NSF 24-606: Pathways to Enable Open-Source Ecosystems (POSE)

Program Solicitation

Document Information

Document History

- **Posted:** September 13, 2024
- **Replaces:** NSF 23-556

View the program page

U.S. National Science Foundation
Directorate for Biological Sciences
Directorate for Computer and Information Science and Engineering
Directorate for STEM Education
Directorate for Engineering
Directorate for Geosciences
Directorate for Mathematical and Physical Sciences
Directorate for Social, Behavioral and Economic Sciences
Directorate for Technology, Innovation and Partnerships

Full Proposal Deadline(s) (due by 5 p.m. submitting organization's local time):

January 14, 2025

Second Tuesday in January, Annually Thereafter

Phase I Proposals

September 02, 2025

First Tuesday in September, Annually Thereafter

Phase I and Phase II Proposals

Table Of Contents

Important Information And Revision Notes

Any proposal submitted in response to this solicitation should be submitted in accordance with the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) that is in effect for the relevant due date to which the proposal is being submitted. The NSF PAPPG is regularly revised and it is the responsibility of the proposer to ensure that the proposal meets the requirements specified in this solicitation and the applicable version of the PAPPG. Submitting a proposal prior to a specified deadline does not negate this requirement.

Summary Of Program Requirements

General Information

Program Title:

Pathways to Enable Open-Source Ecosystems (POSE)

Synopsis of Program:

The Pathways to Enable Open-Source Ecosystems (POSE) program aims to harness the power of open-source development for the creation of new technology solutions to problems of national and societal importance. Many NSF-funded projects result in publicly accessible, modifiable, and distributable open-source products, including software, hardware, models, specifications, programming languages, or data platforms that catalyze further innovation. In some cases, an open-source product that shows potential for wide adoption forms the basis for a self-sustaining open-source ecosystem (OSE) that comprises a leadership team; a managing organization with a well-defined governance structure and distributed development model; a cohesive community of external intellectual content developers; and a broad base of users across academia, industry, and/or government. The overarching vision of POSE is that proactive

and intentional formation of managing organizations will ensure broader and more diverse adoption of open-source products; increased coordination of external intellectual content developer contributions; and a more focused route to technologies with broad societal impact. Toward this end, the POSE program supports the formation of new OSE managing organizations based on an existing open-source product or class of products, whereby each organization is responsible for the creation and management of processes and infrastructure needed for the efficient and secure development and maintenance of an OSE.

POSE constitutes a new pathway to translate scientific innovations, akin to the Lab-to-Market Platform that NSF has pioneered over many decades. Whereas programs like the NSF Innovation Corps (NSF I-Corps™) and America's Seed Fund [Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)] represent an integrated set of programs to provide researchers with the capacity to transform their fundamental research into deep technology ventures, POSE is specifically focused on another translational pathway – supporting the transition from open-source research artifacts to OSEs.

Importantly, the POSE program is **not** intended to fund the *development* of open-source products, including tools and artifacts. The POSE program is also **not** intended to fund existing well-resourced, open-source communities or ecosystems. Instead, the program aims to support **new** managing organizations to catalyze distributed, community-driven development and growth of **new** OSEs. The expected outcomes of the POSE program are to grow the community of researchers and innovators who develop and contribute to OSE efforts, and to enable pathways for the safe and secure development of OSEs that have broad societal impacts. OSEs can emerge from any areas of Science, Technology, Engineering, and Mathematics (STEM) research and development.

This solicitation seeks two types of proposals, allowing teams to propose specific activities to *scope and plan* the establishment of an OSE (Phase I), and to *establish* a sustainable OSE based on a robust open-source product that shows promise in the ability to both meet an emergent societal or national need and build a community to help develop it (Phase II).

Phase I: OSE Scoping and Planning Proposals

Phase I projects are for open-source research products with a small community of external users though the product may not necessarily have external content developers. The objectives of Phase I projects are to: (1) enable scoping activities that will inform the transition of promising research products that are already available in open-source formats into sustainable and robust OSEs that will have broad societal impacts, and (2) provide training to teams interested in building such an OSE.

Phase I awardees are not obligated to submit Phase II proposals in the future.

Phase II: Establishment and Expansion Proposals

Phase II projects are for open-source research products with small, existing communities of external users *and* external content developers. The objective of Phase II projects is to support the transition of a promising open-source product into a sustainable and robust OSE. Phase II proposal teams are expected to have already conducted the scoping activities needed to develop a detailed project plan to support the community-driven distributed development and deployment of successful open-source tools into operational environments (not necessarily via a Phase I award).

An NSF POSE Phase I award is not required for the submission of a Phase II proposal.

Broadening Participation In STEM

NSF recognizes the unique lived experiences of individuals from communities that are underrepresented and/or under-served in science, technology, engineering, and mathematics (STEM) and the barriers to inclusion and access to STEM

education and careers. NSF highly encourages the leadership, partnership, and contributions in all NSF opportunities of individuals who are members of such communities supported by NSF. This includes leading and designing STEM research and education proposals for funding; serving as peer reviewers, advisory committee members, and/or committee of visitor members; and serving as NSF leadership, program, and/or administrative staff. NSF also highly encourages demographically diverse institutions of higher education (IHEs) to lead, partner, and contribute to NSF opportunities on behalf of their research and education communities. NSF expects that all individuals, including those who are members of groups that are underrepresented and/or under-served in STEM, are treated equitably and inclusively in the Foundation's proposal and award process.

NSF encourages IHEs that enroll, educate, graduate, and employ individuals who are members of groups underrepresented and/or under-served in STEM education programs and careers to lead, partner, and contribute to NSF opportunities, including leading and designing STEM research and education proposals for funding. Such IHEs include, but may not be limited to, community colleges and two-year institutions, mission-based institutions such as Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), women's colleges, and institutions that primarily serve persons with disabilities, as well as institutions defined by enrollment such as Predominantly Undergraduate Institutions (PUIs), Minority-Serving Institutions (MSIs), and Hispanic Serving Institutions (HSIs).

"Broadening participation in STEM" is the comprehensive phrase used by NSF to refer to the Foundation's goal of increasing the representation and diversity of individuals, organizations, and geographic regions that contribute to STEM teaching, research, and innovation. To broaden participation in STEM, it is necessary to address issues of equity, inclusion, and access in STEM education, training, and careers. Whereas all NSF programs might support broadening participation components, some programs primarily focus on supporting broadening participation research and projects. Examples can be found on the NSF Broadening Participation in STEM website.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Jeff Stanton, Program Director, TIP/TI, telephone: (703) 292-7794, email: pose@nsf.gov
- Nina Amla, Senior Science Advisor, CISE/OAD, telephone: (703) 292-7991, email: pose@nsf.gov
- Peter S. Atherton, Program Director, TIP/TI, telephone: (703) 292-8772, email: pose@nsf.gov
- Parvathi Chundi, Program Director, TIP/TI, telephone: (703) 292-5198, email: pose@nsf.gov
- Richard Dawes, Program Director, MPS/CHE, telephone: (703) 292-7486, email: pose@nsf.gov
- Daniel McAdams, Program Director, ENG/CMMI, telephone: (703) 292-4654, email: pose@nsf.gov
- Deepankar Medhi, Program Director, CISE/CNS, telephone: (703) 292-2935, email: pose@nsf.gov
- Daniela A. Oliveira, Program Director, CISE/CNS, telephone: (703) 292 4352, email: pose@nsf.gov
- Olga Pierrakos, Program Director, EDU/DUE, telephone: (703) 292-7253, email: pose@nsf.gov
- Sylvia J. Spengler, Program Director, CISE/IIS, telephone: (703) 292-7347, email: pose@nsf.gov
- Selcuk Uluagac, Program Director, CISE/CNS, telephone: (703) 292-4540, email: pose@nsf.gov
- Maria P. Womack, Program Director, GEO/AGS, telephone: (703) 292-2620, email: pose@nsf.gov
- Marlon Pierce, Program Director, CISE/OAC, telephone: (703) 292-7743, email: pose@nsf.gov
- David Liberles, Program Director, BIO/DBI, telephone: (703) 292-5111, email: pose@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences

- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- STEM Education
- 47.079 --- Office of International Science and Engineering
- 47.083 --- Office of Integrative Activities (OIA)
- 47.084 --- NSF Technology, Innovation and Partnerships

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 30 to 50

If a proposal involves multiple organizations, it must be submitted as a single proposal with sub-awards; separately submitted collaborative proposals are not permitted.

Anticipated Funding Amount: $27,800,000

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of sub-awards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.
- For-profit organizations: U.S.-based commercial organizations, including small businesses, with strong capabilities in scientific or engineering research or education and a passion for innovation.
- State and Local Governments
- Tribal Nations: An American Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges as a federally recognized tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. §§ 5130-5131.

Who May Serve as PI:

For Institutions of Higher Education:

By the submission deadline, any PI, co-PI, or other Senior/Key Personnel must hold either:

- a tenured or tenure-track position, or
- a primary, full-time, paid appointment in a research or teaching position, or

- a staff leadership role in an Open-Source Program Office or equivalent position

at a U.S.-based campus of an Institution of Higher Education (see above), with exceptions granted for family or medical leave, as determined by the submitting organization.

Individuals with *primary* appointments at overseas branch campuses of U.S. institutions of higher education are not eligible. Researchers from foreign academic institutions who contribute essential expertise to the project may participate as Senior/Key Personnel or collaborators but may not receive NSF support.

Individuals with *primary* appointments at non-U.S. based non-profit or non-U.S. based for-profit organizations are not eligible.

For all other eligible proposing organizations:

The PI must be an employee of the proposing organization who is normally resident in the U.S. and must be acting as an employee of the proposing organization while performing PI responsibilities. The PI may perform the PI responsibilities while temporarily out of the U.S.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or co-PI:

There are no restrictions or limits.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
    - Full Proposals submitted via Research.gov: *NSF Proposal and Award Policies and Procedures Guide* (PAPPG) guidelines apply. The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.
    - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide).

B. Budgetary Information

- **Cost Sharing Requirements:**

  Inclusion of voluntary committed cost sharing is prohibited.

- **Indirect Cost (F&A) Limitations:**

  Not Applicable

- **Other Budgetary Limitations:**

  Not Applicable

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitting organization's local time):

  January 14, 2025

  Second Tuesday in January, Annually Thereafter

  Phase I Proposals

  September 02, 2025

  First Tuesday in September, Annually Thereafter

  Phase I and Phase II Proposals

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. Additional merit review criteria apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions:

Additional award conditions apply. Please see the full text of this solicitation for further information.

Reporting Requirements:

Standard NSF reporting requirements apply.

I. Introduction

The term "*open-source*" has often referred to software systems for which the source code is widely distributed to anyone and for any purpose, including for further development and refinement in a collaborative public manner. However, increasingly, "open-source" refers to a much broader range of products such as programming languages or formats; hardware instruction sets; designs or specifications; scientific methodologies, models, or processes; manufacturing processes or process specifications; material formulations; and data platforms.

Academic and industrial researchers worldwide are extensively using the open-source model to make research artifacts such as software, tools, and prototypes openly available with a goal of enabling collaboration and catalyzing further innovation. An open-source product can be shared via a web page on the Internet, but a more common approach uses a version control system. Multiple NSF research infrastructure programs support further development of open-source projects with the goal of serving the research community and enabling advances in science and engineering research and education, including the Community Infrastructure for Research in Computer and Information Science and Engineering (CIRC), Cyberinfrastructure for Sustained Scientific Innovation (CSSI), Infrastructure Capacity for Biological Research (Capacity), and Human Networks and Data Science – Infrastructure (HNDS-1).

Some open-source projects expand well beyond their original research teams, catalyzing broad adoption across academia, industry, government, and other sectors, and resulting in communities of users and intellectual content developers/contributors who coalesce around them into "ecosystems." Examples of NSF-funded open-source research projects and products that have transitioned into OSEs with broad measurable and transformative impact include:

- LLVM, a modular and reusable compiler infrastructure to construct, optimize, and produce intermediate and/or binary machine code that has seen wide adoption in industry;
- Galaxy, a scientific workflow, data integration / analysis, and publishing platform that makes computational biology accessible to researchers who do not have computer programming or systems administration experience;

and

- RISC-V, an open, standard instruction set architecture (ISA) that enables researchers, developers, and manufacturers to design and experiment with building hardware with a proven and freely available ISA.

There are many such open-source projects in all areas of science and engineering that have benefited from open collaboration and innovation.

An Open-Source Ecosystem (OSE) is a self-sustaining organization that enables the ongoing, distributed, asynchronous development of an open-source product that is designed to be publicly accessible, modifiable, and distributable by anyone under an open-source licensing model. An OSE organization has several key components: a leadership team that is responsible for governance and management of distributed development processes and infrastructure, a decentralized and open network of intellectual content contributors/developers who are committed to the vision of the OSE and contribute their time and expertise to develop and maintain the core product, and users whose needs serve to guide the evolution of the product. The intellectual content contributors are a key part of an OSE because they help develop, grow, and maintain the core open-source product. Building a successful open-source ecosystem depends on many different elements, including recruiting, motivating, mentoring, managing, and mediating disputes among community members. There are many existing models of OSEs, ranging from non-profit institutions that are well-coordinated community efforts to build and support open source products (e.g., the Apache Software Foundation, the Linux Foundation, and the Mozilla Foundation), to for-profit companies that release open-source products and then coordinate an open-source community around them (e.g., IBM's Qiskit and Google's TensorFlow).

OSEs are an important alternative to more common for-profit technology companies and offer several key strengths: they are well suited to multidisciplinary efforts aimed at solving large-scale problems; they engender a sense of ownership among all participants and encourage contributions from new technical disciplines as the OSE evolves; and they avoid costs, delays, and disputes that frequently arise in circumstances where proprietary solutions are developed. OSEs encourage rapid prototyping in moving value from the conception to execution phases, serving as important catalysts for innovation.

A key aspect of successful OSEs is their value in demonstrating the potential of a technology at scale in diverse application scenarios. While not always easy to quantify, the significant technological, societal, and economic impacts of OSEs over the past decades are undeniable. For example, a recent European Commission Study estimated that companies located in the European Union invested around 1 billion Euros in open-source software alone in 2018, which brought about a positive impact on the European economy of between 65 and 95 billion Euros.

II. Program Description

The purpose of the POSE program is to support a new pathway for translating research or innovation results by supporting the establishment of managing organizations that facilitate the creation and growth of sustainable, high-impact OSEs around already-developed open-source products, tools, and artifacts. The POSE program aims to grow the community of individuals who develop and contribute to OSE efforts, and enable pathways to intentionally transition promising, robust open-source innovations into self-sustaining OSEs that could lead to new technology products or services with broad societal impacts.

Importantly, the POSE program does not itself support further development of open-source products. A key attribute of OSEs is a distributed development model in which external intellectual content contributors use a continuous development, integration, and deployment model to develop and/or maintain the core open-source product. Projects lacking this distributed development aspect are not well suited for POSE and may be better suited for infrastructure programs. For example, a data repository with a centralized development model where external content developers only upload data would not be suitable for POSE. Likewise, the POSE program is not intended for open-source product development or focused communities with limited impact. Instead, POSE proposals are expected to build an ecosystem around an existing, robust, open-source product that has active users and contributors outside of the founding team. Note that development of open-source software specific to the advanced cyberinfrastructure of a particular scientific community may be better served as a submission to the "Transition to Sustainability" track in the NSF CSSI program.

Finally, POSE is also not intended to support the development of products that are proprietary and/or intended for profit; Such efforts may be better suited for NSF's SBIR/STTR programs.

The transition from open-source research or innovation project to an OSE requires an organized and intentional approach with multiple elements. These include: (1) the vision of the founding team and a set of guiding principles, (2) one or more specific open-source products under development, (3) documented demand for the product(s) within the current technological landscape, (4) the need for adaptability and flexibility in deployment scenarios, (5) a distributed community of intellectual content developers who will drive the collaborative development of the technology, and (6) a community of users who adopt and engage with the technology. OSEs are frequently supported by a national or international community of users and developers from different sectors, including academia, non-profits, and industry. POSE strongly encourages proposers to consider mechanisms to intentionally involve all these groups. Note the eligibility requirements for funded organizations that appear in Section IV.

As shown in Figure 1, the transition from open-source product to OSE can be conceived as a continuum. At one end of this continuum is an early stage open-source artifact that, for example, may have been developed by a scientist for a specific use and has been adopted by a small number of users. At the other end is a fully developed OSE based on a robust open-source artifact, managed by an organization that: coordinates an external distributed developer community; interfaces with and supports a community of users; provides training and on-boarding to new developers and users; enables efficient continuous development, integration, and deployment of the open-source product; maintains an efficient supply chain; ensures security, privacy, and reliability of all aspects of the OSE operations; maintains appropriate organizational governance practices; and attracts resources for the long-term sustenance of the ecosystem. POSE aims to support this transition, assisting the evolution of an early stage open-source project to a fully operational OSE that can realize the potential societal impact nascent in the originating open-source artifact.

Figure 1. Transition from Open-source Product to Open-source Ecosystem

This solicitation seeks two types of proposals: first to scope and plan for an OSE (Phase I), and second to establish and expand (Phase II) a sustainable OSE based on an existing and robust open-source product that shows promise both in the ability to meet an emergent societal or national need and to build a community to help develop it. For both phases, the open-source product should already (i) be publicly accessible, preferably via an open-source license (proposers are encouraged to consider licenses approved by the Open Source Initiative) and (ii) have some external third-party users and/or external intellectual content developers. In this context the term "external" means external to the founding team. Phase II proposers are strongly urged to have an open-source license in place for their core product by the time of proposal submission.

An OSE supported by POSE, as shown in Figure 2, will comprise three components: a distributed community of intellectual content developers from academia, industry, and/or the non-profit sector; a community of third-party end users in research, industry, government, and/or other sectors – some of whom may also be intellectual content developers; and a managing organization. POSE funding will support the establishment of the managing organization whose role includes all the functions described above and whose overarching objective is to ensure sustainability of the OSE. The primary distinction between Phase I and Phase II is that Phase I scoping and planning projects are intended for organizations that need more experience and knowledge for building the distributed intellectual content developer and end user communities around an open-source product. Phase I project teams will also benefit from learning more about the non-technical roles of a POSE managing organization – e.g., corporate governance, legal and administrative functions, licensing, fundraising, etc.

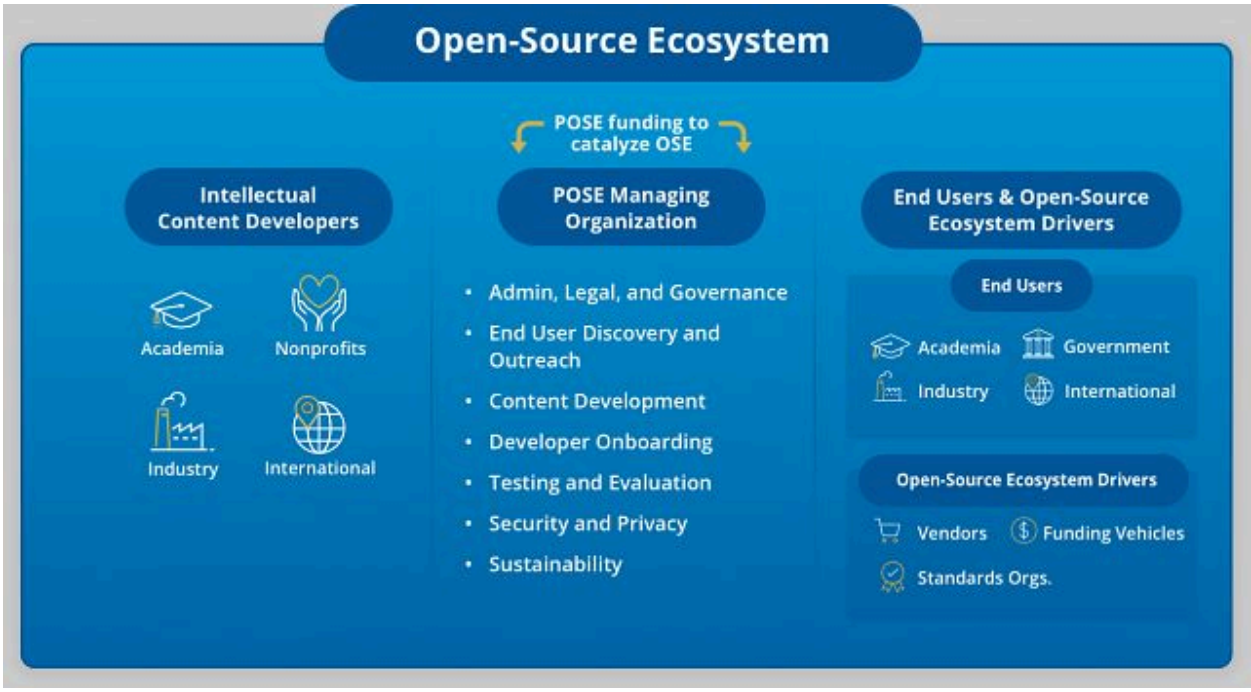

Figure 2. Role of the POSE Managing Organization

III. Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 30-50

If a proposal involves multiple organizations, it must be submitted as a single proposal with sub-awards; separately submitted collaborative proposals are not permitted.

Anticipated Funding Amount: $27,800,000

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

IV. Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of sub-awards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.
- Non-profit, non-academic organizations: Independent museums, observatories, research laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.
- For-profit organizations: U.S.-based commercial organizations, including small businesses, with strong capabilities in scientific or engineering research or education and a passion for innovation.
- State and Local Governments
- Tribal Nations: An American Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges as a federally recognized tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. §§ 5130-5131.

Who May Serve as PI:

For Institutions of Higher Education:

By the submission deadline, any PI, co-PI, or other Senior/Key Personnel must hold either:

- a tenured or tenure-track position, or
- a primary, full-time, paid appointment in a research or teaching position, or
- a staff leadership role in an Open-Source Program Office or equivalent position

at a U.S.-based campus of an Institution of Higher Education (see above), with exceptions granted for family or medical leave, as determined by the submitting organization.

Individuals with *primary* appointments at overseas branch campuses of U.S. institutions of higher education are not eligible. Researchers from foreign academic institutions who contribute essential expertise to the project may participate as Senior/Key Personnel or collaborators but may not receive NSF support.

Individuals with *primary* appointments at non-U.S. based non-profit or non-U.S. based for-profit organizations are not eligible.

For all other eligible proposing organizations:

The PI must be an employee of the proposing organization who is normally resident in the U.S. and must be acting as an employee of the proposing organization while performing PI responsibilities. The PI may perform the PI responsibilities while temporarily out of the U.S.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or co-PI:

There are no restrictions or limits.

Additional Eligibility Info:

Collaborative Proposals: Although POSE proposals are expected to be multi-organizational, a single organization must serve as the lead and all other organizations as sub-awardees. Collaborative proposals arranged as separate submissions from multiple organizations will not be accepted in response to this solicitation. Organizations ineligible to submit to this program solicitation may not receive sub-awards; if they are part of the team, their participation is expected to be supported by non-NSF sources.

Ownership and Control Requirements: Non-profit and for-profit proposing organizations must be U.S.-based, and U.S.-owned and controlled, as described in the following.

A majority (more than 50%) of a proposing organization's equity (e.g., stock) must be directly owned and controlled by one of the following:

1. One or more individuals who are citizens or permanent residents of the U.S.;
2. Other U.S. firms, each of which is directly owned and controlled by individuals who are citizens or permanent residents of the U.S.;
3. A combination of (1) and (2) above.

If an Employee Stock Ownership Plan owns all or part of a proposing organization, each stock trustee and plan member is considered an owner. If a trust owns all or part of the organization, each trustee and trust beneficiary is considered an owner.

The above ownership requirement states that at least a majority of a proposing organization's equity must be held by certain types of eligible entities (individuals and/or other firms). Therefore, when determining your organization's eligibility, you must be able to identify an ownership majority (of individuals and/or entities) that is made up of eligible individuals and/or other firms.

Each individual included as part of the eligible ownership majority of a proposing organization must be either a citizen or permanent resident of the U.S. The term "individual" refers only to actual people — it does not refer to companies or other legal entities of any sort. "Permanent resident" refers to an individual admitted to the United States as a lawful permanent resident by the U.S. Citizenship and Immigration Services.

If you include other firms as part of the eligible ownership majority of a proposing organization, you should verify that each such firm is more than 50% owned and controlled by individuals who are U.S. citizens or permanent residents.

Ownership refers to direct ownership of stock or equity of a proposing organization. Equity ownership is determined on a fully diluted basis. This means that the determination considers the total number of shares or equity that would be outstanding if all possible sources of conversion were exercised, including, but not limited to: outstanding common stock or equity, outstanding preferred stock (on a converted-to-common basis) or equity, outstanding warrants (on an as-exercised-and-converted-to-common basis), outstanding options and options reserved for future grants, and any other convertible securities on an as-converted-to-common basis.

The purpose of the ownership requirement is to ensure that an awardee organization is controlled directly by individuals who are U.S. citizens or permanent residents or by firms that are majority-owned by U.S. citizens or permanent residents. Therefore, actual control of the organization must reside within the eligible ownership majority and may not reside outside of that ownership block. One of the following must describe the control of the proposing organization – the company must be more than 50% controlled by:

- One U.S. citizen or permanent resident;
- More than one U.S. citizen or permanent resident;
- One other U.S. firm that is directly owned and controlled by U.S. citizens or permanent residents;

- More than one other U.S. firm, each of which is directly owned and controlled by U.S. citizens or permanent residents
- Any combination of the above.

Cost Principles for For-Profit Organizations:

For-profit entities are subject to the cost principles contained in the Federal Acquisition Regulation, Part 31.

Legal Right to Work:

The PI and all employees of the proposing organization who will receive POSE funding support must have a legal right to work in the U.S. for the proposing organization.

V. Proposal Preparation And Submission Instructions

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Research.gov or Grants.gov.

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal and Award Policies and Procedures Guide* (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg. Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. The Prepare New Proposal setup will prompt you for the program solicitation number.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov*. The complete text of the *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

See PAPPG Chapter II.D.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

See PAPPG Chapter II.D.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

General Considerations

The POSE program seeks broad and diverse representation of PIs and organizations in its award portfolio, reflective of the Nation's demography and geography.

Carefully review the list of solicitation-specific Return Without Review (RWR) conditions at the conclusion of Section V.A. below and ensure that the proposal includes the required elements.

Ethical use of data, including the privacy and protection of human subjects, is of paramount importance. If the proposed project will involve the use of human data or data related to human activities, PIs should consult with their organization's Institutional Review Board (IRB). Proposals will not be recommended for award until and unless appropriate IRB approval

or determination of exemption documents have been submitted to NSF. See PAPPG Chapter II.E.5 for NSF policies on proposals involving human subjects.

Each awarded project is expected to provide a team of at least three and no more than five individuals to participate in mandatory OSE training, known as I-Corps for POSE. Training will enable each awarded team to ascertain the potential for a relevant and sustainable OSE for their open-source product, learn best-practices for building a secure, private, and sustainable OSE, and identify broad societal impacts for their OSE. The training program will include experiential learning activities in ecosystem discovery and workshop sessions focused on community building, governance, and sustainability of OSEs. The training team must include at least two participants who are members of the core project team (e.g., principal investigator (PI) and co-principal investigator (co-PI)) and one participant who is external to the core project team. The external member, a person who should have relevant expertise in open-source ecosystems, serves as an OSE mentor and trusted adviser during training. For planning and budgeting purposes, NSF anticipates that training will require approximately 41 hours of each team member's time (including the mentor) in course-related meetings during the seven-week program. Additionally, training team members will conduct 100 OSE interviews that will require up to 65 hours of effort for each member of the team except for the mentor. The mentor is encouraged to participate in interviews during the training program kickoff and should allow time to meet with the team at least once per week but is not required to participate in interviews after the kickoff. Phase II proposer teams that have completed the I-Corps for POSE training during a prior Phase I award do not need to repeat the training but should describe the outcomes of the training in the Project Description of the Phase II proposal.

For proposals involving the use of vertebrate animals, sufficient information must be provided in the project description to enable reviewers to evaluate the choice of species, number of animals to be used, and any necessary exposure of animals to discomfort, pain, or injury. NSF requires that proposed projects involving use of any vertebrate animal for research or education be approved by the submitting organization's Institutional Animal Care and Use Committee (IACUC) before an award can be made. See PAPPG Chapter II.E.4 for NSF policies on proposals involving vertebrate animals.

Title: POSE Phase I proposal titles **must** begin with "POSE: Phase I: " and then the title of the project. For example, a proposal to Phase I would have a title of the form POSE: Phase I: Title.

POSE Phase II proposal titles **must** begin with "NSF POSE: Phase II: " and then the title of the project. For example, NSF POSE: Phase II: Title.

Project Summary: The last line of the Project Summary must have a prioritized list of 2-5 keywords that best characterize the technical field and impact area the OSE is intended to pursue. **The first keyword must denote the NSF directorate** [Biological Sciences (BIO), Computer and Information Science and Engineering (CISE), STEM Education (EDU), Engineering (ENG), Geosciences (GEO), Mathematical and Physical Sciences (MPS), or Social, Behavioral and Economic Sciences (SBE)] that most closely matches the technical topic advanced in the OSE. The additional keywords (2-5) must be words (or phrases) that describe the primary intended impact area for the proposed OSE – e.g., "Artificial Intelligence," "Healthcare," "Sustainability," etc. The list should start with "Keywords: " followed by a list of keywords separated by semi-colons (";").

Project Description: Describe the activities to be undertaken in up to 7 pages for Phase I proposals and up to 15 pages for Phase II proposals.

In addition to requirements specified in the PAPPG, including a separate section labeled "Broader Impacts," both Phase I and Phase II proposals must have a separate section titled "**Context of OSE**" describing the vision and context of the proposed OSE. This required section must include a description of the long-term vision and guiding principles for the proposed OSE, the specific societal or national need(s) that the OSE will address, and the anticipated broader impacts of the OSE. Proposals must have (1) **a pointer to the existing publicly-available open-source product that is being transitioned** (note: the PAPPG does not permit inclusion of URLs in the Project Description; proposers should use an in-line citation and an entry in the References Cited section to point to the open-source product); (2) details on the current status of the open-source product development and testing model, methods of dissemination, user base, and contributor base; (3) a description of the problem being addressed, and the novelty of the intended product being transitioned, including substantiating evidence of the technology's potential to significantly impact/address the problem in light of

other solutions that may already exist; and (4) a strong justification that makes the case that the team is qualified to conduct this work.

All proposals must include, as a separate section in the Project Description, a well-conceived **risk analysis/security plan** that addresses all project-relevant risks and security aspects, particularly those related to the open-source products, such as data and source code including data privacy and code quality. Proposers are encouraged to consider the U.S. Cybersecurity and Infrastructure Security Agency (CISA) and the U.S. National Security Agency (NSA), guidance for developers on securing software supply chains and the Open Source Security Foundation's best practices.

The proposals must include a community outreach plan that outlines activities to engage the intended intellectual content developer community that will further develop and maintain the technology and identify user communities and/or organizations that will serve as early adopters of the technology. The proposals must also include an actionable evaluation plan, along with metrics to assess and evaluate success.

Please note that the POSE Phase I proposals described in this solicitation are a solicitation-specific project category and are separate and distinct from the "Planning" type of proposal described in Chapter II.F.1 of the PAPPG. When preparing a POSE Phase I proposal in response to this solicitation, the "Research" type of proposal should be selected.

Phase I: OSE Scoping and Planning Awards

Phase I awards are not intended to support further development efforts: the open-source products are expected to be robust products with active users.

Each Phase I proposal must describe the current context and, to the extent known at the time of the Phase I proposal, the long-term vision and potential impact of the proposed OSE. The proposals should also include specific scoping activities that will inform plans for ecosystem discovery; organizational and governance structures; continuous development, integration, and deployment of the open-source product(s); and community building for users and intellectual content developers. Phase I scoping activities are intended to help teams determine whether (a) their open-source product is viable and ready to be transitioned into an OSE; (b) there is a user base that is ready to serve as early adopters; and (c) there is a distributed intellectual content developer community that can help develop and maintain the core product going forward.

These awards will support OSE scoping and planning activities that can inform the development of Phase II proposals.

POSE Phase I proposals should address the following:

- **Ecosystem Discovery:** Describe a strategy that: (i) includes methods to evaluate and justify the need for the innovation within the current technological landscape; (ii) explains why an OSE is the right approach to further develop the technology; and (iii) outlines ways to identify potential users who will utilize this technology and new developers who will contribute to it.
- **Organization and Governance:** Describe specific activities and their rationale that will identify: (i) the appropriate organizational, coordination, and governance models including the licensing approach to be employed; (ii) the specific continuous development and integration processes and infrastructure most suitable for open, asynchronous, and distributed development of the open-source product; (iii) processes for ensuring quality, security, privacy, or ethical concerns of new content; and (iv) the best methods for sustaining the organizational structure, including metrics to assess and evaluate long-term success of the development methodology, support for users, and on-boarding mechanisms for new contributors.
- **Risk Analysis/Security Plan:** Discuss anticipated security, safety, and privacy risks if the OSE will collaboratively develop and/or release any artifacts. Project activities can include exploration of the mechanisms that may be needed to ensure (i) quality, (ii) secure modification, integration, and release of content (e.g., secure software development methodologies, policies for patching known security vulnerabilities, etc.), (iii) identity and access management, and (iv) chain of custody.
- **Community Building:** Describe the specific activities to engage potential users and intellectual content developers, including: (i) identification of the specific research and development capabilities required of the

potential contributor communities and (ii) mechanisms to engage these communities (e.g., workshops, hackathons, competitions, research coordination networks, and Ideas Labs).

Phase II: OSE Establishment and Expansion Awards

The objective of Phase II awards is to support the establishment of a sustainable and robust OSE.

Each Phase II proposal must describe the current context and the long-term vision and impact of the proposed OSE. The proposal should also include a well-developed, cohesive plan for building an OSE, including ecosystem establishment/growth; organizational and governance structure; a framework for continuous development, integration, and deployment of the technology; methods for evaluating the OSE's effectiveness; and activities to ensure security and privacy, build the community, and sustain the ecosystem.

Phase II proposals should include the following components in the Project Description:

- **Ecosystem Establishment/Growth:** Include a well-developed ecosystem establishment and ongoing discovery strategy to ensure that the proposed OSE can effectively grow the open-source product within the current technological landscape, along with specific plans to identify, engage, and support potential users, contributors/developers, and partners. The engagement of industrial and international collaborators is also encouraged.
- **Organization and Governance**: Describe a well-developed and sustainable organizational, coordination, and governance model including the licensing approach to be employed. The model should describe how key decisions will be made on product updating and development roadmaps.
- **Continuous Development Model**: Describe the specific continuous development, integration, and deployment methodology and infrastructure that will be employed to enable the open, asynchronous, and distributed development of the open-source product and specific processes for ensuring quality control, security, and privacy of new content.
- **Risk Analysis/Security Plan:** Enumerate important security, safety, and privacy risks in the proposed OSE continuous development model and describe a security plan that addresses these risks. The plan should discuss the following in the context of the specific risks: the identity and access management mechanisms that are planned for both users and content developers, as well as other mechanisms necessary to ensure (i) quality, (ii) secure modification, integration, and release of content (e.g., secure software development methodologies, policies for patching known security vulnerabilities), and (iii) chain of custody.
- **Community Building:** Describe a long-term strategy for community building to engage, incentivize, on-board, and support potential users and contributors/developers who will help in further developing and maintaining the open-source product.
- **Sustainability:** Articulate clear sustainability goals of the OSE both with respect to financial support mechanisms and strategies to sustain vibrant communities of users and intellectual content contributors.
- **Evaluation plan:** Include a detailed and actionable evaluation plan, along with metrics to assess and evaluate success.

Budget and Budget Justification. Phase I and Phase II budgets should comply with the following guidelines. The maximum budget shown on the Cover Sheet and on the Budget **must not** exceed $300,000 for Phase I proposals and $1,500,000 for Phase II proposals. Proposals with budgets in excess of these limits will be returned without review.

1. Salary Rates (Lines A and B):
    a. IHEs; State and Local Governments (see Section IV. Eligibility Information):
        i. For existing employees: Personnel on budget lines A and B may request salary support at a rate up to their current salary rate. The budget justification should include a statement for each person affirming that the requested salary rate is no greater than the current salary rate for the person.
        ii. For new employees: Salary rates must be consistent with the established, written policies of the organization.

b. Non-profit and for-profit organizations: The requested salary rates for personnel on budget lines A and B should be no greater than the relevant 75th percentile Bureau of Labor Statistics (BLS) rate corresponding to the responsibilities of the position and geographic location where the work will be carried out, and for each employee the budget justification must include a Standard Occupational Classification (SOC) code and a live link to the relevant BLS web page. NSF may question the reasonableness of any personnel salary rates that exceed the relevant 75th percentile BLS rate. Any rates exceeding this level must be strongly justified in the budget justification. Note that NSF does not recognize the C-level roles for the determination of salary rates – the BLS rates must correspond to specific responsibilities.

c. Note that the normal 2-month per year limit on salary support is not enforced in the POSE program, but requests for cumulative NSF support in excess of 2 months per year will need an explicit justification per PAPPG II.D.2.f.(i)(a).

d. The budget should include salary support sufficient to accommodate the mandatory POSE training. All Phase I teams must budget for participation by a team of at least three and no more than five individuals (see the training description in Section II of this solicitation). Phase II proposers that have not previously participated in training under a Phase I award are required to participate and so should also budget for salary support for this purpose.

2. Use 173.33 hours per month in salary calculations, where appropriate.
3. All personnel on lines A and B of the main budget must be employees of the proposing organization.
4. In the budget justification provide title, salary rate information, time commitment, total requested salary, and a description of responsibilities for the PI and other Senior/Key Personnel (Line A) and for all individuals listed in budget Line B.
5. The number of calendar months shown in the budget should reflect the number of person-months for which POSE funding is requested.
6. Fringe Benefits (Line C): In the budget justification provide rate and base information for Fringe Benefits and provide a breakdown of the request for fringe benefits funding.
7. Equipment (line D):
    a. Funding requests for Equipment are not allowed for POSE Phase I proposals.
    b. Funding requests for Equipment are allowed for POSE Phase II proposals. The budget justification should include a description of the equipment for which funding is requested and an explanation of why the equipment is needed to perform the project. **For items costing more than $1,000, quotations or other documentation to justify the funding request must be provided and should be uploaded to Other Supplementary Documents.**
8. Travel (Line E): The budget justification must include a description of the proposed travel and an explanation of why it is necessary to perform the project. A detailed breakdown of the funding request must be provided. All travel costs must comply with the applicable federal cost principles. For-profit organizations are subject to 48 CFR 31.205-46, while all other organizations are subject to 2 CFR § 200.475. **Quotations or estimates in support of the travel funds request must be provided and should be uploaded to Other Supplementary Documents.**
9. Participant Support Costs (Line F): See the current PAPPG for guidance.
10. Materials and Supplies (Line G.1): In the budget justification include an explanation of the need for the requested materials and supplies. The request must be itemized. **For each item costing in excess of $1,000 provide a description of the item, the quantity, the unit price, and the total cost. A price quote or estimate is required for each different item - actual price quotes or estimates must be provided, rather than web links - and should be uploaded to Other Supplementary Documents.**
11. Publication Costs/Documentation/Dissemination (Line G.2): A detailed breakdown of the funding request must be provided in the budget justification**. Supporting quotes or estimates should be uploaded to Other Supplementary Documents.**

12. Consultant Services (Line G.3): The budget justification must include the time commitment, consultant rate, a brief description of the consultant responsibilities, and the total funding request for each consultant. **For consultants who will receive more than $1,000 over the entire award period, a signed letter/statement from each consultant confirming availability, time commitment, role in the project, and the agreed consulting rate must be provided and should be uploaded to Other Supplementary Documents.**

    Note that owners of, or equity holders in, the proposing entity may **also not** be paid via POSE funds as consultants, contractors, or under a sub-award.

13. Computer Services (Line G.4): The budget justification must include a description of the computer services for which funding is requested and why they are needed. **Quotations or web-based estimates to support the funding request must be provided and should be uploaded to Other Supplementary Documents.**
14. Sub-awards (Line G.5): For each sub-award., the budget justification must include a description of the purpose of the sub-award., key tasks to be performed, and the requested funding amount. The following must also be provided:

    a. a letter from the sub-award. institution acknowledging the sub-award., **to be uploaded to Other Supplementary Documents**;

    b. a letter from the PI on the sub-award. (the co-PI), which indicates his/her willingness to collaborate and describes his/her responsibilities and the specific tasks to be accomplished on the project **to be uploaded to Other Supplementary Documents**;

    c. for Phase II proposals, an executed copy of an intellectual property allocation of rights agreement between the proposing organization and each sub-award. institution, **to be uploaded to Other Supplementary Documents**;

    d. The following requirements apply to each sub-award. request.

        i. The sub-award. budget must include an accompanying budget justification that follows essentially the same format as for the main budget.

        ii. Each line item of the sub-award. budget must be identified by its letter and number in the sub-award. budget justification.

        iii. The sub-award. co-PI should be identified and listed on Line A (Senior/Key Personnel) of the sub-award. budget.

        iv. Equipment (Line D): The purchase of equipment is not allowed on a sub-award. budget.

        v. Travel (Line E): Travel costs are allowed on a sub-award. budget. This stipulation also applies retroactively to previous awards made under the POSE program. The budget justification must include a description of the proposed travel and an explanation of why the travel is necessary to perform the project. A detailed breakdown of the funding request must be provided. All travel costs must comply with the applicable federal cost principles. **Quotations or estimates in support of the travel funds request must be provided and should be uploaded to Other Supplementary Documents.**

        vi. Fee (Line K): Not applicable.

        vii. Guidance provided in this section for budget lines A, B, C, E, F, G, and I also applies to sub-awards **All quotations and other supporting documentation should be uploaded to Other Supplementary Documents.**

        viii. Note that owners of, or equity holders in, the proposing entity may also not be paid via POSE funds under a sub-award.

15. Other (Line G.6): The budget line is typically used for fee-for-service costs and subcontracts. The budget justification must include a description of services for which funding is requested. **Copies of price quotes, executed subcontracts (these may be conditional on the proposing organization receiving an award from**

NSF), or other supporting documentation to justify the request must be provided and should be uploaded to Other Supplementary Documents.

16. Indirect Costs (Line I):

    a. If the proposing organization has a current federal Negotiated Indirect Cost Rate Agreement (NICRA) the negotiated rate must be used.

    b. If the proposing organization does not have a NICRA, the organization may elect to use a de minimis rate of 15% of modified total direct costs. For further guidance on indirect costs rates see https://www.nsf.gov/bfa/dias/caar/indirect.jsp.

17. Fee (Line K): Not applicable.

Supplementary Documents:

1. Letters of Collaboration (required)

A minimum of three and up to five letters of collaboration from third-party users and/or contributors of the open-source product **must** be uploaded as Supplementary Documents. These letters of collaboration must be from current users or contributors (who are not directly related to the proposing team) of the open-source product that is the subject of the proposed OSE. Each letter writer should clearly describe how they have contributed and will continue to contribute to the development of the proposed OSE. If the OSE will depend on facilities infrastructure provided by the proposing organization or another organization after the conclusion of the award, one letter of collaboration describing the extent and term of this provision should be included. **These letters do not have to conform to the standard format specified in the PAPPG.** In addition to the above information, each letter of collaboration (not to exceed 2 pages) must include the name of the letter writer, current affiliations (institution or place of employment), and relationship to the members of the proposing team.

2. A List of Project Personnel, Collaborators, and Partner Organizations (required)

Provide current, accurate information for all personnel and organizations involved in the project. NSF staff will use this information in the merit review process to manage reviewer selection. The list must include all PIs, co-PIs, Senior/Key Personnel, funded/unfunded consultants, collaborators (including everyone who has provided a letter of collaboration), sub-awardees., postdocs, and project-level advisory committee members.

Note that because POSE awards do not typically contain a substantial scientific research component, the inclusion of postdocs or graduate students as project personnel will be scrutinized during merit review. Proposers should ensure that the Mentoring Plan contains a clear justification for inclusion of one or more postdocs and/or graduate students on a POSE project.

This list should be numbered and include (in this order) full name, organization(s), and role in the project, with each item separated by a semi-colon. Each person listed should start a new numbered line. For example:

1. Amara Smith; XYZ University; PI
2. John Rodrigues; University of PQR Non-Profit; Senior/Key Personnel
3. Jaime Brown; XYZ University; Letter of Collaboration
4. Bob Adams; ABC Community College; Funded Consultant
5. Ada White; DEF Corporation; Unfunded Collaborator
6. Tim Green; ZZZ University; Subawardee

3. Data Management and Sharing Plan (required):

In accordance with the guidance in the PAPPG, proposals must include a Data Management and Sharing Plan of no more than 2 pages. The Data Management and Sharing Plan must be substantive and specific to the application area described in the proposal. In addition to addressing how the project will conform to NSF's policy on the dissemination and sharing

of research results, the Data Management and Sharing Plan should address the handling of sensitive data, if it is relevant to the project. If the open source ecosystem involves the receipt, management, curation, or archiving of sensitive data, the Data Management and Sharing Plan must discuss the methods of data collection and identification of harms that could arise from its collection or inadvertent dissemination, techniques that will be used to protect the privacy of individuals and organizations associated with the data and plans to request IRB and/or IACUC approval for data collection, aggregation, and analysis if applicable. Methods for providing other users with controlled access to sensitive data, the time period during which sensitive data will be available, and policies for authorizing access to the data and techniques (including security protections) that will be used to prevent the unauthorized dissemination of the data should also be discussed.

For additional information on the Dissemination and Sharing of Research Results, see: https://www.nsf.gov/bfa/dias/policy/dmp.jsp.

4. Documentation for the Budget

All budget related documentation should be uploaded as Supplementary Documents. Please ensure that each item of supporting documentation for the budget is clearly identified by the corresponding budget line (e.g., Line G. 3) and a heading that describes the nature of the corresponding document (e.g., "Consultant Letter of Commitment").

Solicitation-Specific Submission Checklist:

To assist proposal preparation, the following checklist is provided as a reminder of some important items that should be checked before submitting a proposal to this solicitation. For the items marked with "(RWR)," the proposal will be returned without review if the required item is non-compliant at the submission deadline. Note that these are requirements unique to this solicitation; for other return without review requirements, see the PAPPG.

- (RWR) The last line of the Project Summary **must** consist of the word "Keywords" followed by a colon and between 2-5 keywords separated by semicolons. The first keyword must denote the acronym of the NSF directorate that most closely matches the technical topic advanced in the OSE. The additional keywords (2-5) must be words (or phrases) that describe the primary intended impact area for the proposed OSE – e.g., "Artificial Intelligence," or "Healthcare," etc.
- (RWR) The Project Description **must** have a section labeled "Context of OSE" that discusses the context and vision of the proposed OSE.
- (RWR) The Project Description **must** have a section labeled "Risk Analysis/Security Plan" that discusses the quality, safety, security, and privacy approach of the OSE.
- (RWR) Either the Project Description or the References Cited (or both) must include a pointer to the publicly available repository where the open-source artifact(s) are available.
- (RWR) The maximum budget shown on the Cover Sheet and on the budget sheets **must** not exceed $300,000 for Phase I proposals and $1,500,000 for Phase II proposals.
- (RWR) A minimum of three and up to five letters of collaboration from third-party contributors or users of the open-source product **must** be included as Supplementary Documents.
- (RWR) A Project Personnel, Collaborators and Partner Organizations list as a Supplementary Document **must** be included.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitting organization's local time):

January 14, 2025

Second Tuesday in January, Annually Thereafter

Phase I Proposals

September 02, 2025

First Tuesday in September, Annually Thereafter

Phase I and Phase II Proposals

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationa For Research.gov user support, call the Research.gov Help Desk at 1-800-381-1532 or e-mail rgov@nsf.gov. The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources web page: https://www.grants.gov/applicants. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to Research.gov for further processing.

The NSF Grants.gov Proposal Processing in Research.gov informational page provides submission guidance to applicants and links to helpful resources including the NSF Grants.gov Application Guide, Grants.gov Proposal Processing in Research.gov how-to guide, and Grants.gov Submitted Proposals Frequently Asked Questions. Grants.gov proposals must pass all NSF pre-check and post-check validations in order to be accepted by Research.gov at NSF.

When submitting via Grants.gov, NSF strongly recommends applicants initiate proposal submission at least five business days in advance of a deadline to allow adequate time to address NSF compliance errors and resubmissions by 5:00 p.m. submitting organization's local time on the deadline. Please note that some errors cannot be corrected in Grants.gov. Once a proposal passes pre-checks but fails any post-check, an applicant can only correct and submit the in-progress proposal in Research.gov.

Proposers that submitted via Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized

Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF Proposal Processing And Review Procedures

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgment and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: https://www.nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Leading the World in Discovery and Innovation, STEM Talent Development and the Delivery of Benefits from Research - NSF Strategic Plan for Fiscal Years (FY) 2022 - 2026*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.D.2.d(i). contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.D.2.d(i), prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
    a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
    b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?

4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and other underrepresented groups in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management and Sharing Plan and the Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

Phase I proposals will be evaluated on the basis of the following solicitation-specific review criteria:

1. Does the proposal present a convincing case that the OSE will address an issue of significant societal or national importance that is not currently being adequately addressed?
2. Does the proposal clearly describe the long-term vision for the OSE, including potential partnerships and sustainability?
3. Does the proposal provide convincing evidence that a substantial user base exists, or could be built, for the open-source product that will be the subject of the OSE?
4. Does the proposal justify the OSE within the current technological landscape and present a strong case that an OSE is the best approach for generating impact?
5. Does the proposal present clear plans for discovering the ecosystem within which the OSE will be operating?
6. Does the proposal present a credible plan for exploring the establishment of a sustainable organizational structure?
7. Does the proposal present a credible plan to develop a strategy for building a community of contributors?
8. Does the proposing team have the required expertise and experience to undertake the Phase I activities described in the solicitation?
9. Will NSF support serve as a critical catalyst for the establishment of the OSE?
10. Does the proposal include third-party letters of collaboration from current users of the open-source product that is the subject of the OSE?

Phase II proposals will be evaluated on the basis of the following solicitation-specific review criteria:

1. Does the proposal present a convincing case that the OSE will address an issue of significant societal or national importance that is not currently being adequately addressed?
2. Does the proposal clearly describe the long-term vision for the OSE, including potential partnerships and sustainability?
3. Does the proposal provide convincing evidence that a substantial user base exists for the open-source product that will be the subject of the OSE?
4. Does the proposal justify the OSE within the current technological landscape and present a strong case that an OSE is the best approach for generating impact?

5. Does the proposal present a clear and comprehensive description of the ecosystem within which the OSE will be operating along with plans for ongoing ecosystem establishment/growth and discovery?
6. Does the proposal present a specific, actionable plan for establishing a sustainable organizational structure?
7. Does the proposal present a credible strategy and actionable plan for building a community of contributors and retaining contributors?
8. Does the proposal include a clear, detailed licensing approach for the open-source product that is the subject of the OSE?
9. Does the proposal clearly describe a build and test infrastructure, and procedures to address quality control and security of new content?
10. Does the proposal present a clear, actionable evaluation plan to measure the success of the OSE with respect to its sustainability goals?
11. Does the proposing team have the required expertise and experience to undertake the Phase II activities described in the solicitation?
12. Will NSF support serve as a critical catalyst for the establishment and growth of the OSE towards achieving sustainability?
13. Does the proposal include third-party letters of collaboration from current users of the open-source technology that is the subject of the OSE?

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review, or Reverse Site Review.

Proposals will be reviewed externally by panel, ad hoc, or a combination of methods.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new recipients may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements or the Division of Acquisition and Cooperative Support for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

VII. Award Administration Information

A. Notification of the Award

Notification of the award is made to *the submitting organization* by an NSF Grants and Agreements Officer. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1)*; or Research Terms and Conditions* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

Administrative and National Policy Requirements

Build America, Buy America

As expressed in Executive Order 14005, Ensuring the Future is Made in All of America by All of America's Workers (86 FR 7475), it is the policy of the executive branch to use terms and conditions of Federal financial assistance awards to maximize, consistent with law, the use of goods, products, and materials produced in, and services offered in, the United States.

Consistent with the requirements of the Build America, Buy America Act (Pub. L. 117-58, Division G, Title IX, Subtitle A, November 15, 2021), no funding made available through this funding opportunity may be obligated for infrastructure projects under an award unless all iron, steel, manufactured products, and construction materials used in the project are produced in the United States. For additional information, visit NSF's Build America, Buy America web page

Special Award Conditions:

CHIPS and Science Act of 2022

In compliance with the CHIPS and Science Act of 2022, Section 10636 (Person or entity of concern prohibition) (42 U.S.C. 19235): No person published on the list under section 1237(b) of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (Public Law 105 261; 50 U.S.C. 1701 note) or entity identified under section 1260h of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (10 U.S.C. 113 note; Public Law 116 283) may receive or participate in any grant, award, program, support, or other activity under the Directorate for Technology, Innovation and Partnerships.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period. (Some

programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final annual project report, and a project outcomes report for the general public.

Failure to provide the required annual or final annual project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final annual project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

VIII. Agency Contacts

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Jeff Stanton, Program Director, TIP/TI, telephone: (703) 292-7794, email: pose@nsf.gov
- Nina Amla, Senior Science Advisor, CISE/OAD, telephone: (703) 292-7991, email: pose@nsf.gov
- Peter S. Atherton, Program Director, TIP/TI, telephone: (703) 292-8772, email: pose@nsf.gov
- Parvathi Chundi, Program Director, TIP/TI, telephone: (703) 292-5198, email: pose@nsf.gov
- Richard Dawes, Program Director, MPS/CHE, telephone: (703) 292-7486, email: pose@nsf.gov
- Daniel McAdams, Program Director, ENG/CMMI, telephone: (703) 292-4654, email: pose@nsf.gov
- Deepankar Medhi, Program Director, CISE/CNS, telephone: (703) 292-2935, email: pose@nsf.gov
- Daniela A. Oliveira, Program Director, CISE/CNS, telephone: (703) 292 4352, email: pose@nsf.gov
- Olga Pierrakos, Program Director, EDU/DUE, telephone: (703) 292-7253, email: pose@nsf.gov
- Sylvia J. Spengler, Program Director, CISE/IIS, telephone: (703) 292-7347, email: pose@nsf.gov
- Selcuk Uluagac, Program Director, CISE/CNS, telephone: (703) 292-4540, email: pose@nsf.gov
- Maria P. Womack, Program Director, GEO/AGS, telephone: (703) 292-2620, email: pose@nsf.gov
- Marlon Pierce, Program Director, CISE/OAC, telephone: (703) 292-7743, email: pose@nsf.gov
- David Liberles, Program Director, BIO/DBI, telephone: (703) 292-5111, email: pose@nsf.gov

For questions related to the use of NSF systems contact:

- NSF Help Desk: 1-800-381-1532
- Research.gov Help Desk e-mail: rgov@nsf.gov

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

IX. Other Information

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF's website.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at https://www.grants.gov.

About The National Science Foundation

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the *NSF Proposal & Award Policies & Procedures Guide* Chapter II.F.7 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.
To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at https://www.nsf.gov.

- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **For General Information** (NSF Information Center)**:** (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**

  Send an e-mail to: nsfpubs@nsf.gov

  or telephone: (703) 292-8134
- **To Locate NSF Employees:** (703) 292-5111

Privacy Act And Public Burden Statements

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by proposers will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding proposers or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See System of Record Notices, NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Policy Office, Division of Institution and Award Support
Office of Budget, Finance, and Award Management
National Science Foundation
Alexandria, VA 22314