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

Accelerating Technology, Innovation and Partnerships

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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.

CHIPS & Science Act of 2022

NSF supports the full range of critical and emerging technologies, including the key technology focus areas enumerated in the "CHIPS and Science Act of 2022".
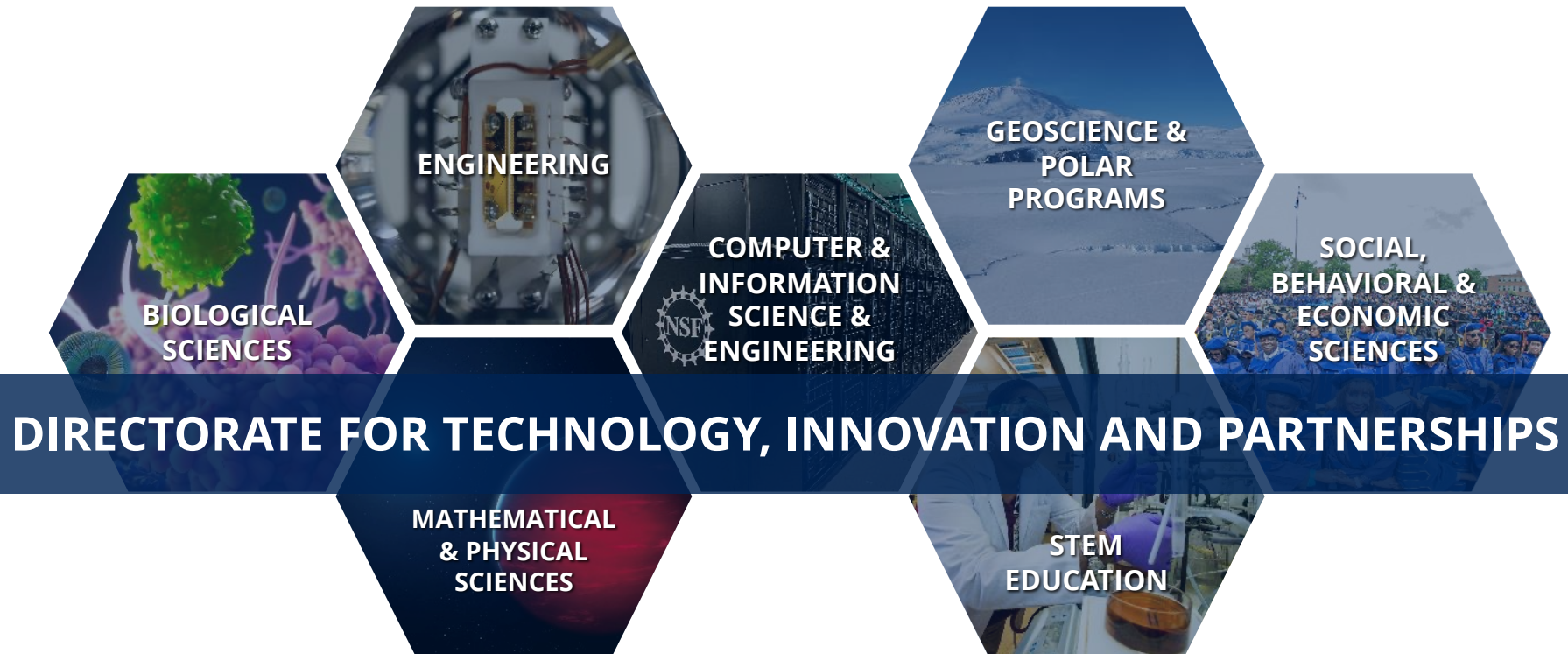
- Advanced computing and semiconductors
- Advanced materials
- Advanced communications
- Advanced energy and industrial efficiency technologies
- Artificial intelligence

- Biotechnology
- Cyberinfrastructure and cybersecurity
- Disaster prevention and mitigation
- Robotics and advanced manufacturing
- Quantum information science and technology

Five societal, national, and geostrategic challenges:
- *United States national security*
- *United States manufacturing and industrial productivity*
- *United States workforce development and skills gaps*
- *Climate change and environmental sustainability*
- *Inequitable access to education, opportunity, or other services*

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

ENGINEERING

GEOSCIENCE & POLAR PROGRAMS

BIOLOGICAL SCIENCES

COMPUTER & INFORMATION SCIENCE & ENGINEERING

SOCIAL, BEHAVIORAL & ECONOMIC SCIENCES

DIRECTORATE FOR TECHNOLOGY, INNOVATION AND PARTNERSHIPS

MATHEMATICAL & PHYSICAL SCIENCES

STEM EDUCATION

Integrative Activities

International Science & Engineering

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
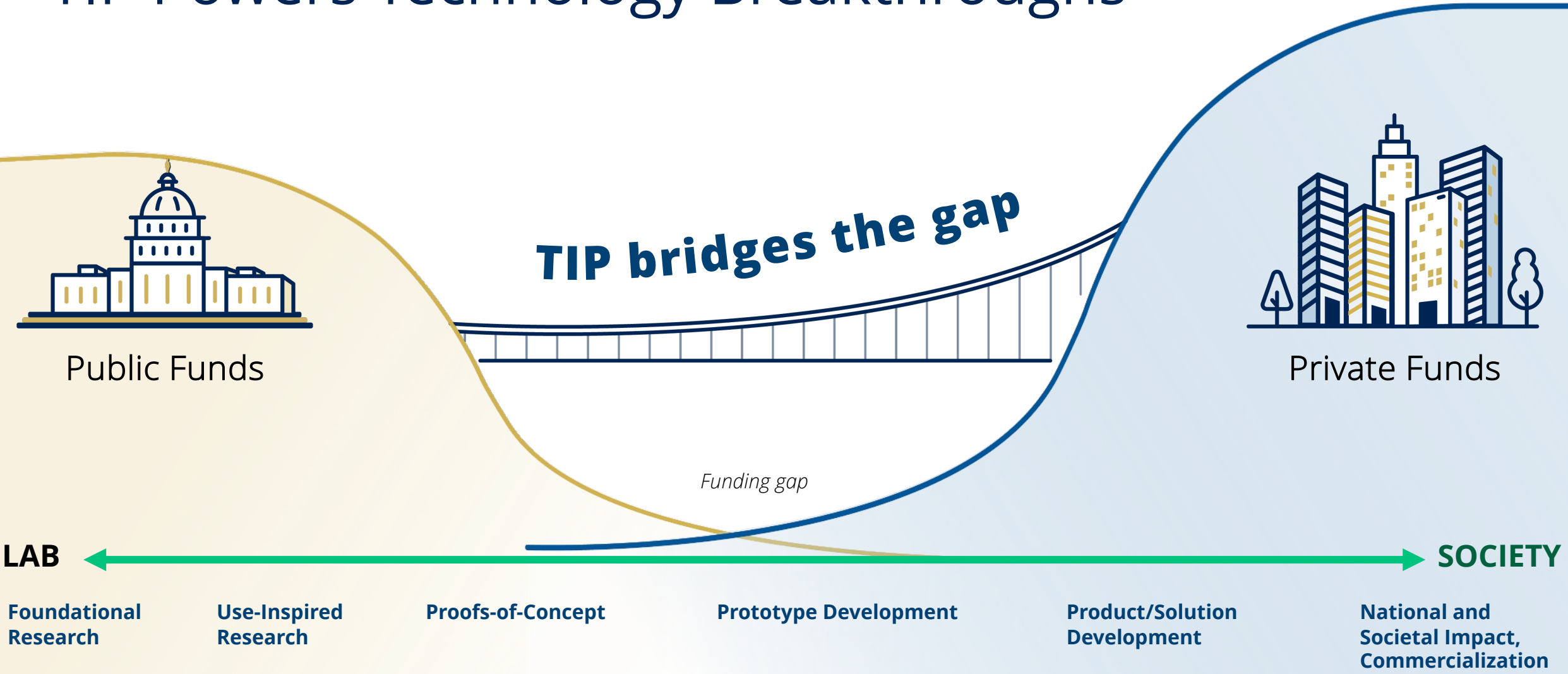
Public Funds

Private Funds

TIP bridges the gap

Funding gap

LAB ⟵————————————————————⟶ SOCIETY

Foundational Research **Use-Inspired Research** **Proofs-of-Concept** **Prototype Development** **Product/Solution Development** **National and Societal Impact, Commercialization**

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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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
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Opportunity available to:

Academia

Business & Industry

Governments

Nonprofits

U.S. National Science Foundation
**Directorate for Technology, Innovation
and Partnerships**
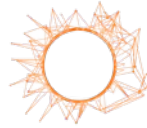
NSF Convergence Accelerator Portfolio

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

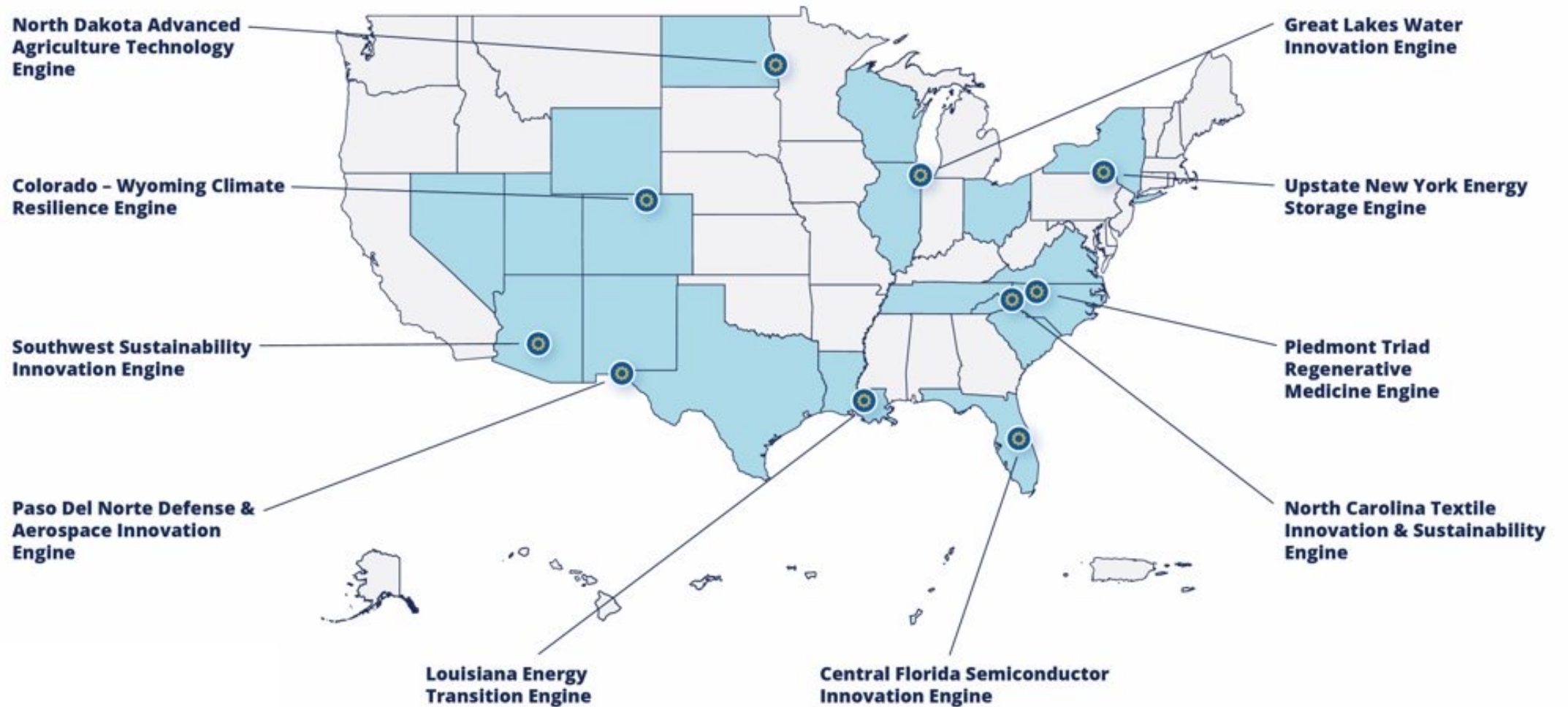**Opportunity available to:**

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Business & Industry

Governments

Nonprofits

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Directorate for Technology, Innovation and Partnerships

10 Inaugural NSF Engines

North Dakota Advanced Agriculture Technology Engine

Colorado – Wyoming Climate Resilience Engine

Southwest Sustainability Innovation Engine

Paso Del Norte Defense & Aerospace Innovation Engine

Great Lakes Water Innovation Engine

Upstate New York Energy Storage Engine

Piedmont Triad Regenerative Medicine Engine

North Carolina Textile Innovation & Sustainability Engine

Louisiana Energy Transition Engine

Central Florida Semiconductor Innovation Engine

NSF establishes 10 inaugural Regional Innovation Engines across the country

- The first-ever NSF Engines awards span 18 states.

- Initial investment of $150 million over two years, with a potential investment of nearly $1.6 billion over the next decade.

- This groundbreaking investment represents the single largest broad investment in place-based science and technology R&D in our nation's history.

"The inaugural NSF Engines awards demonstrate our enduring commitment to create opportunity everywhere and enable innovation anywhere. Through these NSF Engines, NSF aims to expand the frontiers of technology and innovation and spur economic growth across the nation through unprecedented investments in people and partnerships. NSF Engines hold significant promise to elevate and transform entire geographic regions into world-leading hubs of innovation."

- NSF Director Sethuraman Panchanathan

Funding Levels and Model

| PHASE 1: DEVELOPMENT | PHASE 2: NASCENT | PHASE 3: EMERGENT | PHASE 4: GROWTH | PHASE 5: MATURE |

Development Awards - $1M (2 years)

44 Awardees + 15 invited

NSF Engines – Up to $160M (Up to 10 years)

10 Awardees

10 Inaugural NSF Engines

North Dakota Advanced Agriculture Technology Engine

Colorado – Wyoming Climate Resilience Engine

Southwest Sustainability Innovation Engine

Paso Del Norte Defense & Aerospace Innovation Engine

Great Lakes Water Innovation Engine

Upstate New York Energy Storage Engine

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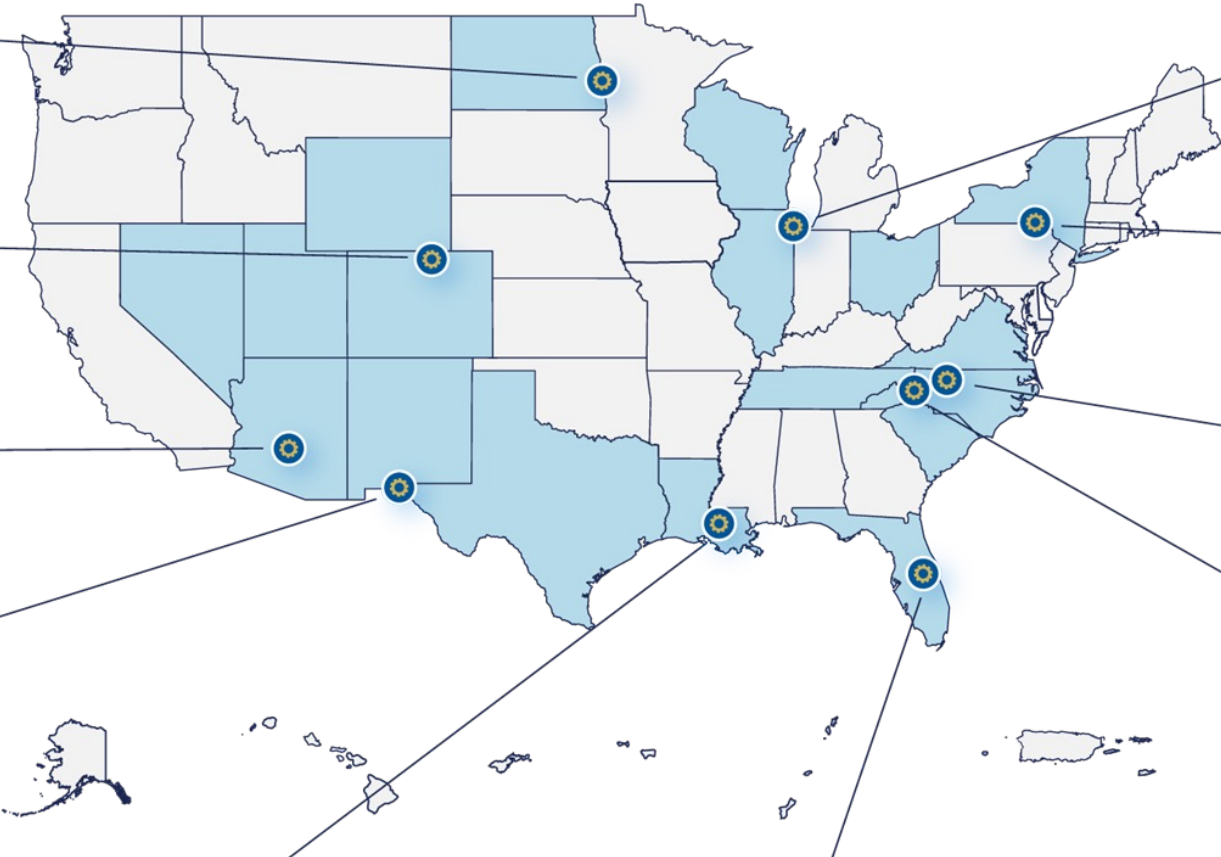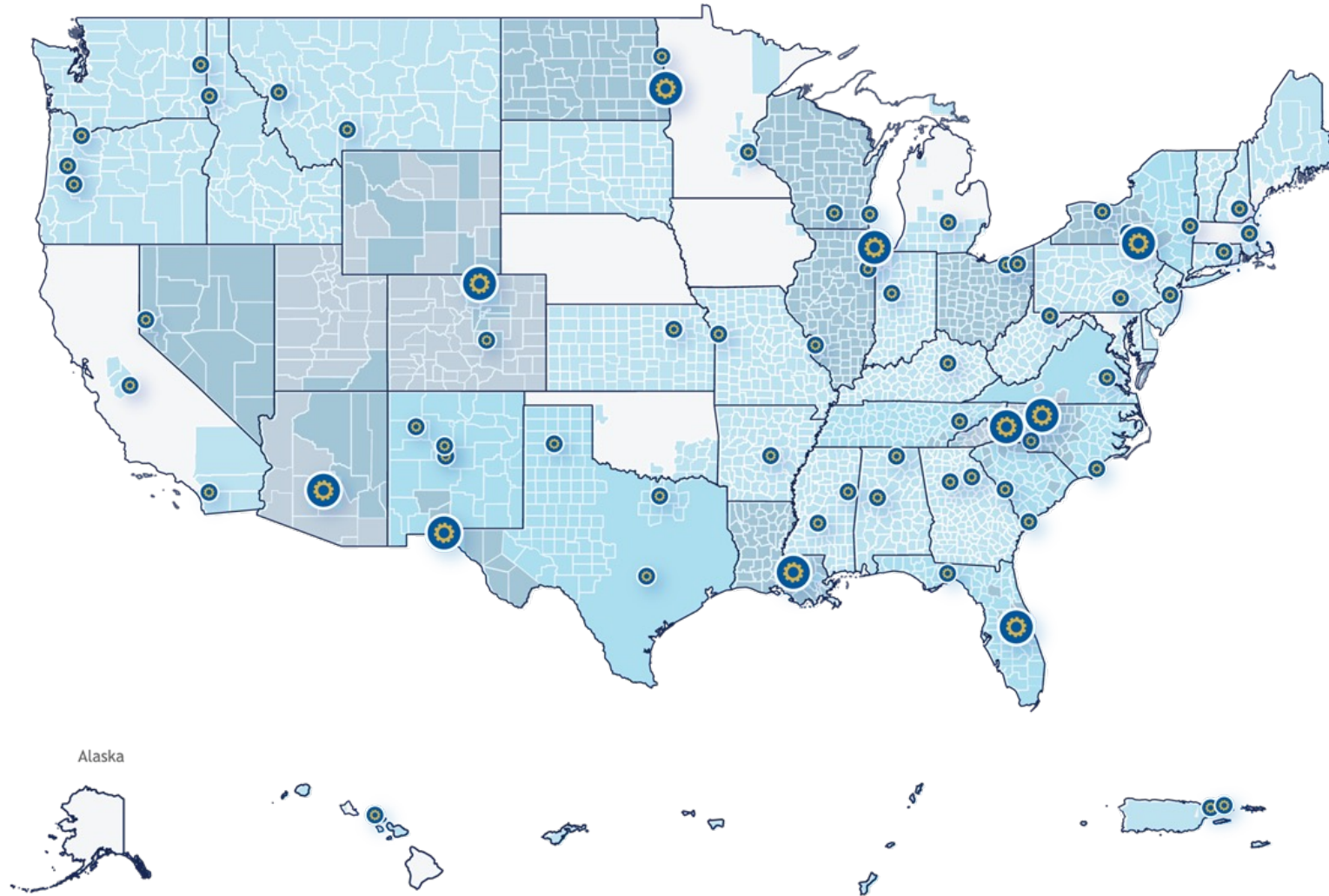
Louisiana Energy Transition Engine

Central Florida Semiconductor Innovation Engine

Full NSF Engines Portfolio

NSF Engines: By the Numbers

679 Concept outlines submitted

44 NSF Engines Development Awards

10 NSF Engines Inaugural Awards
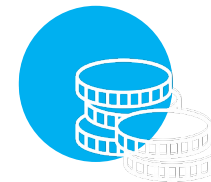
18 States receiving NSF Engines funding

10 Key technology areas from the CHIPS & Science Act represented in the portfolio

450+ Organizations partnering with NSF Engines Awardees

2:1+ Match of NSF funds from corporate, philanthropic, and government sources

40% First time NSF Engine awardees

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Share your interest in working with an NSF Engine

The NSF Engines team has created an interest form to help members of the innovation community connect with and support the NSF Engines Development Awardees and NSF Engines Awardees. NSF recognizes that building robust innovation ecosystems across the country requires identifying and working with new sources of talent and building diverse collaborations. The goal of this interest form is to create an entry point for individuals, organizations, and funders who are interested in supporting our portfolio of NSF Engine awardees and/or working within an NSF Engine to share their information.

Enabling 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 **$20 million** to nearly 50 teams.

New funding opportunity is available. Deadline to apply is **May 16, 2024**.
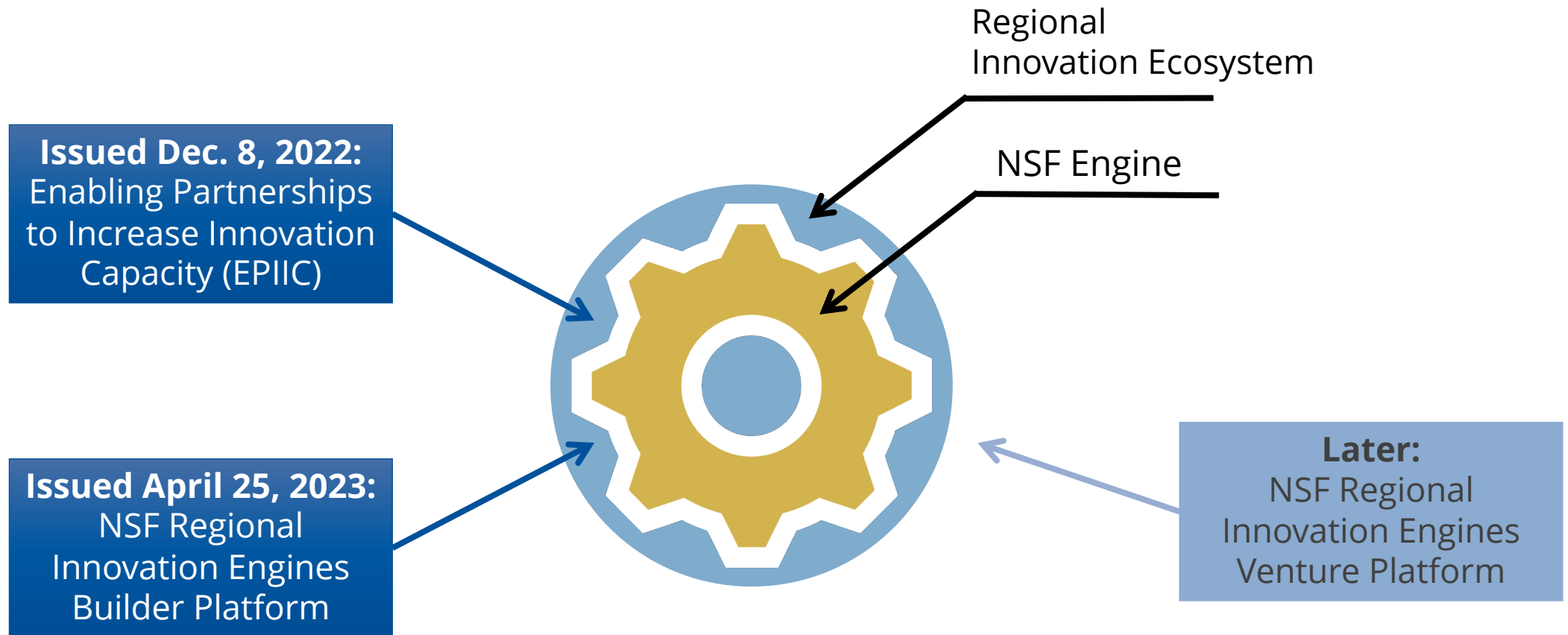
Opportunity available to:

Academia

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NSF Engines: Scaffolding for Success

Regional Innovation Ecosystem

NSF Engine

Issued Dec. 8, 2022:
Enabling Partnerships to Increase Innovation Capacity (EPIIC)

Issued April 25, 2023:
NSF Regional Innovation Engines Builder Platform

Later:
NSF Regional Innovation Engines Venture Platform

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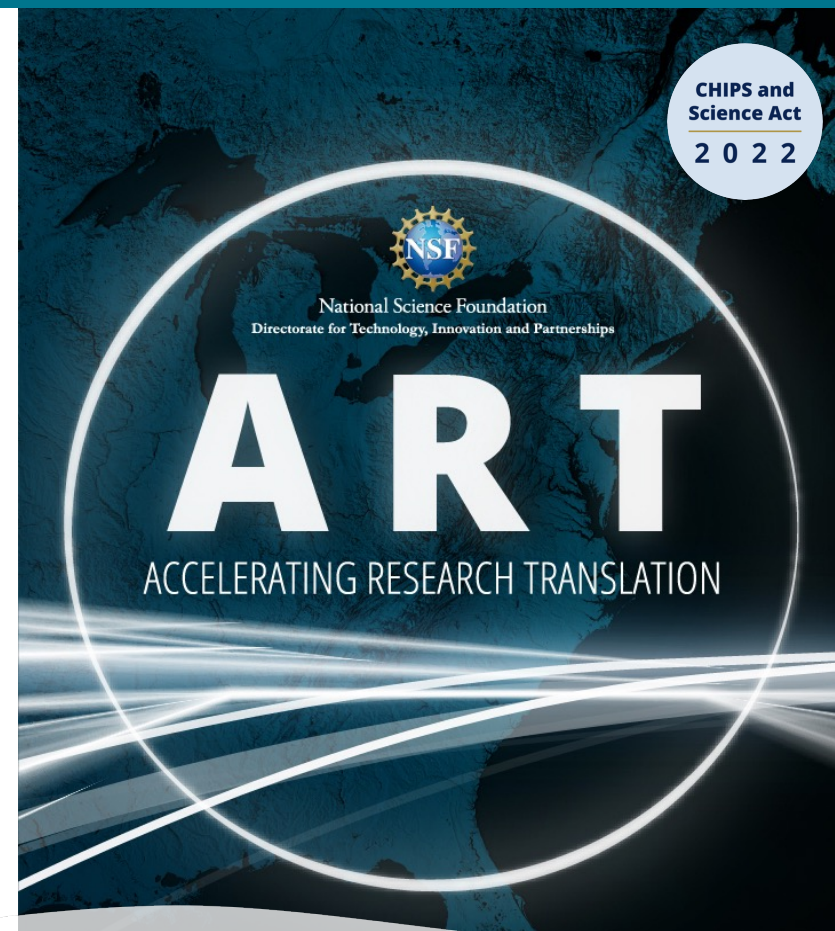Diverse Innovation Ecosystems

Technology Translation and Development

Workforce Development

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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.

CHIPS and Science Act 2022

ART
ACCELERATING RESEARCH TRANSLATION

NSF
National Science Foundation
Directorate for Technology, Innovation and Partnerships

Opportunity available to:

Academia

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

ReDDDoT
Responsible Design, Development, & Deployment of Technologies

CHIPS and Science Act 2022

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

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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.

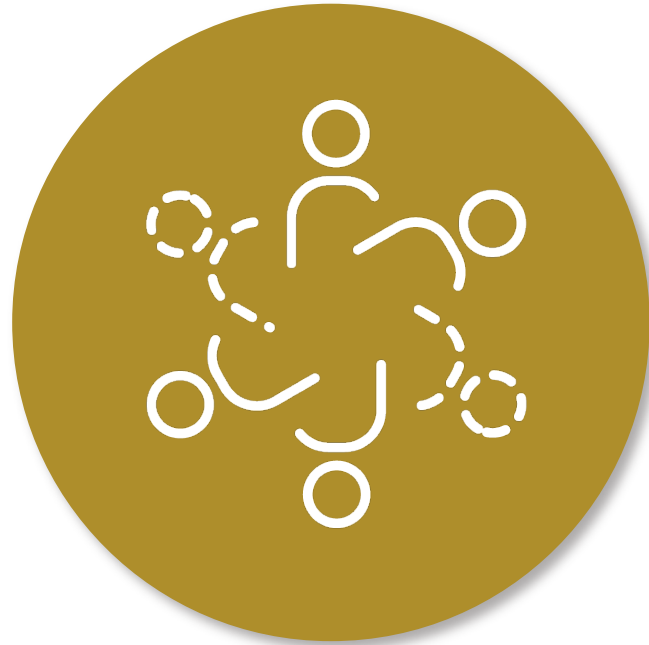**Opportunity available to:**

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TIP: Accelerating Research To Impact

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Questions?

- Email tip@nsf.gov or jthongno@nsf.gov
- Visit https://new.nsf.gov/tip/latest