



National Science Foundation
Directorate for Technology, Innovation and Partnerships

Accelerating Technology, Innovation and Partnerships

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Directorate of Technology, Innovation, and Partnerships

December 06, 2023

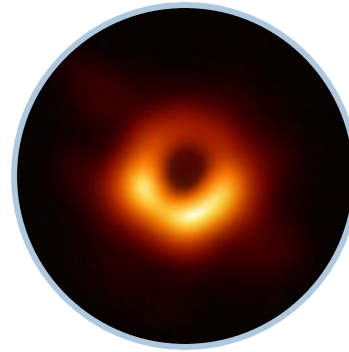
Seven Decades of NSF-Powered Innovations



**FOUNDATION FOR
THE INTERNET**



**3-D PRINTING
BREAKTHROUGH**



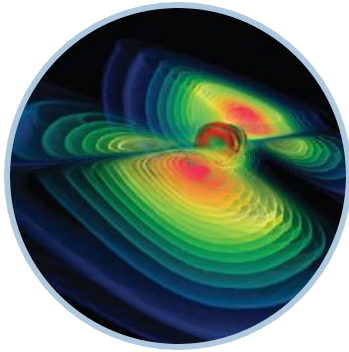
**FIRST IMAGE OF
A BLACK HOLE**



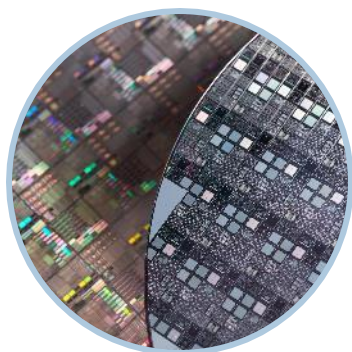
**RAPID COVID-19
TESTING**



**CLIMATE
FORECASTING**



**LIGO
GRAVITATIONAL
WAVES**



**COMPUTER CHIP
FABRICATION**



**ARTIFICIAL
INTELLIGENCE
(AI)**



**EARLY WEB
SEARCH**



**MAGIC
SCHOOL BUS**

NSF's Mission



NSF's Three Strategic Priorities



STRENGTHENING ESTABLISHED NSF

With **investments that expand the frontiers of knowledge and technology.**



INSPIRING THE MISSING MILLIONS

Using **interventions and capacity building** that enhance and broaden participation.



ACCELERATING TECHNOLOGY AND INNOVATION

Through innovative, **cross-cutting partnerships** and programs.

NSF Supports All Areas of Science and Engineering



Integrative Activities

International Science & Engineering

A Changing Landscape



A Pivotal Moment for the Nation and Society



Climate change

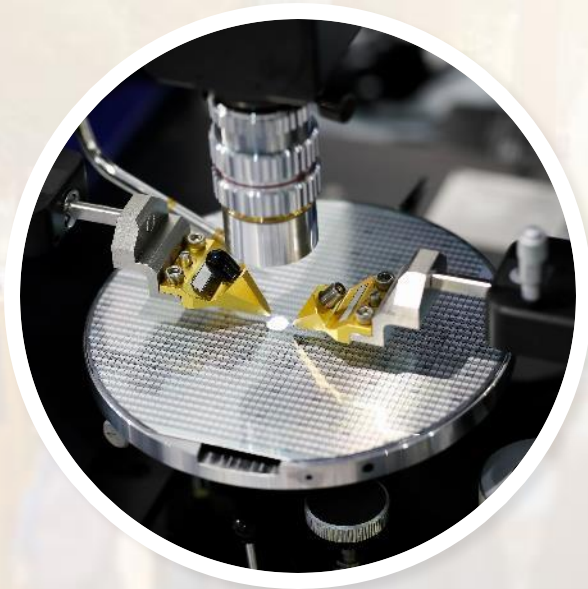


Equitable access to education, health care

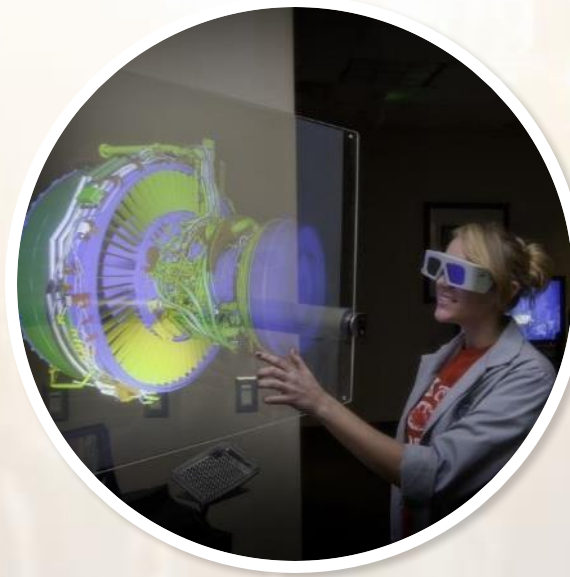


Critical and resilient infrastructure

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

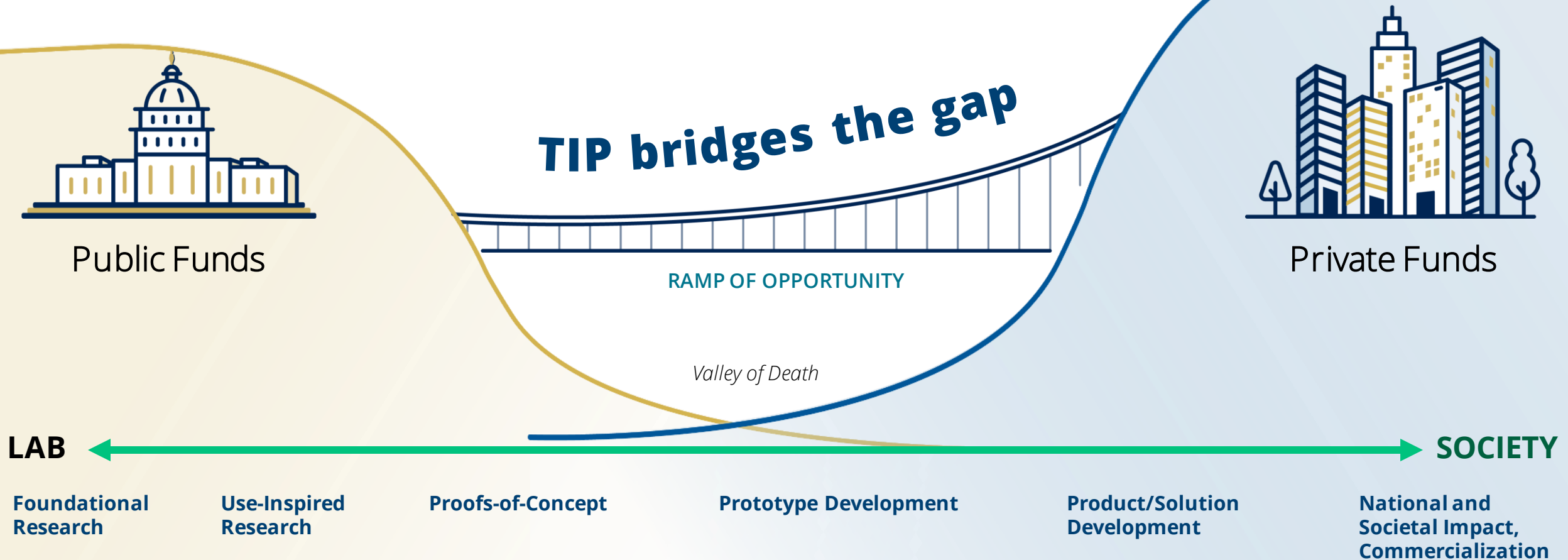


National Science Foundation
Directorate for Technology, Innovation and Partnerships

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.

TIP Programs Power Technology Breakthroughs



Catalyzing a Paradigm *Expansion*

Today

- Largely investigator-driven
- Primarily academic research teams
- Stream of discoveries improve prosperity, resilience, quality of life

“Technology / supply push”



Tomorrow

- Users / beneficiaries engaged in shaping, conducting research
- Multi-sector teams – academia, industry, government, civil society, communities of practice
- Important societal and/or economic problems drive research pursuits

“Market / demand pull”

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



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**

CHIPS and
Science Act
2022

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 - up to **\$1 million** for up to **2** years to plan for an Engine.

CHIPS and
Science Act
2022

Opportunity available to:



Academia



Business & Industry



Governments



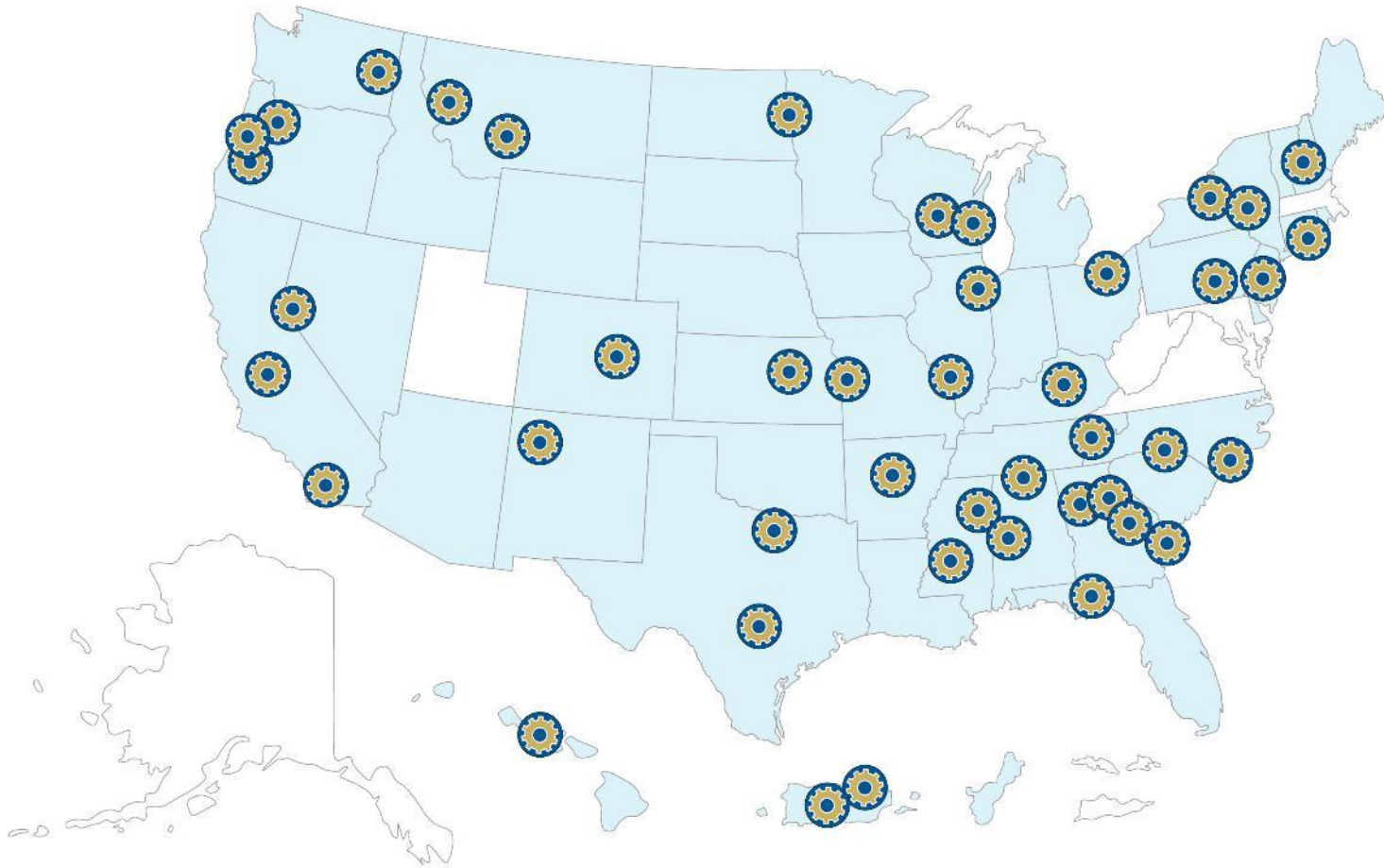
Nonprofits

NSF ENGINES

DEVELOPMENT AWARDS



44 NSF Engines State Development Awards

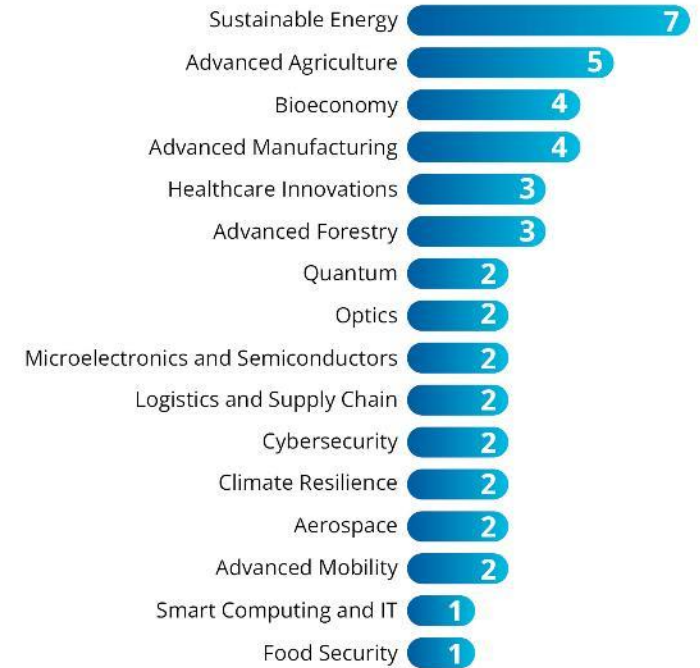


States and territories covered by at least one award

The first-ever NSF Engines Development Awards will help regional partners collaborate to advance key technologies, address societal challenges, and create economic opportunities. The awards to 44 unique teams span universities, nonprofits, business and other organizations across U.S. states and territories.

Topics

Each Award is aligned with one of the following topics.





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.



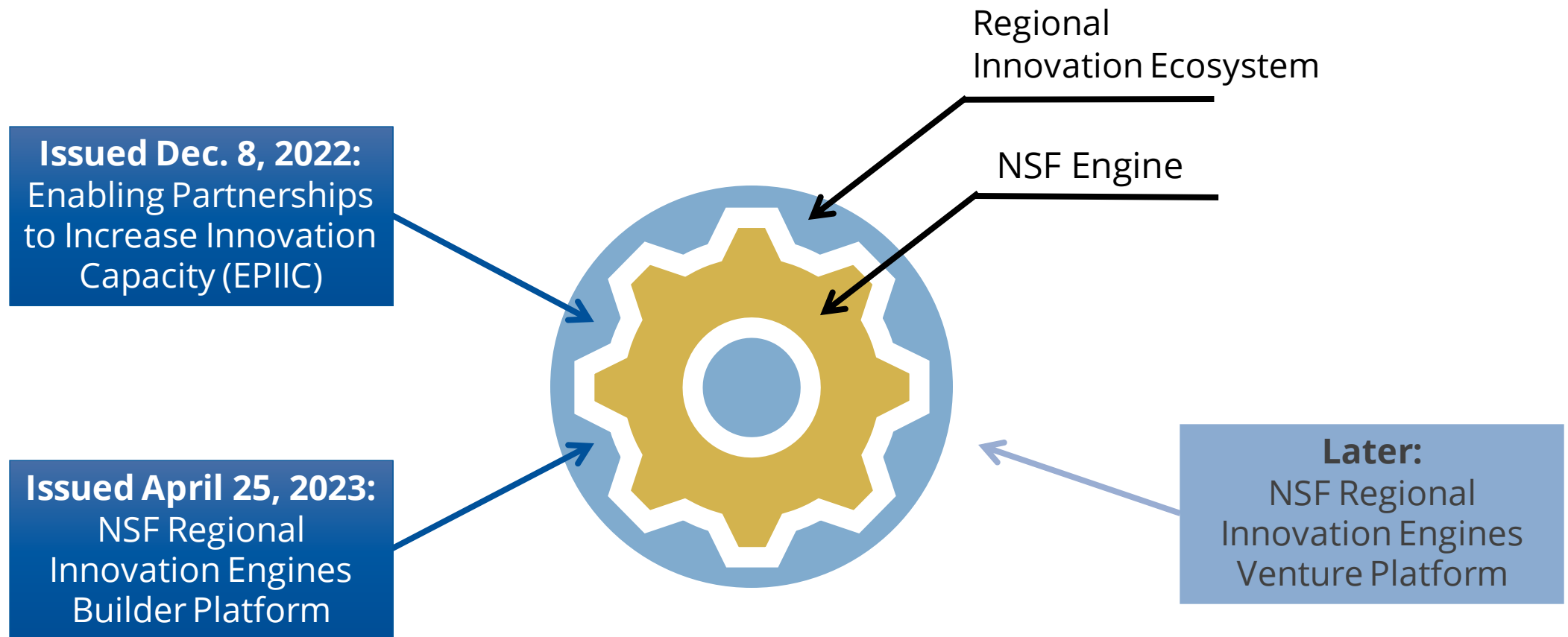
Opportunity available to:



Academia



NSF Engines: Scaffolding for Success



TIP's Core Message

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Diverse Innovation Ecosystems



Technology Translation and Development



Workforce Development



Partnerships for Innovation (PFI) program offers researchers a technology testbed to gain market insights, launch a commercial application or facilitate industry adoption. PFI helps researchers translate basic research into technologies and spurs university spinoff companies.

Two Phases:

TECHNOLOGY TRANSLATION

2 years
Up to **\$550,000**

RESEARCH PARTNERSHIPS

3 years
Up to **\$1 million**

Opportunity available to:



Academia



Nonprofits



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

6-12 months

Up to

\$275,000

PHASE II

2 years

Up to

\$1 million

PHASE IIB

Up to

\$500,000

CHIPS and
Science Act
2022



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

CHIPS and
Science Act

2022

Pathways to Enable Open-Source Ecosystems

Opportunity available to:



Academia



Business & Industry



Nonprofits



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.

Funding up to **\$6 million** over **4** years



Opportunity available to:



Academia



NSF seeks feedback on prioritizing and focusing TIP investments to advance U.S. technological competitiveness and address societal and economic needs as well as workforce gaps through use-inspired and translational research, public and private partnerships, and crosscutting investments.

Develop a roadmap over a **3**-year time frame

Advance U.S. competitiveness and develop the U.S. workforce in **10** critical technology areas.

Address societal, national and geostrategic challenges in **5** areas.



For more information visit:

<https://new.nsf.gov/tip/updates/nsf-seeks-input-develop-investment-roadmap>

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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



Opportunity available to:



Academia



Business & Industry



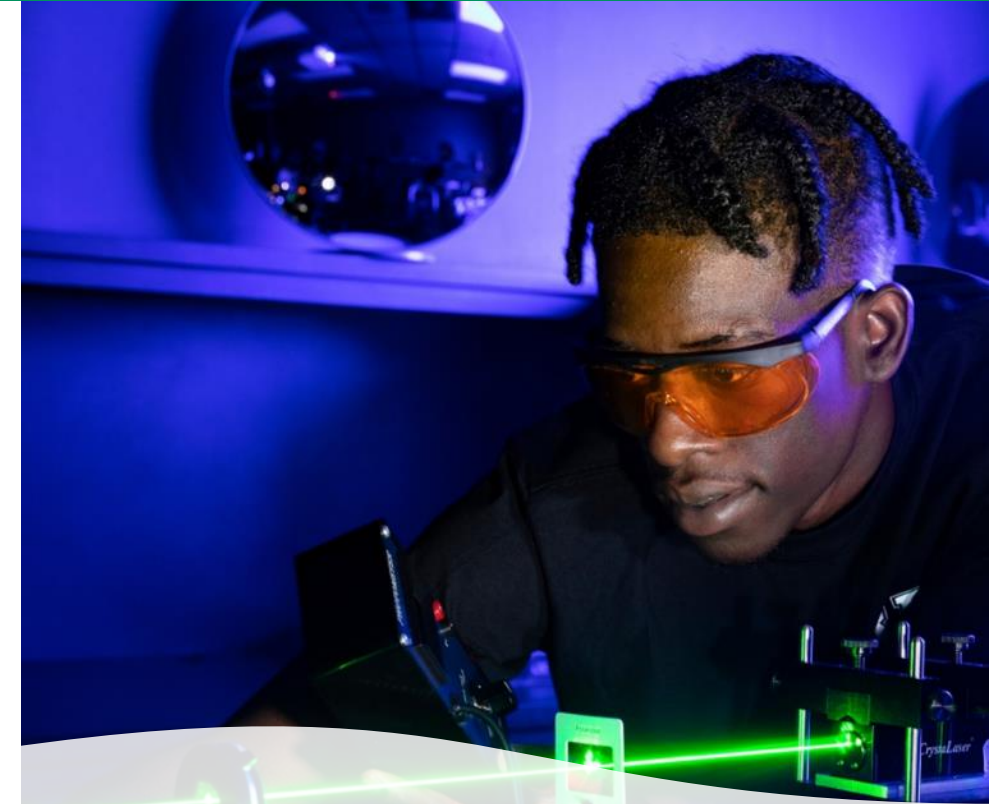
Governments



Nonprofits



NSF invited input on challenges and opportunities related to investing in robust and engaging pathways for talent interested in working in emerging technology areas. Information gathered will help identify and shape new funding opportunities to increase the rate and overall composition of domestic students enrolled in traditional academic and nontraditional STEM pathways that will lead to emerging technology careers.



To view the responses visit,
<https://new.nsf.gov/tip/stem-workforce-development-rfi-responses>



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.

2 years of training

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

Activate

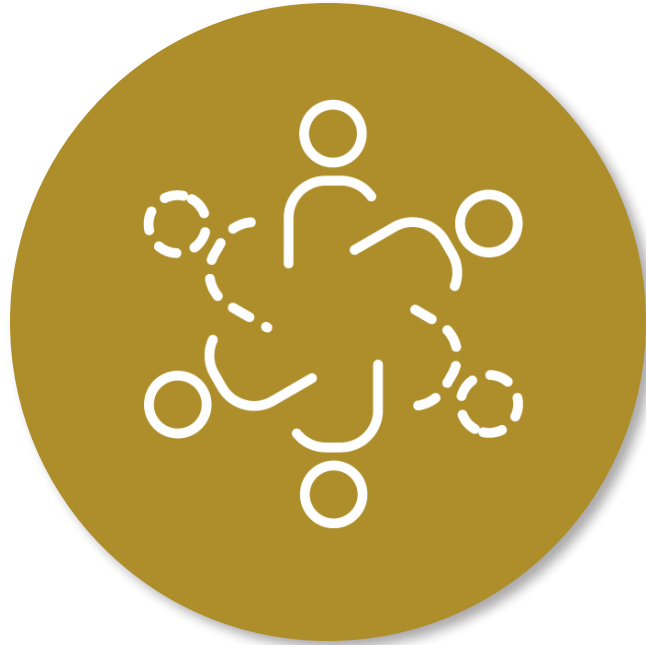
CHIPS and
Science Act
2022

Opportunity available to:



Individual Researchers

TIP: Accelerating Research To Impact



TIP: Accelerating Research to Impact



Diverse Innovation Ecosystems

Nurtures regional and national innovation and technology ecosystems to support researchers and innovators.

Technology Translation and Development

Supports researchers, startups, and entrepreneurs to create technologies and innovations with impact.



Workforce Development

Supports people from all demographics and geographies to get the training and expertise for the jobs of the future.



Partnerships as the Foundation

“To help develop and attract a pipeline of skilled talent from within the region, Intel plans to invest approximately \$100 million over the next decade in partnership with ... the U.S. National Science Foundation [ranging] from collaborative research projects to building semiconductor-specific curricula for associate and undergraduate degree programs.”

Micron Foundation,
National Science
Foundation and
Schumer announce

\$10 million

commitment to
semiconductor
education



“Significant investments such as this one will allow us to harness the best ideas from around the country to drive future semiconductor design and manufacturing as well as develop a diverse, next-generation semiconductor workforce, reaffirming U.S. competitiveness in this vital area. Today’s announcement builds on our long history of collaboration with industry like Intel to accelerate fundamental research and rapidly bring solutions to market.”

- Sethuraman Panchanathan
U.S. National Science Foundation Director

“[NSF] announced a cross-sector partnership with Micron Technology, Inc. to develop bold, potentially transformative solutions to address semiconductor manufacturing challenges and workforce shortages. NSF and Micron will each invest \$5 million in support of research, education, infrastructure capacity building, and workforce development...”

JANUARY 2022

NOVEMBER 2022

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



Business & Industry

- America's Seed Fund powered by NSF
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Government

- Convergence Accelerator
- Experiential Learning for Emerging and Novel Technologies
- NSF Regional Innovation Engines
- 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
- Visionary interdisciplinary Teams Advancing Learning Prize Challenge

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Technology, Innovation and Partnerships

A new directorate at the U.S. National Science Foundation

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One year ago, under the leadership of Director Sethuraman Panchanathan, the U.S. National Science Foundation announced the establishment of the Directorate for Technology, Innovation and Partnerships, or TIP, the agency's first new directorate in more than 30 years.

Just a few months later, Congress passed the "CHIPS and Science Act," authorizing the establishment of the directorate and charging it with the critical mission of advancing U.S. competitiveness through investments that accelerate the development of key technologies and address pressing societal and economic challenges.

Updates

[NSF invests more than \\$43 million in NSF Regional Innovation Engines Development Awards](#)

May 11, 2023

[NSF seeks input on novel approaches to emerging technology career pathways](#)

> Learn More About TIP

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National Science Foundation
Directorate for Technology, Innovation and Partnerships

Questions?

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