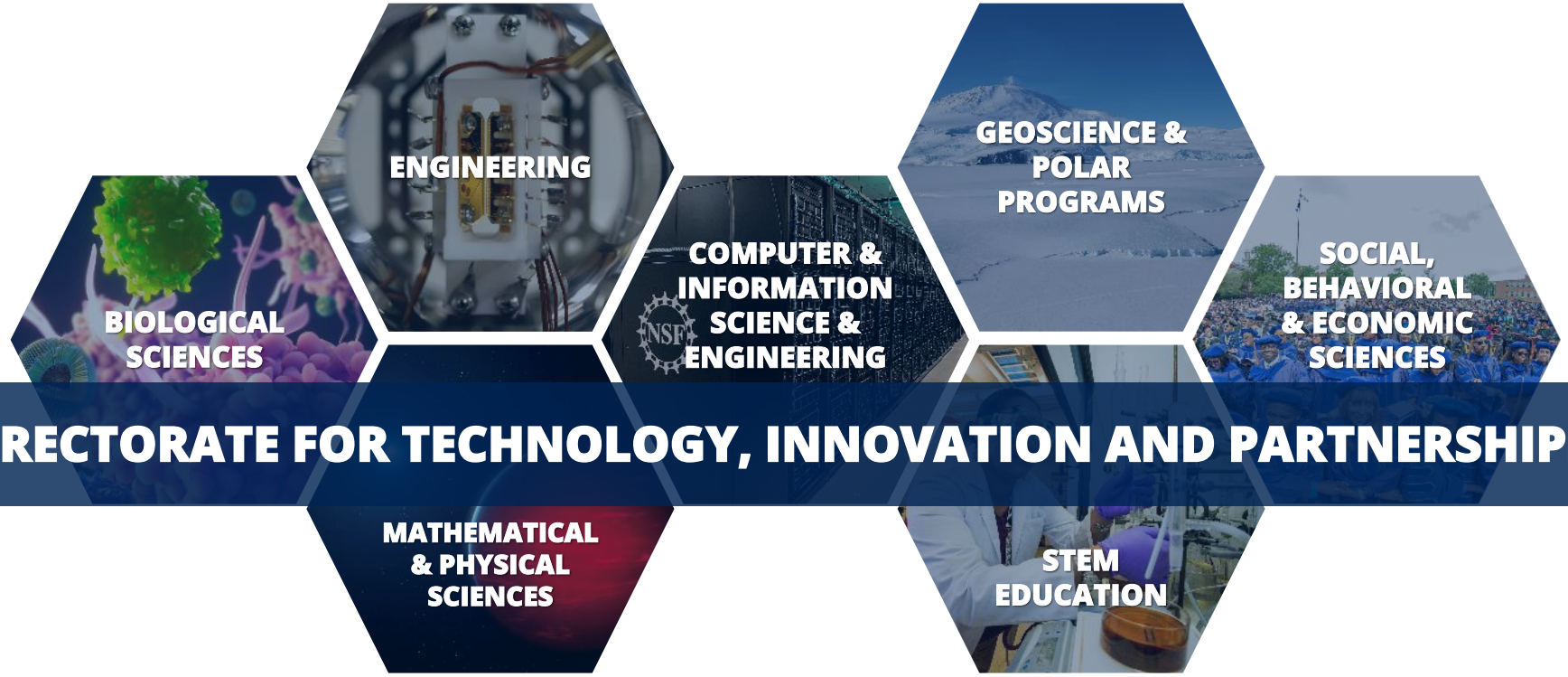
Pace of discovery accelerated by data, emerging technologies



Demand for societal and economic impact

Opportunity to leverage partnerships

A New “Horizontal”: Strengthen, Scale Use-Inspired and Translational Research



Integrative Activities

International Science & Engineering

U.S. National Science Foundation
Directorate for Technology, Innovation and Partnerships

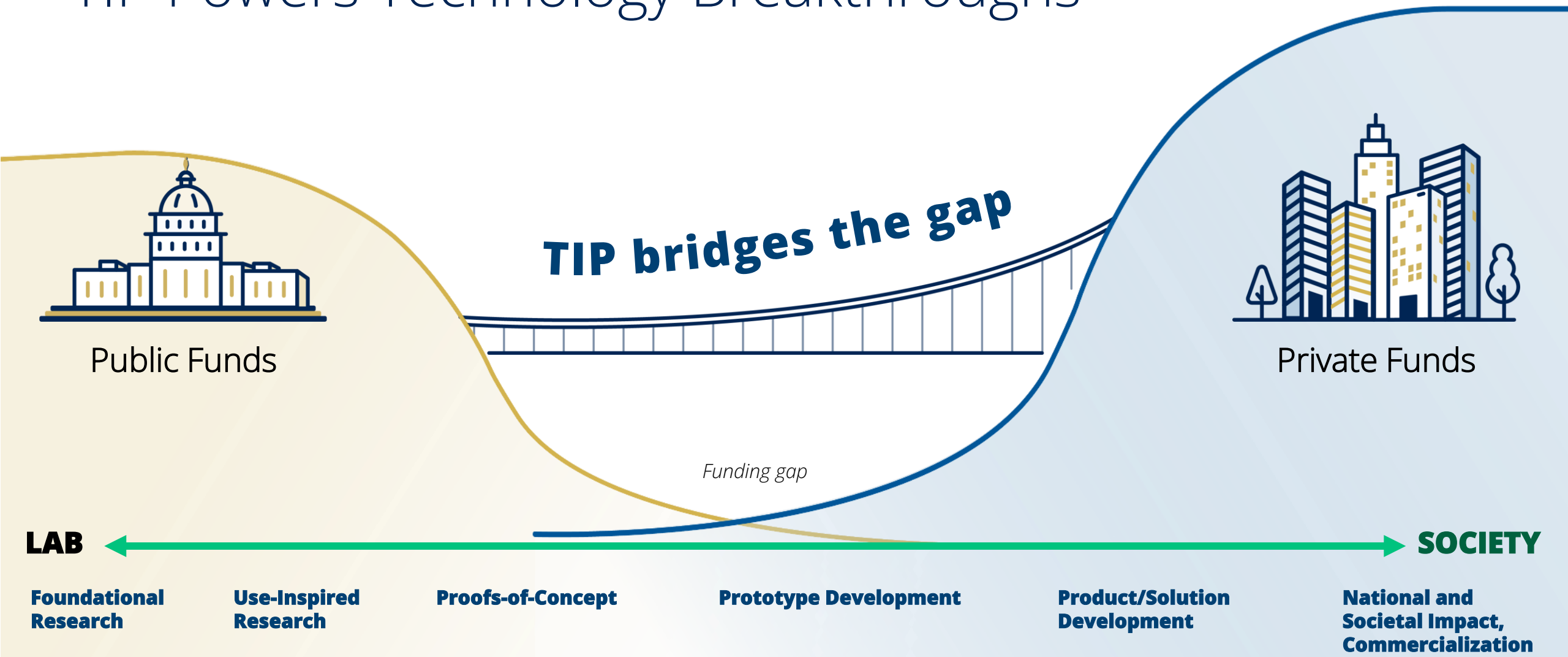
TIP Directorate Mission

TIP harnesses the nation's vast and diverse talent pool to advance critical and emerging technologies, address pressing societal and economic challenges, and accelerate the translation of research results from lab to market and society. TIP improves U.S. competitiveness, growing the U.S. economy and training a diverse workforce for future, high-wage jobs.

Catalyzing a Paradigm ***Expansion***

Today	Tomorrow
• Largely investigator-driven	• Users / beneficiaries engaged in shaping, conducting research
• Primarily academic research teams	• Multi-sector teams – academia, industry, government, civil society, communities of practice
• Stream of discoveries improve prosperity, resilience, quality of life	• Important societal and/or economic problems drive research pursuits
"Technology / supply push"	***"Market / demand pull"***

TIP Powers Technology Breakthroughs



TIP's Core Message

TIP advances U.S. competitiveness and societal impact by nurturing partnerships that drive and accelerate:

Diverse Innovation Ecosystems

Technology Translation and Development

Workforce Development

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TIP advances U.S. competitiveness and societal impact by nurturing partnerships that drive and accelerate:

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Workforce Development

NSF Convergence Accelerator funds transdisciplinary teams through convergence research and innovation processes to stimulate innovative idea sharing and development of sustainable solutions to solve societal challenges.

Two Phases:

PHASE I (PLANNING)
9 months
Up to **$750,000**

PHASE II (IMPLEMENTATION)
24 months
Up to **$5 Million**

Opportunity available to:

- Academia
- Business & Industry
- Governments
- Nonprofits

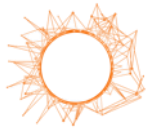
NSF Convergence Accelerator Portfolio

Track A

Open
Knowledge Networks

Track B

AI and the Future
of Work



Track C

Quantum
Technology

Track D

AI-Innovation
Data Sharing & Modeling

Track E

Networked
Blue Economy

Track F

Trust & Authenticity in
Communication Systems

2019 COHORT
Complete

2020 COHORT
Phase 2

2021 COHORT
Phase 2

Track G

Securely Operating
Through 5G
Infrastructure

Track H

Enhancing
Opportunities for
Persons with
Disabilities

Track I

Sustainable Materials
for Global Challenges

Track J

Food & Nutrition
Security

Track K

Equitable Water
Solutions

Track L

Real-World Chemical
Sensing Applications

Track M

Bio-Inspired Design
Innovations

2022 COHORT
Phase 1

2023 COHORT
Phase 1

NSF Regional Innovation Engines (NSF Engines)

program supports the development of diverse, regional coalitions to engage in use-inspired research, drive research results to the market and society, promote workforce development, and ultimately stimulate the economy and create new jobs.

NSF Engines are funded up to **$160 million** for up to **10** years

NSF Engine Development Awards funded at up to **$1 million** for up to **2** years to plan for an Engine

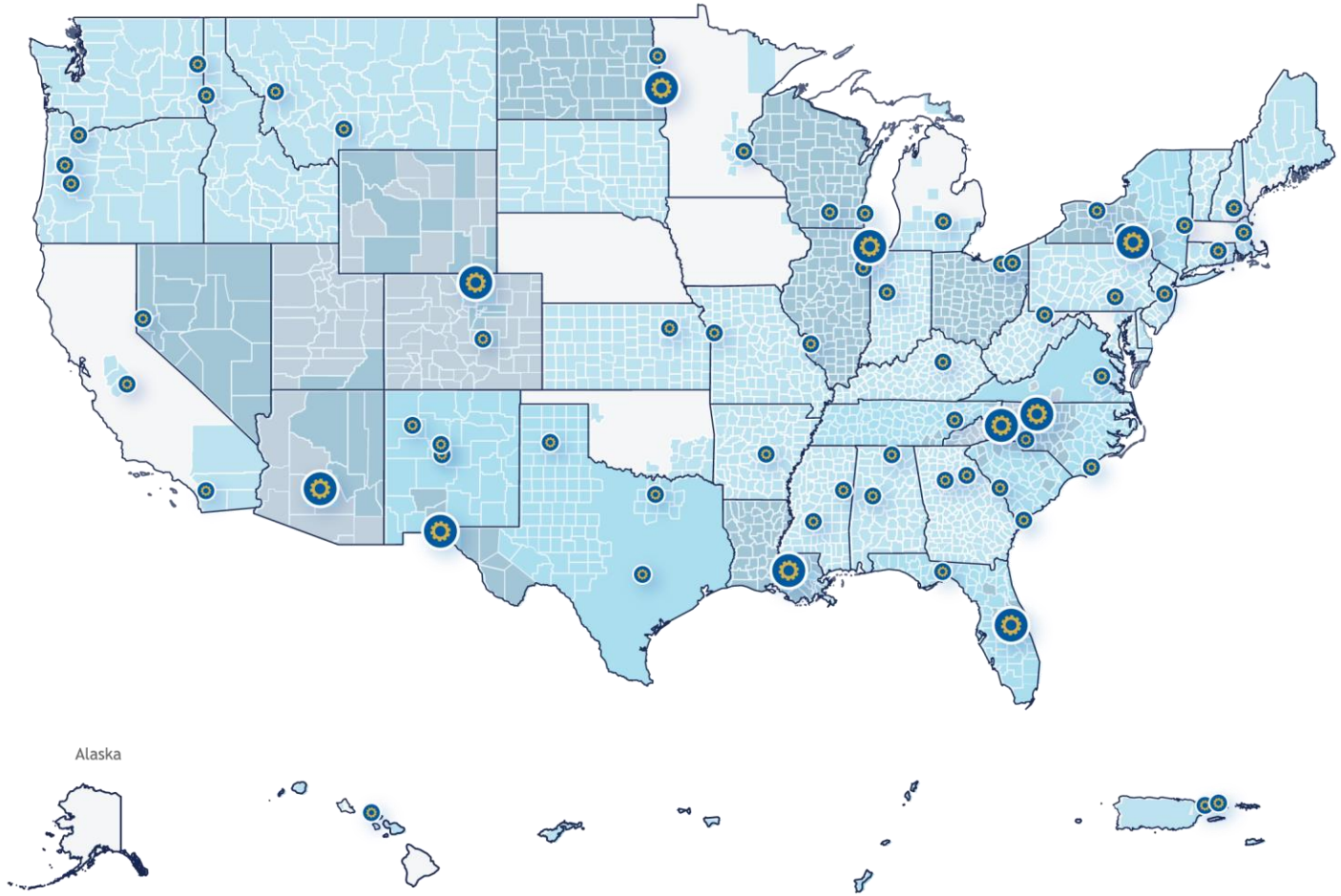
Opportunity available to:

- Academia
- Business & Industry
- Governments
- Nonprofits

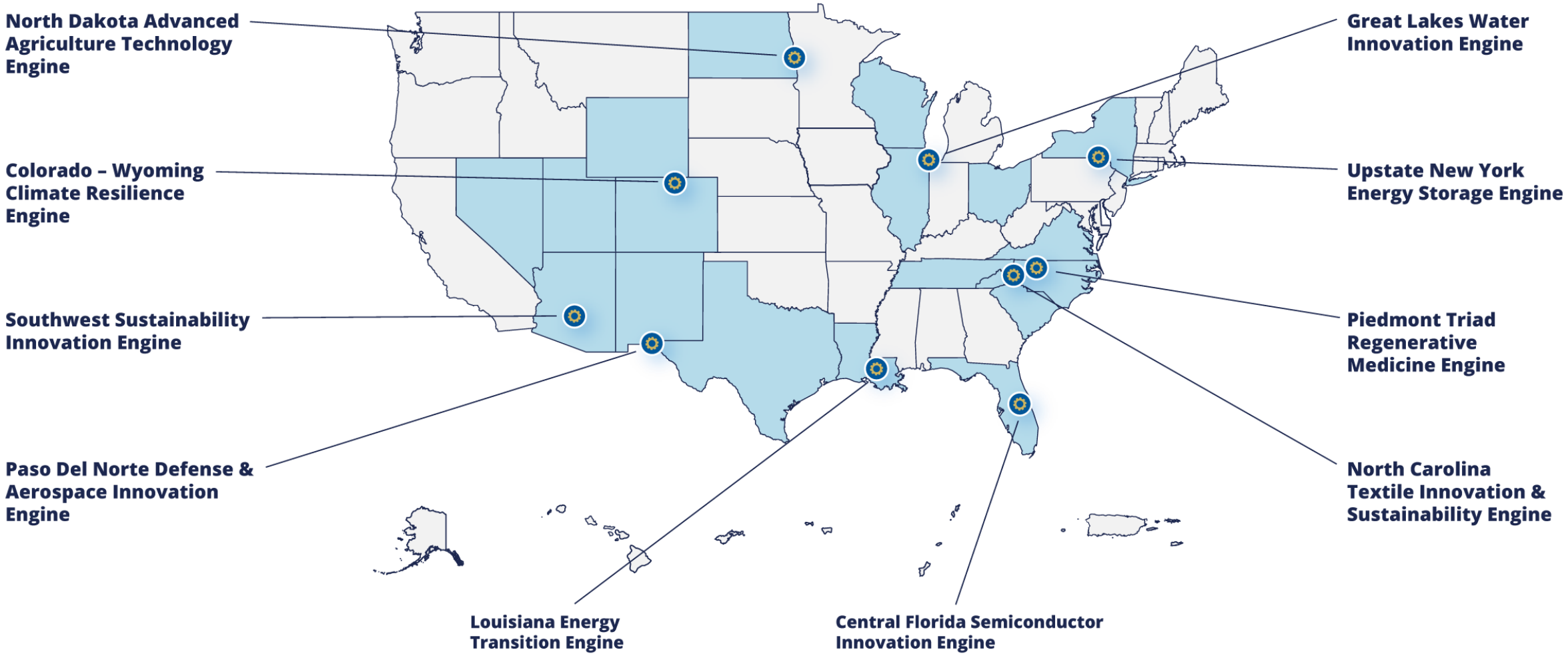
NSF is Making History

NSF Engines awards represent:

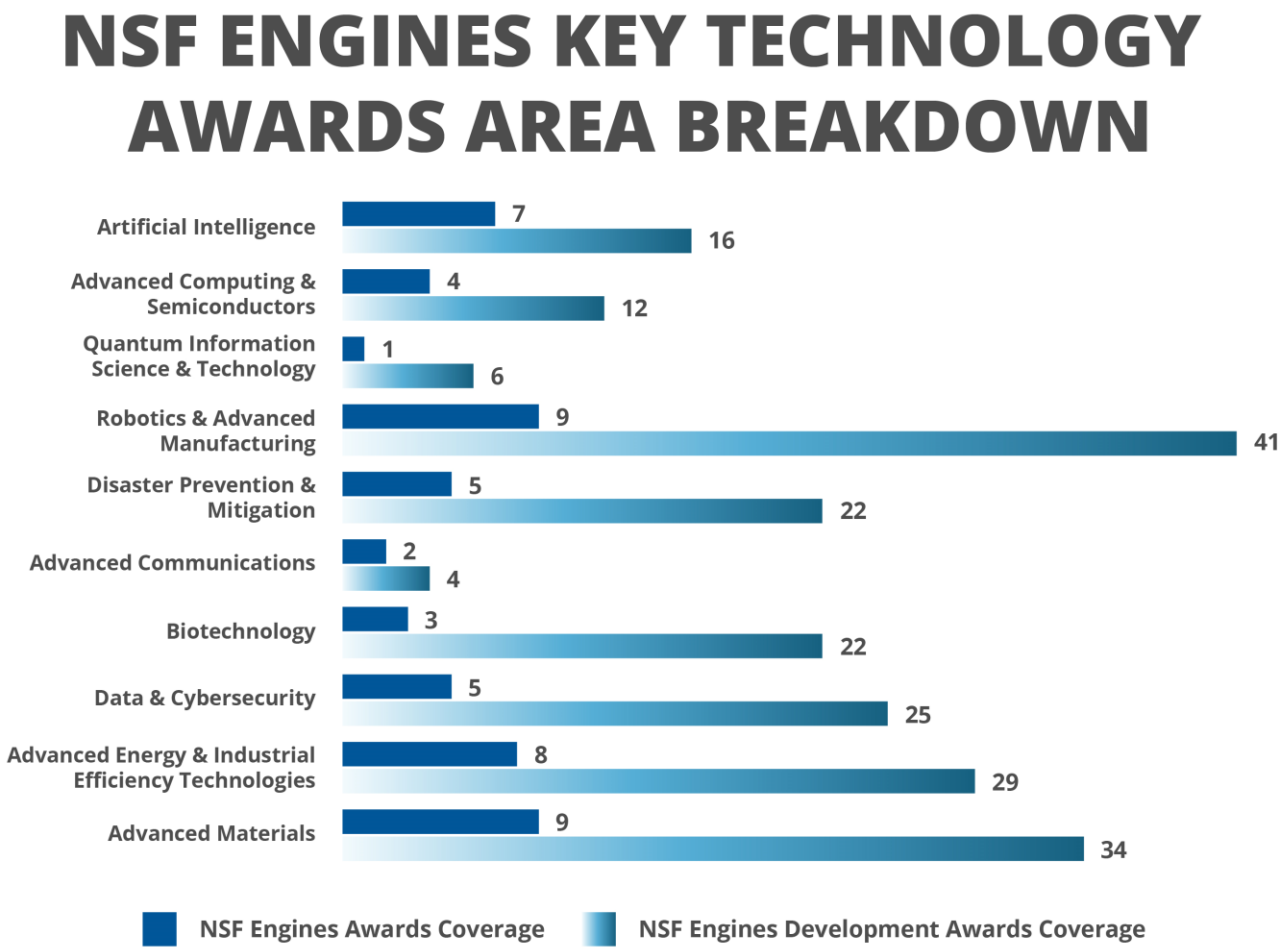
- $1.6 billion over a decade
- 450+ partners across sectors
- 18 states across 10 regions; 69 regions total across the U.S.
- 2:1 matched investment from public and private sectors
- Catalyzing America's innovation economy in all corners of the country



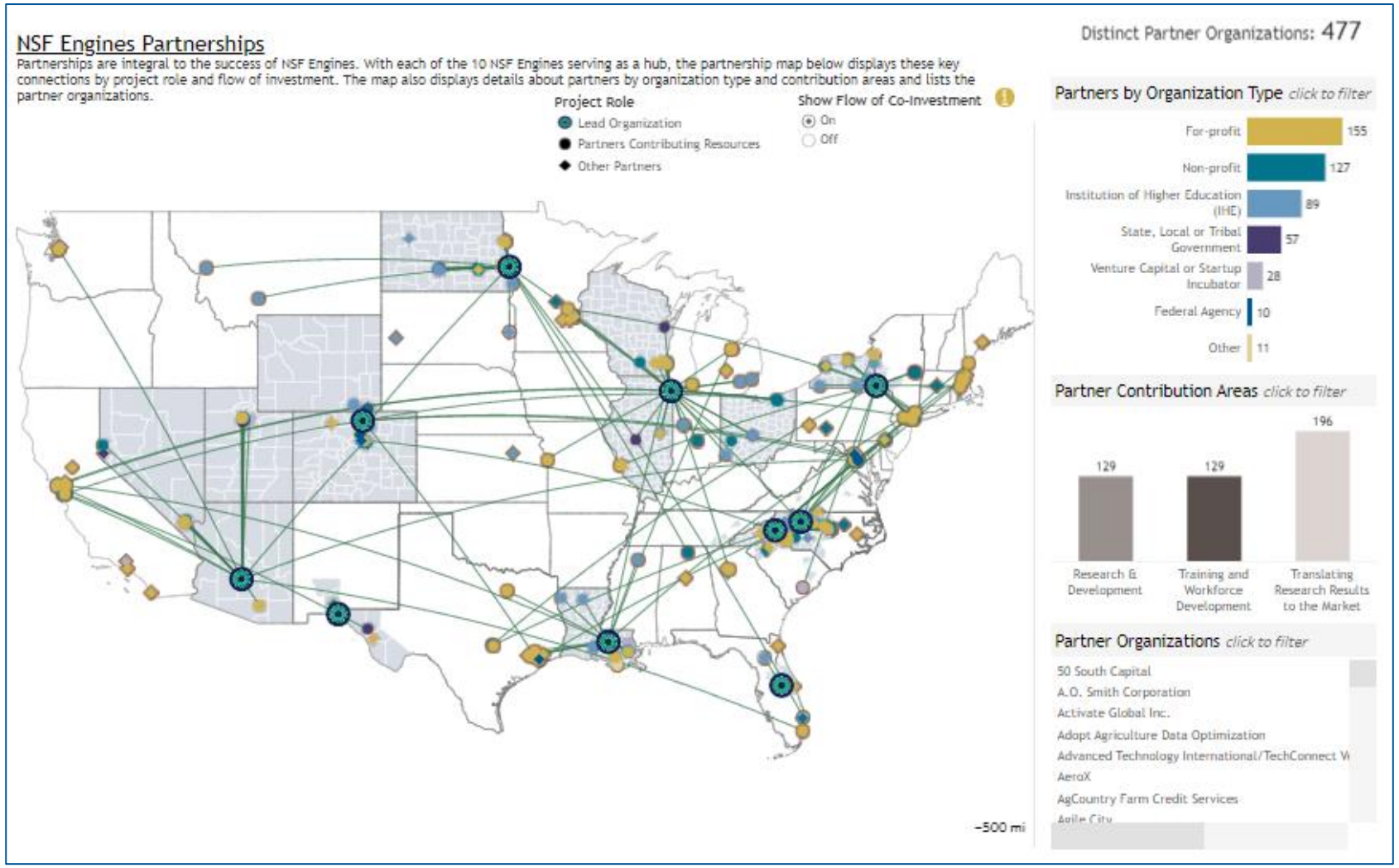
The 10 Inaugural NSF Engines



CHIPS and Science Act: Key Technology Focus Areas



NSF Engines Partnerships Network



Central Florida Semiconductor Innovation Engine

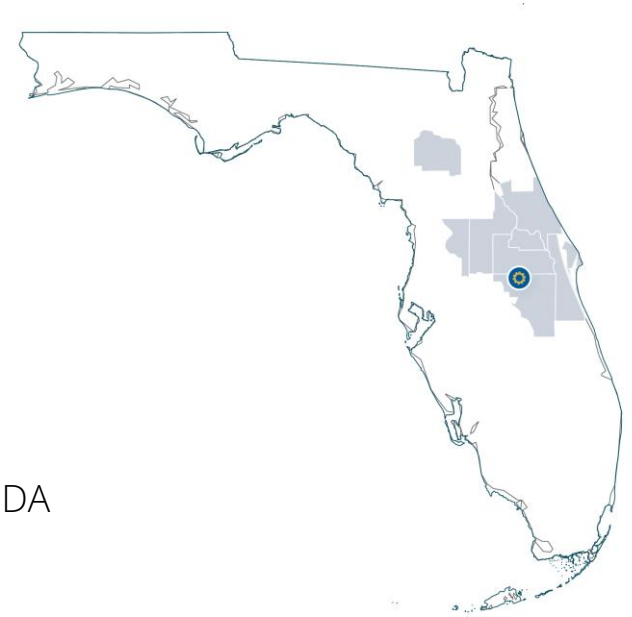
Lead Organization:
ICAMR, Inc. (dba BRIDG)

Primary Societal Challenge:
Making the U.S. a leader in semiconductor advanced packaging design and manufacturing

Innovations:
Advanced semiconductor packaging, digital twin advanced packaging design and manufacturing, county-owned fabrication facility

Capital Commitments:
$50 million from Florida Commerce and the Florida Department of Education; $50 million from EDA Build Back Better Regional Challenge; $49 million recently from U.S. Department of Defense

Key Fact:
The 5,000 square foot campus is a unique model where the county owns the land and there is a high school on the campus



Sampling of Partners (10)

ACADEMICS (3)
GOVERNMENT ENTITIES (1)
INDUSTRY (1)
NON-PROFIT (5)

UNIVERSITY OF CENTRAL FLORIDA
OSCEOLA COUNTY
SKYWATER TECHNOLOGY
ORLANDO ECONOMIC PARTNERSHIP

ND Advanced Agriculture Technology Engine

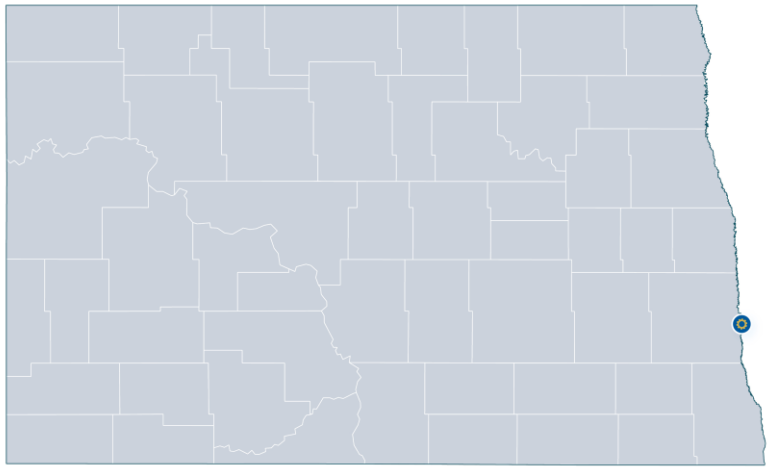
Lead Organization:
North Dakota State University

Primary Societal Challenge:
Driving the agtech revolution by partnering with rural and tribal communities to spur inclusive economic development

Innovations:
Crop genomics, climate modeling, advanced crop data, sensors

Capital Commitments:
EDA Good Jobs Challenge Awardee, UAS FAA drone site

Key Fact:
#1 U.S. producer of peas, beans, barley, canola, flax, oats, and wheat



Sampling of Partners (65)

ACADEMICS (14)
GOVERNEMNT ENTITIES (8)
INDUSTRY (32)
NON-PROFIT (11)
Tribal Entities (5)

UNIVERSITY OF MONTANA
NORTH DAKOTA GOVERNOR'S OFFICE
BANKNORTH, MICROSOFT (FARGO)
NORTH DAKOTA FARMERS UNION
NUETA HIDATSA SAHNISH COLLEGE

Louisiana Energy Transition Engine

Lead Organization:
Louisiana State University

Primary Societal Challenge:
Advancing US's capacity for innovation in low-carbon energy with a focus on carbon capture and hydrogen

Innovations:
Carbon capture, hydrogen fuel, CO2 as feedstock, sustainable manufacturing for clean energy

Capital Commitments:
$67.5 million from state, EDA BBRC winner +Tech Hubs finalist

Key Fact:
There are over 5,000 miles of oil, gas, chemical, H2 and CO2 pipelines in Louisiana

Sampling of Partners (49)

ACADEMICS (13)
GOVERNEMNT ENTITIES (5)
INDUSTRY (21)
NON-PROFIT (10)

DILLARD UNIVERSITY
LOUISIANA ECONOMIC DEVELOPMENT
EXXONMOBIL, SHELL
SOUTH LOUISIANA ECONOMIC COUNCIL

NSF Engines Builder Platform

- Run by The Engine Accelerator, a public benefit corporation with origins at MIT.
- A unique post-award support model that will provide tailored resources and a high level of personalized engagement and support that will significantly contribute to the success of the NSF Engines program.
- The NSF Engines Builder Platform is a human-centered portfolio of support structures that empowers awardees with the tools, networks and capital needed to thrive.
- The Platform is inspired and informed by the support systems pioneered by venture incubators and accelerators, national philanthropy and lessons learned from prior place-based investment efforts.

Enhancing Partnerships to Increase Innovation Capacity (EPIIC) program provides training and networking support to help build more inclusive innovation ecosystems and pathways into NSF Regional Innovation Engines.

Awarded a total **$19.6 million** to nearly 50 teams.

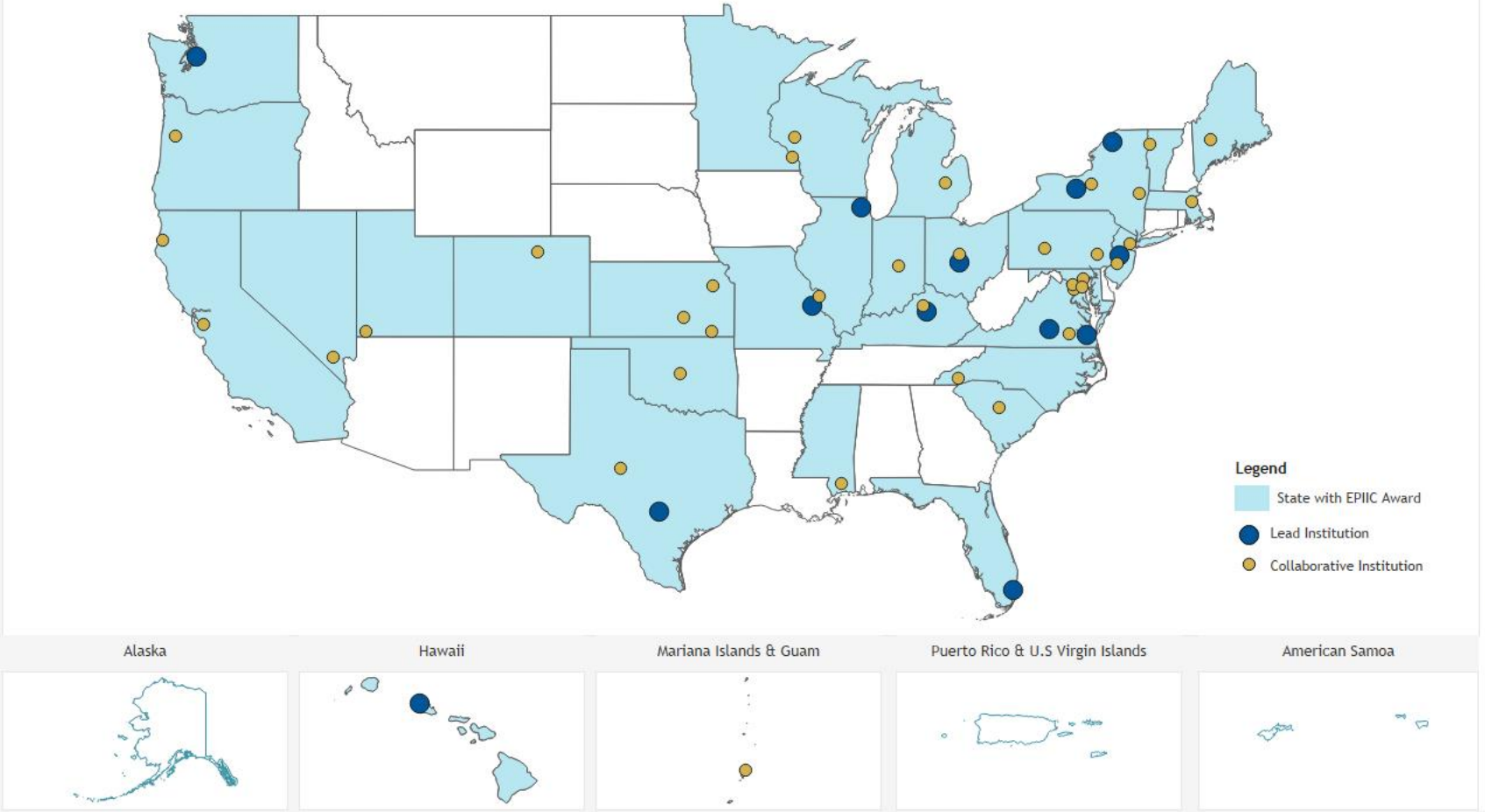
New funding opportunity is available. Deadline to apply is **January 21, 2025**.

Opportunity available to:

Academia

DIVERSE INNOVATION ECOSYSTEMS

NSF Enabling Partnerships to Increase Innovation Capacity



49
EPIIC Awards

New Awardee
N
Y

Awards in EPSCoR States
12

Awards to MSIs
14

Organization Type

Community College	4	14
Master's Colleges	3	14
Baccalaureate Colleges	4	7
Doctoral/Professional Universities	1	1
R1	1	

TIP's Core Message

TIP advances U.S. competitiveness and societal impact by nurturing partnerships that drive and accelerate:

Diverse Innovation Ecosystems

Technology Translation and Development

Workforce Development

Innovation Corps (I-Corps™) provides experiential entrepreneurial education to further the nation's innovation ecosystem. Hubs implement the I-Corps program by creating a network of universities that help researchers learn how to test the market through customer discovery.

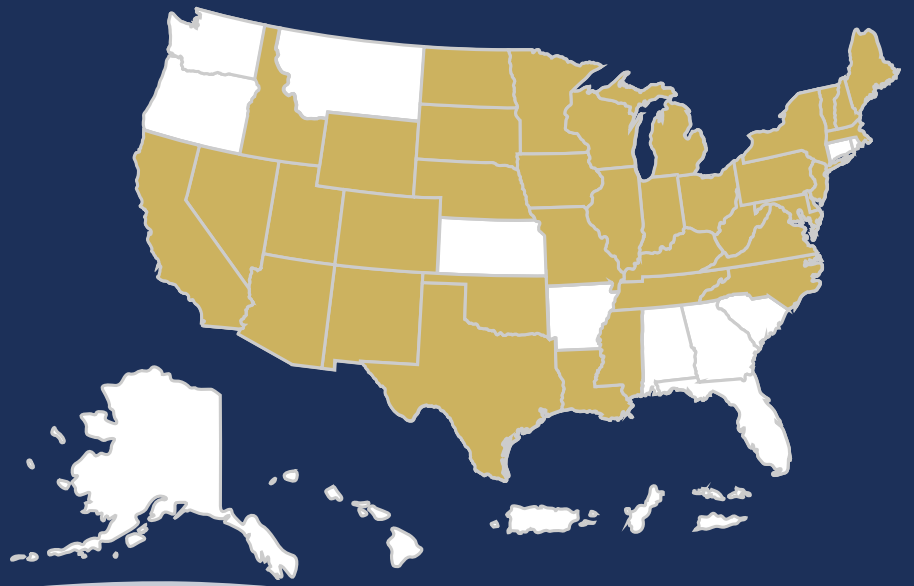
I-Corps Hubs Funding for up to **$3 million** per year for **5 years; Proposals due April 25, 2024**

10 I-Corps Hubs involving nearly 100 universities

I-Corps Teams Funding for **$50,000** for **7 weeks**

NSF CORPS NSF Innovation Corps

All Hubs



Opportunity available to:

Academia

America's Seed Fund powered by NSF (the Small Business Innovation Research and Small Business Technology Transfer program) provides up to **$2 million** in research and development funding for deep-tech startups, transforming scientific and engineering discoveries into products and services with commercial and societal impact.

Submit a Project Pitch to get started!

PHASE I	PHASE II	PHASE IIB
6-12 months	2 years	
Up to	Up to	Up to
$275,000	**$1 million**	**$500,000**

CHIPS and Science Act 2022

NSF | America's SEED FUND SBIR.STTR

Opportunity available to:

- Academia
- Business & Industry

Pathways to Enable Open-Source Ecosystems (POSE) supports sustainable high-impact open-source ecosystems to ensure more secure open-source products, increase coordination of developer contributions and a more focused route to impactful technologies.

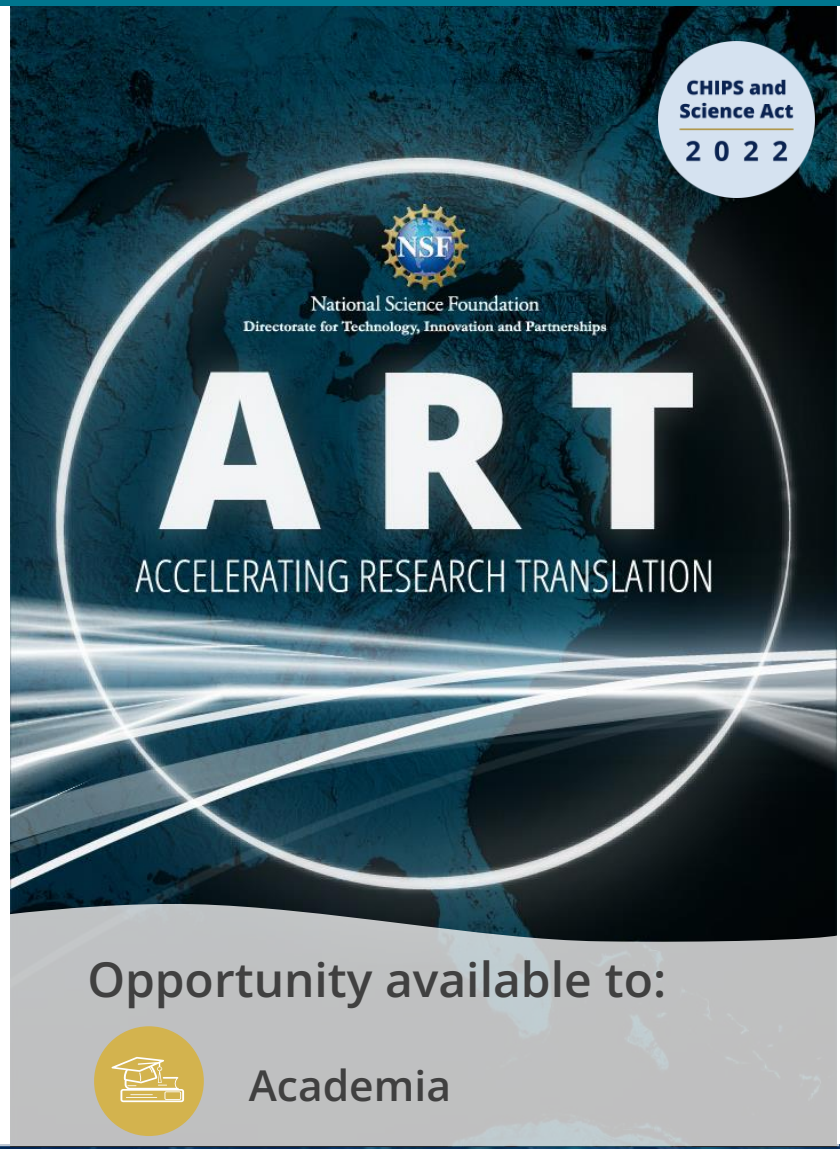
Two Phases:

PHASE I
1 year
Up to
$300,000

PHASE II
2 years
Up to
$1.5 million

Accelerating Research Translation (ART) program supports institutions of higher education to build capacity and infrastructure to strengthen and scale the translation of basic research outcomes into impactful solutions.

Awarded more than $100 million to **18 teams** at academic institutions across the nation.



Opportunity available to:

Academia

U.S. National Science Foundation
Directorate for Technology, Innovation and Partnerships

ART
ACCELERATING RESEARCH TRANSLATION

CHIPS and Science Act 2022

NSF ART Awards:

The NSF Accelerating Research Translation (ART) awards support institutions of higher education (IHEs) that seek to build capacity and infrastructure for translation of fundamental academic research into tangible solutions that benefit the public.

For more information, please visit the NSF ART program website.

Show ART Network
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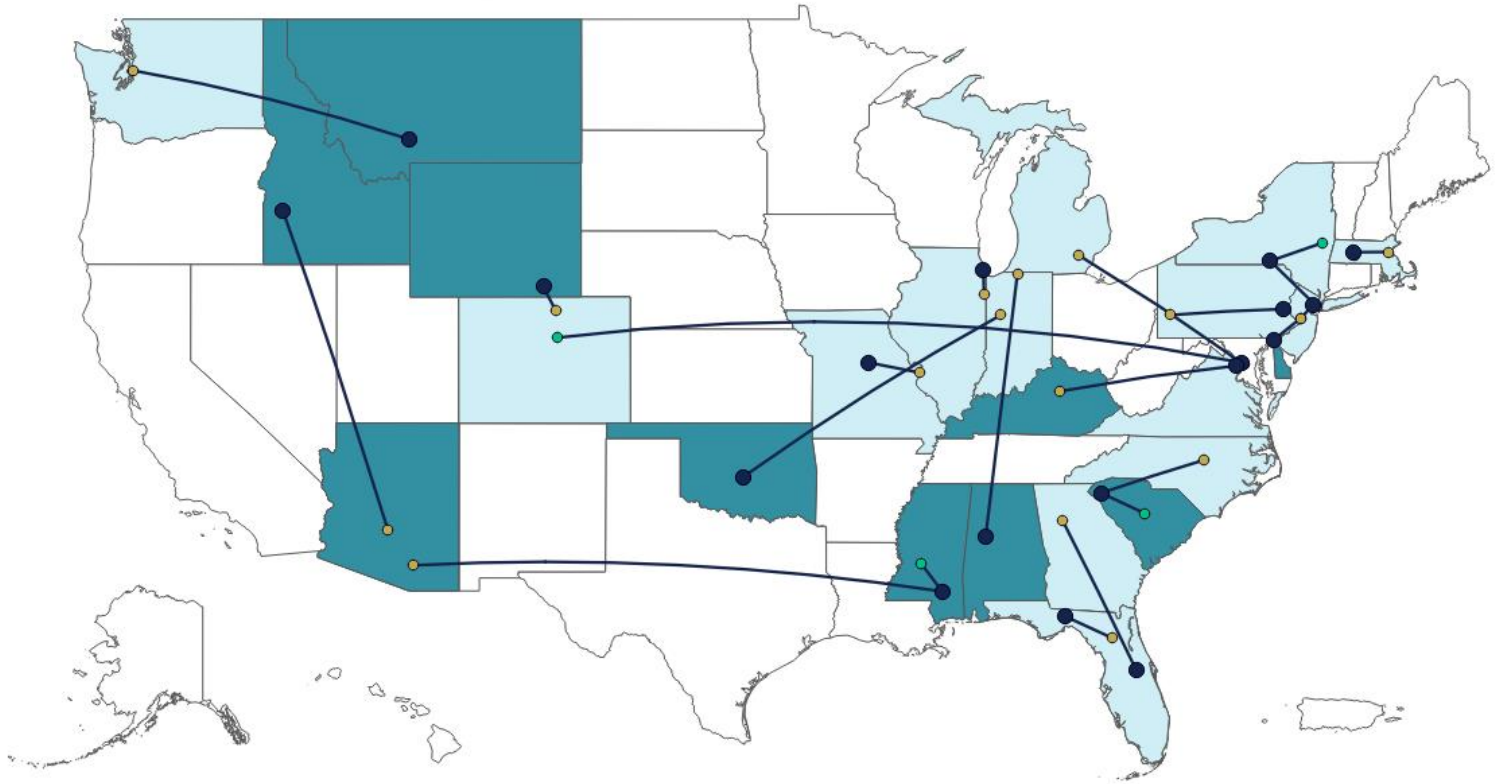
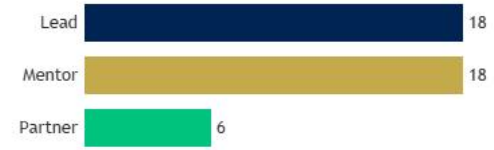


18 ART Awards Total

Project Roles by Institution

(Each ART award includes a Lead Institution and Mentor Institution. Some awards also include a Partner Institution.)



Lead Institution in EPSCOR Jurisdiction (Awards)

(EPSCoR: Established Program to Stimulate Competitive Research)

Awards with Woman PIs (Lead Institutions)

(PI: Principal Investigator)

Map Legend

State with Lead, Mentor, or Partner Institution involved in ART award

EPSCoR State with Lead, Mentor, or Partner Institution involved in ART award

The Responsible Design, Development and Deployment of Technologies (ReDDDoT) program is a collaboration with five philanthropic partners and crosses all disciplines of science and engineering. The program seeks to ensure ethical, legal, community and societal considerations are embedded in the lifecycle of technology's creation and use.

$16 million program

For more information visit:
https://new.nsf.gov/funding/opportunities/responsible-design-development-deployment

TIP's Core Message

TIP advances U.S. competitiveness and societal impact by nurturing partnerships that drive and accelerate:

Diverse Innovation Ecosystems

Technology Translation and Development

Workforce Development

Experiential Learning for Emerging and Novel Technologies (ExLENT) program promotes partnerships between organizations in emerging technology fields and those with expertise in workforce development to expand practical learning opportunities for individuals interested in entering or gaining more experience in emerging and novel technology.

NSF awarded **$18.8 million** to **27 projects** over 3 years. Proposals due **September 2024.**

Opportunity available to:

- Academia
- Business & Industry
- Governments
- Nonprofits

NSF Experiential Learning for Emerging and Novel Technologies

Click the icons on the map to see additional details.
Learn more about NSF Experiential Learning for Emerging and Novel Technologies program by visiting the website.

27 ExLENT Awards

7 Awards to MSIs

5 Awards in EPSCoR States

Awards by Emerging Tech Area

Quantum Information Science & Technology	2	4
Semi Conductors & HPC	4	2
Biotechnology	5	
Advanced Manufacturing & Robotics	4	
Advanced Energy & Industrial Efficiency Technologies	2	1
Artificial Intelligence	2	1

Awards by Organization Type

IHE	R1	8	2
	R2	5	2
	Baccalaureate College	1	2
	Master's College	2	1
	Community College	1	
NGO		2	1

Through a $20 million cooperative agreement, the **Entrepreneurial Fellowships** run by the non-profit, Activate.org, support researchers from a variety of backgrounds and geographies to move technologies from lab to market.

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2 years of training

At least **$350,000** in direct support, plus specialized research facilities and equipment

NSF funded the **Council of Graduate Schools** to expand data collection activities and help recruit graduate students in key technology areas. By collecting more data, universities will use data-driven decision making to address challenges in recruiting and retaining domestic graduate students underrepresented in STEM.

A combined nearly **$5.8 million** over **4** years.

For more information:
https://new.nsf.gov/tip/updates/nsf-supports-council-graduate-schools-efforts

TIP: Accelerating Research To Impact

RAMPING UP TIP

U.S. National Science Foundation
Directorate for Technology, Innovation and Partnerships

MARCH 22

March 16:
TIP established

May 3:
NSF TIP launches new initiative, Regional Innovation Engines program

July 20:
NSF, NIST, OSTP, UK announce privacy prize challenge

Sept. 7:
NSF, DOD partner to advance 5G security

Sept. 8:
NSF awards five new I-Corps™ Hubs

Sept. 19:
NSF launches Entrepreneurial Fellows program

Oct. 19:
NSF launches ExLENT program

Micron

Oct. 27:
NSF + Micron announce $10M semi. workforce partnership

Nov. 10:
NSF announces winners in first phase of NSF, NIST, OSTP, UK privacy prizes

Dec 8:
NSF launches EPIIC program

Dec 9:
NSF invests $12M in solutions for persons with disabilities

Dec 12:
NSF announces Builder Platform for NSF Engines

Dec 13:
NSF invests $11M in food nutrition security

Dec 19:
NSF invests $12M in advanced circular economy

Jan. 10:
NSF + NobleReach Emerge announce biotechnology investment

Jan. 26:
NSF announces FuSe program partnerships with Ericsson, Intel, IBM, and Samsung

MARCH 23

Feb 8:
NSF launches ART program

Mar. 15:
NSF launches Proto-OKN program

RAMPING UP TIP

U.S. National Science Foundation
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APRIL 23

Apr. 3:
NSF announces 100 teams advancing to VITAL Prize Challenge

Apr 25:
NSF launches new $9.5M opportunity to support NSF Engines

May 5:
NSF partners with Sweden for research and innovation

May 11:
NSF announces the first-ever NSF Engines program awards to 44 unique

June 14:
NSF selects 34 semifinalists for the inaugural NSF Engines competition

June 22:
NSF releases its I-Corps™ Biennial report

June 26:
NSF, EDA announce official coordination on regional innovation programs

TECH HUBS
U.S. Economic Development Administration

July 14:
NSF announces 54 teams picked for the VITAL Prize Challenge Semi-Final Round

Aug. 2:
NSF Regional Innovation Engines program selects 16 teams for the final round of competition

Sept 13:
New NSF effort expands I-Corps™ Teams training program

Sept. 14:
NSF and partners invest $45M in the future of semiconductors

Sept. 15:
NSF launches pilot program to identify barriers and tools for historically underrepresented commmunities in the innovation ecosystem

Sept. 21:
NSF invests $25M to advance technologies & communications to operate securely through 5G networks

Sept. 22:
NSF supports the Council of Graduate Schools in efforts to broaden participation in the nation's technology workforce

Sept. 26:
NSF invests $26.7M in building the first-ever prototype open knowledge network

Sept. 27:
NSF invests $18.8M in inaugural cohort of projects enabling experiential learning in key technologies

SEPT 23

RAMPING UP TIP

U.S. National Science Foundation
Directorate for Technology, Innovation and Partnerships

SEPT 23

Sept. 28:
NSF partners with the Institute for Progress to test new mechanisms for funding research and innovation

Sept. 29:
NSF announces award for the NSF Engines Builder Platform

Sept. 29:
NSF launches pilot program to enhance the potential for success of startups

Oct. 26:
NSF launches pilot to assess the impact of strategic investments on regional jobs

Dec. 14:
NSF announces first-ever Accelerating Research Translation awards to empower academic institutions to speed and scale translational research

Jan. 29:
NSF awards 10 inaugural NSF Engines

Sept. 28:
NSF invests $19.6M in emerging research institutions to grow their capacity to participate in regional innovation ecosystems and announces next funding opportunity

Oct. 24:
New report identifies pathways to strengthen U.S. competitiveness in key technology areas

Oct. 25:
NSF invests over $26M in open-source projects

Nov. 28:
NSF announces 18 teams for final round of the VITAL Prize Challenge

Dec. 7:
NSF advances technologies to improve quality of life for persons with disabilities

Jan. 9:
NSF launches Responsible Design, Development, and Deployment of Technologies program

Find Your Opportunities

Academia

- America's Seed Fund powered by NSF
- Accelerating Research Translation
- Convergence Accelerator
- Enabling Partnerships to Increase Innovation Capacity
- Experiential Learning for Emerging and Novel Technologies
- NSF Entrepreneurial Fellowships
- NSF Innovation Corps (I-Corps™)
- Partnerships for Innovation
- Pathways to Enable Open-Source Ecosystems
- Privacy-Enhancing Technologies Prize Challenge
- Prototype Open Knowledge Network
- NSF Regional Innovation Engines
- Responsible Design, Development, and Deployment of Technologies

Business & Industry

- America's Seed Fund powered by NSF
- Convergence Accelerator
- Experiential Learning for Emerging and Novel Technologies
- Pathways to Enable Open-Source Ecosystems
- Pathways to Enable Open-Source Ecosystems
- Privacy-Enhancing Technologies Prize Challenge
- Prototype Open Knowledge Network
- NSF Regional Innovation Engines
- Responsible Design, Development, and Deployment of Technologies

Government

- Convergence Accelerator
- Experiential Learning for Emerging and Novel Technologies
- NSF Regional Innovation Engines
- Responsible Design, Development, and Deployment of Technologies
- Visionary interdisciplinary Teams Advancing Learning Prize Challenge

Nonprofits

- Convergence Accelerator
- Experiential Learning for Emerging and Novel Technologies
- Partnerships for Innovation
- Pathways to Enable Open-Source Ecosystems
- Prototype Open Knowledge Network
- NSF Regional Innovation Engines
- Responsible Design, Development, and Deployment of Technologies
- Visionary interdisciplinary Teams Advancing Learning Prize Challenge

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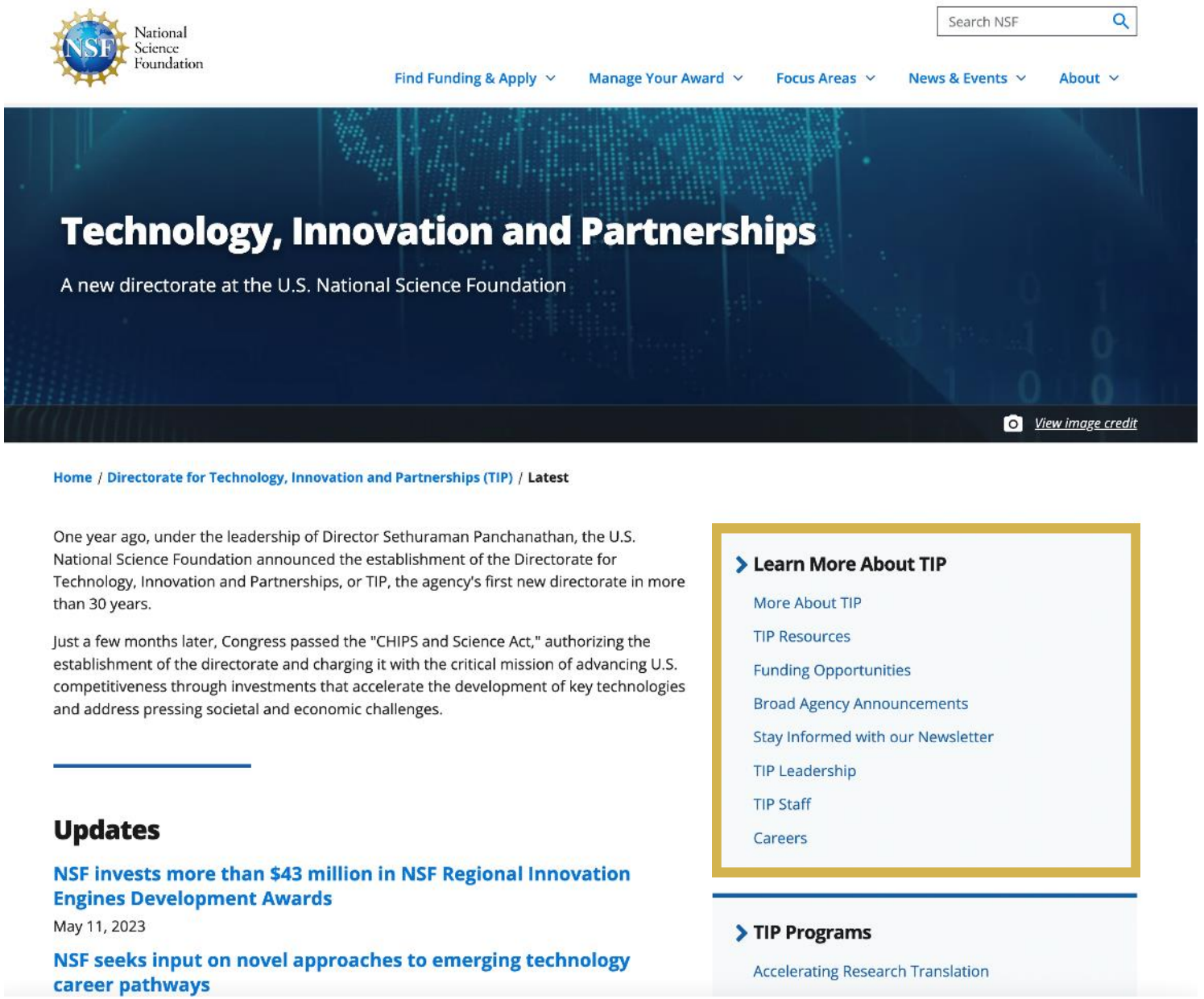

Upcoming deadlines

- America's Seed Fund powered by NSF – March 4, 2024
- I-Corps Hubs – April 25, 2024
- ReDDDoT - April 26, 2024
- PFI – September 3, 2024
- POSE – September 5, 2024
- ExLENT – September 12, 2024
- ART – September 18, 2024

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Questions?

- Email tip@nsf.gov
- Visit new.nsf.gov/tip