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7555-01-P

NATIONAL SCIENCE FOUNDATION

Request for Information (RFI) on Developing a Roadmap for the Directorate for Technology, Innovation, and Partnerships at the National Science Foundation

AGENCY: National Science Foundation.

ACTION: Request for Information.

SUMMARY: The National Science Foundation (NSF) requests input from the full range of institutions and organizations across all sectors—industry, academia, non-profits, government, venture capital, and others—to inform the development of a roadmap for its newly-established Technology, Innovation, and Partnerships (TIP) Directorate, in accordance with the CHIPS and Science Act of 2022. This legislation tasks the TIP Directorate to develop a roadmap to guide investment decisions in use-inspired and translational research over a 3-year time frame, working towards the goal of advancing U.S. competitiveness in the identified key technology focus areas and addressing the identified societal, national, and geostrategic challenges. Investments would be in use-inspired research, translation of research results to impact, and education, training, and development of talent in the key technology areas and societal, national, and geostrategic challenges.

DATES: Interested persons or organizations are invited to submit comments on or before 11:59 p.m. (EST) on [INSERT DATE 90 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Comments submitted in response to this notice may be sent by the following methods:

- *Email:* TIPRoadmap-RFI@nsf.gov. Email submissions should be machine-readable and not be copy-protected. Submissions should include “RFI Response: Roadmap for TIP” in the subject line of the message.
- *Mail:* Attn: Chaitan Baru, 2415 Eisenhower Avenue, Alexandria, VA 22314, USA.

Responses may address one or as many topics as desired from the enumerated list provided in this RFI, noting the corresponding number of the topic(s) to which the response pertains. Submissions must not exceed 10 pages (exclusive of cover page) in 11-point or larger font, with a page number provided on each page. Responses should include the name of the person(s) or organization(s) filing the comment, as well as the respondent type (*e.g.,* academic institution, advocacy group, professional society, community-based organization, industry, member of the public, government, other). Respondent's role in the organization may also be provided (*e.g.,* researcher, administrator, student, program manager, journalist) on a voluntary basis.

Comments containing references, studies, research, and other empirical data that are not widely published should include copies or electronic links of the referenced materials; these materials, as well as a list of references, do not count toward the 10-page limit. No business proprietary information, copyrighted information, or personally identifiable information (aside from that requested above) should be submitted in response to this RFI. Comments submitted in response to this RFI may be posted online or otherwise released publicly.

FOR FURTHER INFORMATION CONTACT: For additional information, please direct questions to Chaitan Baru at TIPRoadmap-RFI@nsf.gov, (703) 292-4596.

SUPPLEMENTARY INFORMATION: The CHIPS and Science Act of 2022 authorized the creation of a Directorate for Technology, Innovation, and Partnerships (TIP) at NSF with the purpose of (i) supporting use-inspired and translational research and accelerating the development and use of federally funded research, (ii) strengthening United States competitiveness by accelerating the development of key technologies, and (iii) growing the domestic workforce in key technology focus areas and expand the participation of United States students and researchers in areas of societal, national, and geostrategic importance, at all levels of education.

In establishing this new directorate, Congress identified ten initial key technology focus areas in which TIP investments should focus on advancing U.S. competitiveness, along with related societal, national, and geostrategic challenges to be addressed through TIP-supported research, as listed below.

Key Technology Focus Areas

(1) Artificial intelligence, machine learning, autonomy, and related advances.

(2) High performance computing, semiconductors, and advanced computer hardware and software.

(3) Quantum information science and technology.

(4) Robotics, automation, and advanced manufacturing.

(5) Natural and anthropogenic disaster prevention or mitigation.

(6) Advanced communications technology and immersive technology.

(7) Biotechnology, medical technology, genomics, and synthetic biology.

(8) Data storage, data management, distributed ledger technologies, and cybersecurity, including biometrics.

(9) Advanced energy and industrial efficiency technologies, such as batteries and advanced nuclear technologies, including but not limited to for the purposes of electric generation

(10) Advanced materials science, including composites 2D materials, other next-generation materials, and related manufacturing technologies.

Societal, National, and Geostrategic Challenges:

(1) United States national security.

(2) United States manufacturing and industrial productivity.

(3) United States workforce development and skills gaps.

(4) Climate change and environmental sustainability.

(5) Inequitable access to education, opportunity, or other services.

The legislation tasked the Directorate to develop a roadmap to guide investment decisions in use-inspired and translational research over a 3-year time frame, working towards the goal of advancing U.S. competitiveness in the identified key technology focus areas and addressing the societal, national, and geostrategic challenges.

Terminology. This RFI uses the following definitions:

—*Use-Inspired Research*: Research that is motivated based on challenges seen in human society.

—*Translational Research*: Research that moves an idea, invention, and/or other research output past the fundamental discovery stage toward results

and outcomes that directly benefit people through societal or economic impacts.

Information Requested. Respondents may provide information for one or as many topics below as they choose. Through this RFI, NSF seeks information to inform development of a roadmap to guide TIP research and development and workforce investments over a 3-year period.

1. *Prioritization.* What evidence exists that should guide NSF in determining priorities across the technologies listed above in advancing or maintaining U.S. competitiveness? Within each technology area, are there critical use-inspired and translational research topics that should be prioritized for NSF investment in a 1- to 3-year time frame to advance U.S. competitiveness, and if so, why? Which research topics within each of the technology areas can be reasonably expected to be funded by others, making them less critical for TIP funding?
2. *Suitability.* Which technologies, or topics within the technologies listed above, are well-suited for the type of use-inspired and translational research that TIP has the mandate to support? What kind of investment approaches or funding vehicles would have the greatest impact in maturing said technology?
3. *Workforce.* Which of the technologies listed above will have the greatest workforce needs in the next 1 to 5 years, understanding that investments in workforce initiatives often have longer time horizons to produce results? To meet this growing demand, how could TIP programs be structured to best supply these workforce needs, including pathways to the state and local levels, considering education and training at every level?
    a. How could TIP collaborate with other government and private organizations to ensure workforce development activities address industry

priorities across the key technology focus areas and societal, national, and geostrategic challenges while broadening the talent base through diversity, equity, inclusion, and accessibility?

b. How could the directorate inform state, local, and tribal government of the knowledge, skills, and abilities needed to build pathways to prepare future workers and reskill current workers for entry into the key technology focus areas?

4. *Addressing societal challenges.* Considering the ways each of the key technology focus areas will impact each of the societal, national, and geostrategic challenges, which of the technology areas should receive investment priority and why? This includes investments in use-inspired and translational research, education, training, as well as general literacy on a given topic. On what specific challenge problems related to the societal, national, and geostrategic challenges could TIP focus that would, in turn, drive technological development in the key technology areas?
5. *Additions.* Are there technology areas that should be prioritized for TIP investment in the near term that are not included in the above list, such as those included on the National Science and Technology Council's Critical and Emerging Technologies List, and if so, why?
6. *Crosscutting investments.* What translational research investments can be made to drive innovation by addressing critical needs common to multiple technology focus areas? What are these shared needs, and among which technology areas?
7. Other topics, in your view, that are relevant to developing a roadmap for TIP.

Authority: 42 U.S.C. 1861, et al.

Dated: April 24, 2023.

Suzanne H. Plimpton,

Reports Clearance Officer,

National Science Foundation.

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