

TIP 2024 ANNUAL IMPACT REPORT

CHIPS and Science Act of 2022; Section 10399



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



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TIP Annual Impact Report (2023-2024) — Celebrating 2 years of progress accelerating transformative technologies — and strengthening America’s new innovation frontier

August 2025

The U.S. National Science Foundation [Directorate for Technology, Innovation and Partnerships](#) (NSF TIP) is proud of our team’s collaborations with our colleagues across NSF and our partners who have successfully seized upon this generational moment to build upon NSF’s longstanding mission and power a new frontier in American innovation for the mid-21st century.

NSF TIP is focused on creating opportunities everywhere because innovation can happen anywhere. And indeed, in just a few short years, we have made intentional and strategic efforts to engage with and impact every corner of the nation, powering a new generation of talent and technology that will ensure the U.S. remains competitive for decades to come. We want to take a moment to briefly highlight some of our key milestones since August 2023 — our last TIP Directorate annual report. (Find a full timeline of TIP’s updates over the last couple of years on the [TIP timeline webpage](#).) But before we do, here are a few links that capture the full breadth and depth of TIP’s portfolio since its founding in March 2022, as well as a look ahead to what comes next:

- See the investments that TIP has made nationwide since 2022 on a new [investment pilot portal](#), an interactive map and award data dashboard that allows the American public a new way of seeing the scale of TIP’s investments in key technology [areas](#) and their impacts all across the United States.
- Read the [TIP investment roadmap](#) that is guiding the directorate as we stage investments in key technology areas. The investment roadmap identifies four near-term TIP focus areas that are driving the development of new use-inspired and translational funding opportunities across TIP, infrastructure investments and workforce development efforts to address key vulnerabilities to U.S. competitiveness. In tandem with these technology-specific investments, many of TIP’s programs continue to welcome proposals spanning the full breadth of key technology focus areas.
- Read the [National Academy of Public Administration report](#), required by the “CHIPS and Science Act of 2022” and commissioned by NSF, providing an assessment of the establishment of the TIP Directorate. This report sought to assess whether the directorate had been constituted to effectively and efficiently deliver its mission to accelerate key technologies, address pressing national challenges and grow the American workforce of the future, and to also assess the directorate’s plans for engaging with NSF’s other directorates and offices, other federal agencies and beyond. TIP leadership acknowledged the value of this report and expressed gratitude to the study panel for a balanced set of findings and recommendations that will benefit TIP, NSF and the nation’s innovation ecosystem for years to come.

Building America’s new industrial innovation base through regional innovation and economic growth

TIP remains committed to fostering a new industrial innovation base for America for the 21st century by catalyzing regional innovation and economic growth. In response to the funding opportunity for the second round of the NSF Regional Innovation Engines (NSF Engines), TIP recently received and published [nearly 300 letters of intent \(LOIs\) spanning every U.S. state and territory](#). The LOIs are a first step in applying to become one of the next NSF Engines and joining a network of coalitions advancing technology leadership as well as regional innovation and economic growth, including workforce development. By transparently publishing the LOI data, we aim to encourage proposers to connect and strengthen regional consortia to enhance their success potential. Preliminary proposals for the funding opportunity were due in early August 2024, and we will continue to publish data from the submissions to foster transparency and teaming nationwide.

Accelerating technology translation and development

Even beyond the technological innovation enabled through the place-based approach described above, TIP has initiated strategic and focused investments in key technology areas, bringing academia, industry, government, philanthropy and nonprofits, and venture capital and investment together around topics critical to U.S. competitiveness. This past year, following a canvassing across the key technology areas, TIP launched four new, technology-specific funding opportunities in areas where federal investment into multi-sector research teams could potentially overcome barriers to translation, unlocking entire ecosystems of technology innovation and follow-on investment:

- [Breaking the Low Latency Barrier for Verticals in Next-G Wireless Networks](#) will simultaneously grow the demand for advanced 5G and next-generation telecommunications network deployment and accelerate the adoption of a range of emerging applications that depend on them — from autonomous vehicles to tele-medicine platforms. Success of this program will help the U.S. establish itself as a global leader in next-generation wireless telecommunications as well as emerging wireless vertical industries.
- [Use-Inspired Acceleration of Protein Design](#) is designed to accelerate artificial intelligence-based translational research in protein design. This initiative brings together experts from industry and academia to build a strong foundation and ecosystem and positions the U.S. to lead in applications of importance to the U.S. bioeconomy.
- [Advancing Cell-Free Systems Toward Increased Range of Use-Inspired Applications](#) looks to speed up the adoption of cell-free systems for biochemical applications, potentially transforming the entire industry sector. This collaborative initiative between industry and academia aims to overcome key limitations of cell-free technology and drives continuous cycles of improvement to advance biomanufacturing capabilities, which will revolutionize biotechnology efforts from health care to bioeconomy.

- [Privacy-Preserving Data Sharing in Practice](#) seeks to spur the development of practical and scalable privacy-preserving data-sharing solutions. The program aims to accelerate the translation of technologies that enable data sharing and collaboration while preserving privacy, facilitating the ability to responsibly harness value from data, including in the development and use of artificial intelligence.

Preparing the U.S. workforce

Recognizing the evolving jobs landscape, TIP is partnering and creating opportunities to ensure that all Americans have access to good-quality, high-wage jobs. Over the course of this past year, TIP invested in training people and building partnerships across sectors, bringing together experts in key technologies and workforce development.

- TIP invested in its first NSF Experiential Learning for Emerging and Novel Technologies (NSF ExLENT) awards to nearly 30 teams. NSF ExLENT equips people with varying experience levels with skills that offer pathways in emerging technology fields.
- TIP also continued to invest in the expansion of the NSF Entrepreneurial Fellowship program, providing fellows with training and direct support. With funding from TIP, the nonprofit organization, Activate, was able to expand its Activate [Anywhere](#) program, which meets founders and small businesses in regions outside of the typical tech bubbles, supporting fellows across 25 states.

During the period August 2023-August 2024, TIP — together with the rest of NSF — sought to be a disruptive agent, paving the way toward a new frontier in American innovation, driven by use-inspired and translational research and talent development. Just a few early wins: The directorate invested \$1.4 billion backing 1,200 startups to derisk technologies, catalyzing nine NSF Engines and 58 NSF Engines Development awardees, and providing over 1,000 internships or experiential opportunities. These efforts have spurred billions in follow-on investment, matching commitments from industry, philanthropy and local governments, and over \$1 billion in partnership funding leveraged to support the agency’s mission. We are engaging all Americans in our technology leadership agenda, powering breakthrough technologies and ensuring the nation’s competitiveness and security for generations to come. We thank all of you who have been on this journey these last two years. Here’s to the next two and many more.

Sincerely,

Erwin Gianchandani
NSF Assistant Director for Technology, Innovation and Partnerships

Gracie Narcho
NSF Deputy Assistant Director for Technology, Innovation and Partnership

Annual Report of the U.S. National Science Foundation Directorate for Technology, Innovation and Partnerships

Background

This report responds to Public Law No. 117-167, “Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022,” which specified the following requirement:

Section 10399. Reports and roadmaps. (a) Annual report. — The Director [of the U.S. National Science Foundation] shall provide to the relevant authorizing and appropriations committees of Congress an annual report describing projects supported by the [Technology, Innovation and Partnerships] Directorate during the previous year.

Overview

Established by the “National Science Foundation Act of 1950” (Public Law No. 81-507), the U.S. National Science Foundation is an independent federal agency whose mission is “to promote the progress of science; to advance the national health, prosperity and welfare; to secure the national defense; and for other purposes.” NSF is unique in carrying out its mission by supporting fundamental and translational research and education across all fields of science, technology, engineering and mathematics.

In March 2022, NSF created the Directorate for Technology, Innovation and Partnerships (NSF TIP), the first new directorate in more than 30 years. Just a few months later, the Directorate was codified with the specific charge to:

“support translational research, accelerate the development and use of federally funded research, strengthen U.S. competitiveness through development of key technologies, and expand student and researcher participation and the U.S. workforce in key technologies and in areas of societal, national, and geostrategic importance.”¹

NSF TIP engages all Americans in accelerating key technologies to advance U.S. competitiveness. The directorate partners across sectors to advance three primary goals — accelerating technology development, fostering regional innovation and economic growth, and preparing all Americans for the jobs of today and tomorrow. TIP nurtures partnerships with the private sector, philanthropy and investment to further this work.

TIP’s approach is intentionally disruptive: the directorate pursues its mission with a hypothesis-driven agenda, ensuring every investment tests a hypothesis; identifies metrics for validating that hypothesis and assessing progress; experiments with novel approaches to proposal solicitation, peer review, and award management; and utilizes a results-driven approach to deciding whether and how to continue.

This second annual report outlines the accomplishments of TIP from August 2023 through August 2024.

Regional innovation and economic growth

TIP fosters technology-driven economic growth by engaging ecosystems of researchers, practitioners and users to shape research directions, catalyze iterative codesign and cocreation, and prepare American workers for high-paying jobs in critical technology areas to ensure U.S. competitiveness.

NSF announces awards in chemical sensing and water solutions

In February 2024, NSF announced a \$10.4 million investment in 16 teams to begin Phase 1 of Real World Chemical Sensing Applications to develop technologies and solutions for a wide range of challenges related to chemical and biological sensing and a \$9.8 million investment in 15 teams in Future Water Solutions to address challenges such as freshwater supply and management; hydrologic systems and infrastructure; and resiliency against rising temperatures, droughts and pollution.

NSF announces awards in food and nutrition security and bio-inspired designs

Also, in February 2024, NSF announced seven teams would advance to Phase 2 of Food and Nutrition Security investments. Each team will receive up to \$5 million to tackle the complex challenges of food and nutrition security related to population growth and rising diet-related diseases.

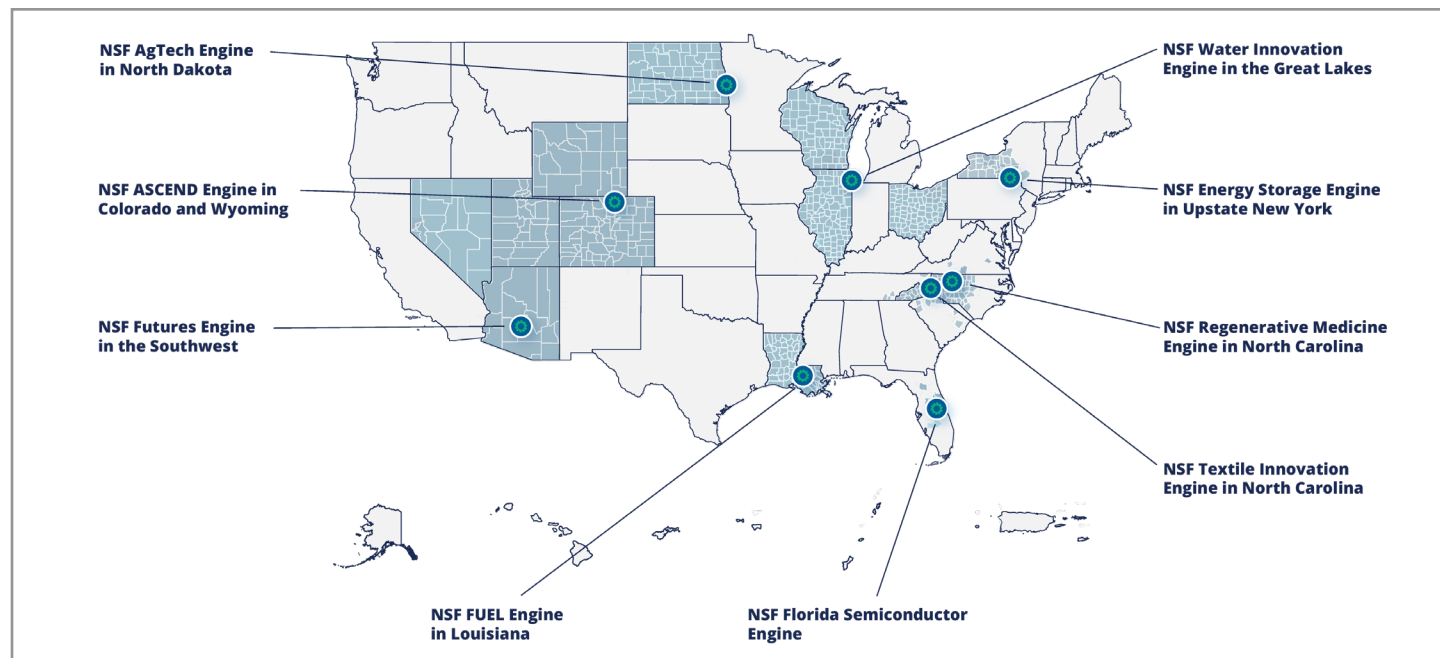
Later that month, NSF announced awards to 15 teams to begin Phase 1 of Bio-Inspired Design Innovations. These teams will work to pioneer innovative technologies and solutions addressing pressing societal and economic challenges. With this announcement, NSF is investing \$9.75 million to advance novel solutions for complex societal and economic challenges inspired by biological systems.

NSF Engines

In January 2024, [NSF announced the establishment of nine inaugural NSF Regional Innovation Engines \(NSF Engines\)](#) to invest in place-based innovation all across America. With a potential NSF investment of nearly \$1.6 billion over the next decade, [NSF Engines](#) would be one of the single largest, broad investments in place-based research and development in the nation’s history. In addition to the nine NSF Engines, a subset of semifinalists and finalists were invited to pursue NSF Engine Development Awards, which enable team building, partnership development and other necessary steps toward future NSF Engines proposals. They joined [44 existing NSF Development Awardees announced in May 2023](#). A key element of the NSF Engines program is the [Builder Platform](#) that NSF announced in September 2023, a unique post-award model designed to significantly contribute to the success of the NSF Engines by providing tailored resources and personalized engagement to awardees.

Closely aligned with NSF Engines, the [NSF Enabling Partnerships to Increase Innovation Capacity \(EPIIC\)](#) program is helping engage more organizations in innovation ecosystems like NSF Engines. In September 2023, [TIP announced the first-ever EPIIC awards](#) to emerging research institutions to grow their capacity to participate in regional innovation ecosystems.

¹ <https://www.congress.gov/bill/117th-congress/house-bill/4346/text>



NSF Engines Inaugural Awards Map

New funding opportunity seeks to invest in additional NSF Engines

On April 16, 2024, NSF announced a funding opportunity to invest in a new set of NSF Engines across the U.S. This new solicitation builds upon the January 2024 announcement of the nine inaugural NSF Engines, representing forward momentum to create flourishing regional technology- and innovation-driven leaders of economic activity throughout the U.S.

NSF invests \$19.6M in emerging research institutions to grow their capacity to participate in regional innovation ecosystems

NSF announced the first-ever EPIIC investment of \$19.6 million to nearly 50 teams at U.S. institutions of higher education. Each awardee will receive up to \$400,000 over three years and receive support to develop capacity and institutional knowledge to help them build new partnerships, secure future external funding and tap into their regional innovation ecosystems — potentially into an NSF Engine. NSF also recently released the next funding opportunity for EPIIC.

NSF announces award for its Builder Platform

NSF announced a three-year, \$9.5 million investment in The Engine Accelerator, a public benefit corporation with origins at the Massachusetts Institute of Technology. The Engine Accelerator will develop, launch, and run the NSF Engines Builder Platform, a unique post-award support model that will provide tailored resources and a high level of personalized engagement to significantly contribute to the success of the NSF Engines.

Technology translation and development

TIP's investments in technology translation and development cover the full technology development life cycle. The directorate supports institutions of higher education to build

capacity and opportunities for researchers to transition foundational research to use-inspired research. Additionally, the directorate makes targeted investments to accelerate key technology areas to drive U.S. competitiveness. And TIP investments support efforts by entrepreneurs and researchers to prototype and build technologies, moving ideas from the lab to society.

Building capacity

In technology translation, the NSF [Accelerating Research Translation \(ART\) program](#) is expanding capacity at institutions of higher education to translate their research to practical applications. In December 2023, TIP, in partnership with other NSF directorates, [invested more than \\$100 million in 18 ART teams](#) to speed and scale their translational research.

TIP is also committed to the long-term work of accelerating technology translation and development by aligning science and technology research and development investments with outcomes essential to U.S. competitiveness. TIP announced the first-ever NSF Assessing and Predicting Technology Outcomes investment in five teams with a potential of up to \$51.4 million over five years. This investment will enable organizations to assess and evaluate the effectiveness of U.S. research and development endeavors and create models and information for decision-makers to optimize investments and advance long-term U.S. competitiveness.

Key technology area investments

TIP has also been working to accelerate the translation and development of breakthrough technologies. Several new TIP programs concentrate on use-inspired and translational research in specific key technology areas.

NSF invests \$26.7M in building the first-ever prototype open knowledge network

In collaboration with five other U.S. government agencies, NSF has invested \$26.7 million in 18 projects through its NSF Building the Prototype Open Knowledge Network program. The multidisciplinary, cross-sector teams will create knowledge graphs, connections and educational materials for a trustworthy open knowledge network. An open knowledge network is a publicly accessible, interconnected set of data repositories and associated knowledge graphs that will enable data-driven, artificial intelligence-based solutions for a broad set of societal and economic challenges.

NSF invests \$25M to advance technologies and communications to operate securely through 5G networks

In September 2023 and in collaboration with the Department of Defense, NSF announced a \$25 million investment in five teams focused on the intersection of national security and 5G infrastructure. Through this investment, NSF is tackling 5G communication infrastructure and operational challenges. The goal of the effort is to enable enhancements to end devices — such as smartphones and tablets — and augmentations to 5G wireless infrastructure, providing capabilities to military, government and critical infrastructure operators to operate through public 5G networks while meeting security and resilience requirements.

New \$12M funding opportunity seeks to break the low-latency barrier for next generation of wireless network applications

In February 2024, NSF announced a new \$12 million funding opportunity to convene innovators in wireless communications to develop and validate low-latency communications technologies. Breaking the Low Latency Barrier for Verticals in Next-G Wireless Networks is a two-year initiative that seeks to identify and solve critical architectural, technical and technological issues that must be resolved in current 5G and next-generation (Next-G) wireless networks. The outcomes will contribute to U.S. leadership in wireless communications and myriad other key technology focus areas that stand to benefit from Next-G networks.

NSF invests \$7M to expand advanced wireless testing capabilities, propel O-RAN ecosystem innovation and growth

In April 2024, NSF announced \$7 million in additional funding for the Platforms for Advanced Wireless Research (PAWR) program to augment the testbeds’ capacities for testing and validation of Open Radio Access Network (O-RAN) systems and subsystems. This additional funding expands PAWR’s capabilities as Open Testing and Integration Centers and makes O-RAN testing and verification services available to a wider audience, enabling the PAWR platforms to increase their testing capabilities in this space.

New \$40M funding opportunity accelerates the translation of novel approaches to protein design to bolster the U.S bioeconomy

In February 2024, NSF published a \$40 million funding opportunity designed to accelerate the translation of AI-based approaches to protein design with specific emphasis on the design of enzymes. Use-Inspired Acceleration of Protein Design (USPRD) is a three-year initiative that will accelerate the translation of novel approaches to protein design and enable new applications of importance to the U.S. bioeconomy. USPRD has the potential to break down barriers to accelerating the use of AI-enabled protein design across a range of applications.

New \$40M funding opportunity seeks to accelerate the adoption of cell-free systems for biochemical applications

On March 4, 2024, NSF published a \$40 million funding opportunity designed to accelerate the adoption of cell-free systems, enable new applications of this technology and contribute to the growth of the U.S. bioeconomy. Advancing Cell-Free Systems Toward Increased Range of Use-Inspired Applications (CFIRE) seeks to reduce the cost and increase the range of cell-free systems and develop and demonstrate their use. CFIRE will contribute to the accelerated adoption of cell-free systems in advanced manufacturing, agriculture, the rapid detection of hazardous chemicals and more.

NSF and NobleReach Emerge select 11 projects to speed biotechnology development and translation

In April 2024, NSF and the nonprofit NobleReach Emerge announced the first 11 NSF-funded research projects that will receive additional investment to accelerate the translation of research into biotechnologies and bio-inspired designs with commercial and societal impacts. The pilot will enable selected principal investigators to accelerate bringing their research to the

market and society and aims to serve as a model for creating a sustained national technology translation program for critical technology areas with broad economic and societal applications.

NSF and partners invest \$45M in the future of semiconductors

On September 14, 2024, NSF announced 24 new research and education awards that will help engage all Americans in innovative semiconductor design and manufacturing. The projects are supported by the NSF Future of Semiconductors program through a public-private partnership spanning NSF and four companies: Ericsson, IBM, Intel and Samsung. NSF funding for these research and education projects totals \$45.6 million and will enable rapid progress in new semiconductor technologies and manufacturing and workforce development.

NSF names 9 winners of VITAL Prize Challenge

In February 2024, NSF announced nine winners of the Visionary Interdisciplinary Teams Advancing Learning Prize Challenge. Throughout the competition, participating teams received training from industry experts, mentorship from educators and research and development support through three competitive rounds of programming. The teams span the challenge’s three technology tracks and received grand prize winnings of up to \$250,000 per team. This \$6 million prize challenge was made possible through a partnership between NSF and the Bill & Melinda Gates Foundation, Schmidt Futures and the Walton Family Foundation.

NSF launches new investment to accelerate the transition of privacy-enhancing technologies to practice

In June 2024, NSF announced a new investment to advance privacy-enhancing technologies and promote their use to solve real-world problems. The NSF Privacy-Preserving Data Sharing in Practice (NSF PDaSP) program will enhance the ability to privately share and analyze data for a range of use cases and applications, including those of significant interest to federal agencies. NSF PDaSP is led by TIP in collaboration with the NSF Directorate for Computer and Information Science and Engineering, Intel Corporation, VMware LLC, the U.S. Department of Transportation Federal Highway Administration and the U.S. Department of Commerce National Institute of Standards and Technology.

NSF and industry partners announce sustainable polymer research funding opportunity

On May 2, NSF launched a \$9.5 million research opportunity in partnership with BASF, Dow, IBM, PepsiCo Inc. and Procter & Gamble to fund multidisciplinary work to enable the accelerated creation of safe, sustainable and high-value polymers on a commercial scale. The NSF Sustainable Polymers Enabled by Emerging Data Analytics program is part of the NSF Molecular Foundations for Sustainability program and seeks to accelerate the discovery and manufacture of superior and sustainable polymers to enhance national competitiveness and tackle global challenges such as plastic waste.

NSF seeks to stimulate research in areas that support the effective provision of insurance against terrorism and catastrophic cyber risks

In April 2024, NSF and the U.S. Department of the Treasury Federal Insurance Office jointly issued a Dear Colleague Letter seeking submission of proposals to the NSF Industry-University

Cooperative Research Center program to catalyze research that advances the insurance sector’s modeling and underwriting of terrorism and catastrophic cyber risks. This funding opportunity is specifically designed to bring together the insurance sector, academic teams, government and other stakeholders to focus on developing and refining terrorism and catastrophic cyber insurance modeling and underwriting to strengthen the resilience of the U.S. financial system.

Lab-to-impact platform

TIP also continues to support about 400 startups annually through the NSF Small Business Innovation Research/Small Business Technology Transfer (NSF SBIR/STTR) programs, also known as [America’s Seed Fund powered by NSF](#), uniquely enabling them to de-risk technologies for commercial and societal impact. These newly formed small businesses typically have fewer than 10 employees and are new to NSF and often the U.S. government. TIP also supports entrepreneurial education through its NSF Innovation Corps (NSF I-Corps™) program, allowing researchers to learn the art of customer discovery, create a business model and test the market before launching a business. The directorate also created new avenues for open-source ecosystems to offer new technology translation pathways for investing in the transition of promising open-source products.

NSF boosts funding amounts for SBIR/STTR Phase I and Phase II programs to better support the nation’s innovation and entrepreneurship community

In early June 2024, NSF released new funding opportunities for its NSF SBIR/STTR programs, increasing the maximum funding for SBIR/STTR Phase I awards to \$305,000 and SBIR/STTR Phase II awards to \$1.25 million. The SBIR/STTR programs provide non-dilutive funding for startups to develop deep technologies into commercially viable products and services with positive societal impact.

NSF announces pilot for startups and small businesses to ‘fast-track’ successful development of technological innovations

In June 2024, the directorate initiated an effort to streamline the process for entrepreneurs to get access to the resources necessary to bridge the many different gaps between the research lab and society and reduce administrative burden for both small businesses and NSF. Specifically, [the SBIR/STTR Fast-Track pilot](#) allows companies to develop new products and services based on NSF-funded research conducted in the last five years. The pilot operates by requiring periodic reviews that can unlock more than \$2 million per project, focusing on what matters most: getting innovations from the lab to the market and society expeditiously.

NSF funding opportunity expands experiential entrepreneurial education

[NSF announced the publication of a new funding opportunity to expand the NSF I-Corps Hubs program](#). I-Corps Hubs form the operational backbone of the NSF-led [National Innovation Network](#), providing researchers with training on how to translate their scientific discoveries into new technologies, products, processes and services to benefit the American public and economy. Currently, there are 10 I-Corps Hubs spanning 94 academic institutions across 40 states and the District of Columbia. This newest I-Corps Hubs funding opportunity seeks to support consortia of institutions spanning geographies not presently covered by existing I-Corps Hubs.

NSF I-Corps launches pilot to build entrepreneurial support before and after the 7-week program

NSF announced a \$5 million new entrepreneurial training and mentoring pilot for academic researchers. Building upon the NSF I-Corps Teams training, which helps researchers learn more about the market potential of their research, the pilot arms early-stage entrepreneurs with the information and confidence they need to launch a startup. This pilot provides support services and additional training for a startup launch. Training topics include validating the business mode, forming the founding team, registering the business licensing and protecting intellectual property, obtaining sources of capital, pitching to investors, and preparing for startup growth and exit strategies.

NSF launches pilot program to enhance the potential for success of startups

NSF recently launched a \$4.5 million pilot designed to help maximize the chances of success for startups by making available novel curriculum and support methodologies, including techno-economics training and methods to evaluate financials. The pilot is led by NextCorps, a startup accelerator based in Rochester, New York. Lessons learned from the pilot will inform further research and scaling of this approach.

NSF invests over \$26M in open-source projects

Beyond NSF’s longstanding lab-to-market platform, TIP continued to build on a new technology translation pathway. In October 2023, the agency announced an investment of over \$26 million in 19 Phase II projects through the NSF Pathways to Enable Open-Source Ecosystems program, further cultivating the creation of new open-source ecosystems (OSEs) anticipated to lead to cutting-edge innovation. These open-source projects come from academia, nonprofits and for-profits and include advances in key technologies. Phase II awards provide up to \$1.5 million per project over two years to support the transition of promising open-source products into secure, sustainable and impactful OSEs.

Preparing the workforce

As we work to accelerate technology translation and development and grow innovation ecosystems, we also recognize the need to develop resources and train a skilled workforce in key technology areas. TIP provides accessible training resources within local communities, enabling individuals to advance their careers without having to relocate. The directorate is committed to serving all Americans, including those attending community colleges, undergraduates, graduate school, post-doctoral fellows and people in the workforce who want to reskill or upskill for the jobs of the future.

NSF invests in inaugural Experiential Learning for Emerging and Novel Technologies cohorts

Launched by TIP and the NSF Directorate for STEM Education (NSF EDU), the program helps ensure that all workers have access to essential opportunities to gain on-the-job training in good-quality, well-paying jobs, helping ensure upward socioeconomic mobility and U.S competitiveness. ExLENT aims to expand practical learning opportunities for individuals interested in entering or gaining more experience in key technologies.

In December 2023, NSF announced the first Experiential Learning for Emerging and Novel Technologies (NSF ExLENT) investment of \$18.8 million to 27 teams at U.S. institutions of higher education and nonprofits. NSF ExLENT offers pathways for people with varying STEM experience levels. Of the 27 teams receiving ExLENT awards this round, 18 teams received awards in the Beginnings track, and nine teams received an award in the Pivots track. Teams will build partnerships between organizations in key technologies and those with expertise in workforce development.

In July 2024, the [ExLENT program](#) invested more than \$30 million across three tracks to nearly 40 awardees at U.S. institutions of higher education and nonprofits to expand practical STEM learning opportunities and grow U.S. jobs.

NSF partners with Micron and GlobalFoundries to invest in semiconductor workforce development

In May 2024, NSF announced a new partnership with Micron Technology Inc. and GlobalFoundries to increase access to education for all Americans and develop the next generation of a semiconductor-ready science, technology, engineering, and mathematics workforce. Through this partnership, NSF will invest in semiconductor workforce development at the full range of U.S. institutions of higher education to grow the semiconductor workforce and build pathways for people to access careers through education and career reentry initiatives.

NSF launches pilot to assess the impact of strategic investments on regional jobs

NSF announced a new three-year, \$4.5 million pilot designed to develop novel approaches to assess the impact of investments made by TIP on regional firms and jobs in key technology areas. The pilot will initially focus on AI and electric vehicles in Ohio to demonstrate the feasibility and value of the approach. The project, “Industries of Ideas: A prototype system for measuring the effects of TIP investments on firms and jobs,” will develop people-centric methods for following the movement of ideas from federally funded research to the marketplace by identifying businesses that employ people trained in deep technology skills through these investments along with early workforce indicators.

NSF invests in a pilot to catalyze partnerships between industry and researchers in emerging research institutions

In May 2024, NSF announced a new \$1.2 million pilot effort with Halo, designed to create new, varied partnerships among U.S. institutions of higher education and industry innovators. The pilot will help uncover and drive connections between industry and emerging research institutions. The 18-month effort will be led by Halo, an AI-powered partnering platform that helps research and development teams discover new technologies and applications for their work, develop relationships with researchers, identify industry partners to advance their research, fill their innovation pipelines and scale innovation.

Cross-cutting efforts

New report identifies pathways to strengthen U.S. competitiveness in key technology focus areas

The National Network for Critical Technology Assessment, a network of universities funded by NSF, recently completed a yearlong, nearly \$4 million pilot effort with the release of a report — Securing America’s Future: A Framework for Critical Technology Assessment. The report outlines how to enable timely situational awareness of global technology and production capabilities, rigorous methods to quantify the potential value of innovations and tools for quantifying opportunities across national objectives. The findings of this initial work set the foundations for the NSF Assessing and Predicting Technology Outcomes program launched in summer 2023.

NSF partners with the Institute for Progress to test new, disruptive mechanisms for funding research and innovation

NSF and the Institute for Progress (IFP), with its Metascience Working Group, announced an agreement to design and execute experiments to explore how the agency funds and supports research and innovation. Congress charged NSF with considering alternatives to, or experimentation within, NSF’s traditional processes for receiving, reviewing and funding research and innovation. Under this agreement, IFP will design and implement one or more experiments or statistical tests that could eventually offer disruptive alternatives that would accelerate funding decisions.



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