

Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support - Coordination Office (ACCESS-ACO)

PROGRAM SOLICITATION NSF 21-556



National Science Foundation

Directorate for Computer and Information Science and Engineering
Office of Advanced Cyberinfrastructure

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

June 16, 2021

IMPORTANT INFORMATION AND REVISION NOTES

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) ([NSF 20-1](#)), which is effective for proposals submitted, or due, on or after June 1, 2020.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support - Coordination Office (ACCESS-ACO)

Synopsis of Program:

The national research cyberinfrastructure (CI) ecosystem is essential to computational- and data-intensive research across all of 21st-century science and engineering (S&E), driven by rapid advances in a wide range of technologies; increasing volumes of highly heterogeneous data; and escalating demand by the research community. Research CI is a key catalyst for discovery and innovation and plays a critical role in ensuring US leadership in S&E, economic competitiveness, and national security, consistent with the NSF's mission. NSF, through the Office of Advanced Cyberinfrastructure (OAC), has published a [vision](#) that calls for the broad availability and innovative use of an agile, integrated, robust, trustworthy and sustainable CI ecosystem that can drive new thinking and transformative discoveries in all areas of S&E research and education. In support of this vision, NSF is releasing two solicitations in parallel: this solicitation, Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support – Coordination Office (ACCESS-ACO), and Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support (ACCESS). This solicitation focuses on the creation of a coordination office to support the collective and coordinated operation of the NSF ACCESS solicitation awardees. The ACCESS solicitation aims to establish a suite of CI coordination services—meant to support a broad and diverse set of requirements, users, and usage modes from all areas of S&E research and education—and calls for proposals for five independently-managed yet tightly-cooperative service tracks (see Figure 1).

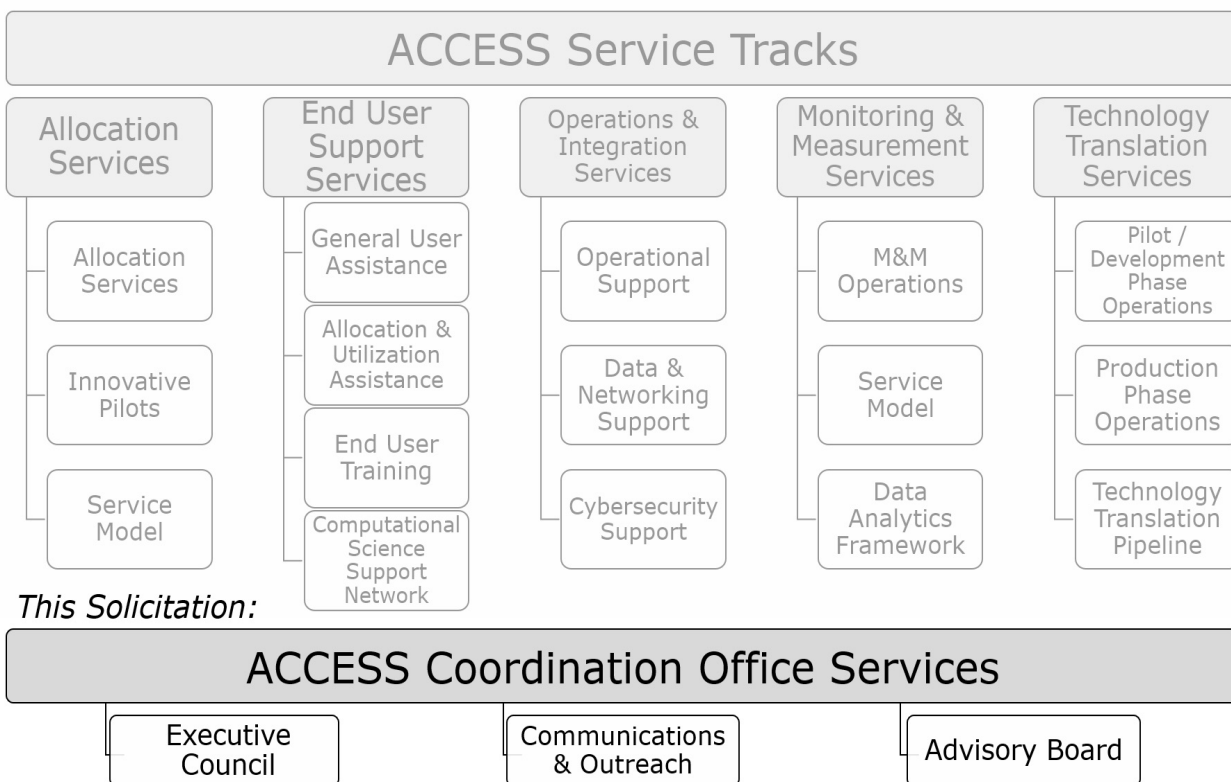


Figure 1: Network of ACCESS services, with a focus on the ACO Services.

This solicitation expects to fund one award for an ACCESS Coordination Office (ACO) to support the collective and coordinated operation of the five CI coordination services. Specifically, the ACO will provide coordination and support services and staffing for top-level coordination and communications among the ACCESS awardees and with the public, including support for top-level inter-awardee governance, coordination of an external advisory board to the ACCESS awardees, maintenance of the top-level landing page of the ACCESS website, and coordinated community-building activities. The ACO awardee will interface with the awardees for the ACCESS service tracks of the ACCESS solicitation. The ACO itself will not engage in overall governance or management responsibilities for the ACCESS but awardees will enable the other ACCESS awardees to accomplish those activities through provision of staffing and services.

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.

- Robert B. Chadduck, Program Director, CISE/OAC, telephone: (703) 292-2247, email: rchadduc@nsf.gov
- Alejandro Suarez, Associate Program Director, CISE/OAC, telephone: (703) 292-7092, email: alsuarez@nsf.gov

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

- 47.070 --- Computer and Information Science and Engineering

Award Information

Anticipated Type of Award: Cooperative Agreement

Estimated Number of Awards: 1

Anticipated Funding Amount: \$5,000,000

A total of \$5,000,000 is available for this solicitation, subject to the availability of funds.

It is anticipated that one award will be made at up to \$5,000,000 total for a duration of five years.

Reasoning: This five-year duration expectation is present in the solicitation management plan and aligns with the information publicized in the companion solicitation [NSF 21-555](#).

There is a possibility of a renewal award contingent upon availability of funds, the successful evaluation of the awardee's performance, and NSF merit review of a renewal proposal.

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 subawards 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.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization: 1

An organization may submit only one proposal but may be a subawardee on other proposals responding to this solicitation.

These eligibility constraints will be strictly enforced in order to treat everyone fairly and consistently. In the event that an organization exceeds this limit, the proposal received within the limit will be accepted based on the earliest date and time of proposal submission (i.e., the first proposal received will be accepted and the remainder will be returned without review). **No exceptions will be made.**

Collaborative projects may **only** be submitted as a single proposal in which a single award is being requested ([PAPPG Chapter II.D.3.a](#)). The involvement of partner organizations should be supported through subawards administered by the submitting organization.

Limit on Number of Proposals per PI or Co-PI: 1

An individual may be the PI or co-PI on no more than one proposal that responds to this solicitation. There is no limit on the number of proposals with which an individual may be associated in other capacities, such as senior personnel.

These eligibility constraints will be strictly enforced in order to treat everyone fairly and consistently. In the event that an individual exceeds this limit, the proposal received within the limit will be accepted based on the earliest date and time of proposal submission. **No exceptions will be made.**

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 FastLane: *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:**

Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

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

June 16, 2021

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:

Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

National research cyberinfrastructure (CI) has become essential to computational- and data-intensive research across all of science and engineering (S&E) in the 21st century. It is a key catalyst for discovery and innovation and plays a critical role in ensuring US leadership in S&E, economic competitiveness, and national security, consistent with NSF’s mission. NSF, through the Office of Advanced Cyberinfrastructure (OAC), has published a vision that calls for the broad availability and innovative use of an agile, integrated, robust, trustworthy and sustainable CI ecosystem that can drive new thinking and transformative discoveries in all areas of S&E research and education.

National CI coordination services are integral to NSF’s CI vision and ecosystem. Consequently, it is imperative that these services be made broadly available to the Nation’s S&E research community consistent with the goals and intent of the diverse set of NSF-funded resources. These services support critical aspects such as allocation, measurement and user support, and enable researchers across every field of NSF-supported S&E to effectively and efficiently use the CI ecosystem and ensure overall user productivity in spite of rapidly changing application and CI landscapes.

NSF recently published a forward-looking blueprint for future national CI coordination services, “Transforming Science Through Cyberinfrastructure: Coordination Services.” This blueprint was informed by the community through advisory bodies, requests for information (RFIs), workshops and conferences, and national initiatives. In particular, the 2019 NSF-funded National Cyberinfrastructure Coordination Service Conference specifically focused on the CI service ecosystem. As outlined in the blueprint document, NSF envisions a fabric of national coordination CI services that can effectively support a broad and diverse set of requirements, users, and usage modes from all areas of S&E research and education. It is also essential that this fabric of services is agile and can evolve and adapt to respond to emerging requirements and technology landscapes. This solicitation, one of two ACCESS solicitations, focuses on the execution of this blueprint and the creation of the national coordination CI services fabric.

The current NSF-supported CI coordination services landscape includes the following major projects: The eXtreme Science and Engineering Discovery Environment (XSEDE) and XSEDE Metrics Service (XMS), both part of the eXtreme Digital (XD) Program, and the Partnership to Advance Throughput Computing (PATH), funded as a continuation of the Open Science Grid (OSG). Moving forward, NSF aims to continue to provide these services while also evolving, integrating, and adapting their structures, scopes, and implementations to respond to rapidly-evolving technologies and science needs. This solicitation is part of a pair of solicitations calling for proposals for projects within the ACCESS ecosystem (see Table 1 below). It complements the other ACCESS solicitation, which calls for proposals for five independently-managed yet tightly-cooperative services along the following tracks: 1) Allocation Services; 2) End User Support Services; 3) Operations and Integration Services; 4) Monitoring & Measurement Services; and 5) Technology Translation Services.

Table 1: ACCESS Solicited Projects

Project	Solicitation	Relevant Activities

Allocation Services	ACCESS Solicitation	<ul style="list-style-type: none"> Allocation Services Innovative Pilots Service Model
End User Support Services	ACCESS Solicitation	<ul style="list-style-type: none"> General User Assistance Allocation & Utilization Assistance End User Training Computational Science Support Network
Operations and Integration Services	ACCESS Solicitation	<ul style="list-style-type: none"> Operational Support Data & Networking Support Cybersecurity Support
Monitoring & Measurement Services	ACCESS Solicitation	<ul style="list-style-type: none"> Monitoring & Measurement Operations Service Model Data Analytics Framework
Technology Translation Services	ACCESS Solicitation	<ul style="list-style-type: none"> Pilot/Development Phase Operations Production Phase Operations Translation Pipeline
ACCESS Coordination Office (ACO)	(This Solicitation)	<ul style="list-style-type: none"> Executive Council External Advisory Board Communications & Outreach

II. PROGRAM DESCRIPTION

This solicitation requests proposals for an ACCESS Coordination Office (ACO). The goals of the ACO will be to:

- Facilitate the effective communication and coordination across the ACCESS awardees and the productive collective execution of all ACCESS services in support of end-user requirements and NSF goals;
- Engage with both existing and future CI user communities in support of ACCESS activities by supplementing and amplifying outreach efforts from the core ACCESS tracks; and
- Support NSF in its management and oversight of the ACCESS awardees.

The ACO will provide coordination, support services and staffing for the top-level facilitation of governance and communications among the ACCESS awardees and with the public, including support for top-level inter-awardee coordination, coordination of an external advisory board to the ACCESS awardees, and establishment of a common framework of ACCESS community outreach and information dissemination, for example, a common landing page for the ACCESS activities.

The ACO awardee will interface with the PIs for the individual ACCESS Coordination Service track awards. The ACO itself will not engage in overall management responsibilities for the ACCESS program but will enable the other ACCESS awardees to accomplish those activities.

ACO proposals in response to this solicitation must detail plans for the following defined activities: a) management and administration of the ACCESS Executive Council; b) creation and management of an external ACCESS advisory board; c) ACCESS-wide communication, outreach and other community-building activities; and d) management of certain coordinated community building activities. Proposals must also provide detailed staffing plans for the ACO, including personnel to support the executive council, the external advisory board, as well as communication and outreach activities, including web content development and management.

ACCESS Executive Council

The ACCESS Executive Council will comprise the Principal Investigators (PIs) of ACCESS awards as primary members and an agreed number of other ACCESS award senior personnel as secondary members or observers. The purpose of the ACCESS Executive Council is to effect top-level coordination and governance among all ACCESS awardees in order to ensure high operational efficiency and user-centric performance of the collective ACCESS resources for the benefit of the scientific and engineering research community. The Council is also meant to prepare ACCESS-wide communications (such as annual community reports) to the S&E research community supported by the ACCESS awardees covering progress on activities over the year, science highlights, and track-specific plans for the future.

The ACO will facilitate the creation of an agreed-upon charter and meeting cadence, provide coordination services for in-person and online meetings, track the Executive Council membership, and prepare and disseminate meeting minutes among the members. The ACCESS Executive Council will be expected to meet quarterly and include the NSF cognizant program officer for ACCESS as an ex-officio non-voting observer.

ACCESS External Advisory Board

The ACCESS External Advisory Board will provide the Executive Council with advice on the various services provided by the ACCESS program awardees. The

External Advisory Board will include a diverse group of members representing the broad S&E and CI communities served by ACCESS. The External Advisory Board should not include individuals from other ACCESS awardee tracks. The ACCESS External Advisory Board is expected to establish a Charter and relevant operations procedures in consultation with and approval from all members of the Executive Council.

The ACO will organize the establishment of an agreed charter and meeting cadence for the External Advisory Board, and will provide coordination services for in-person and online meetings, track External Advisory Board membership, prepare and disseminate meeting minutes among the members, and establish an internal archive of the same accessible to members. The External Advisory Board will be expected to meet at least yearly and will include the NSF cognizant program officer for the ACCESS program as an ex-officio observer.

ACCESS Communications & Outreach

Proposers should describe the communications & outreach activities that the ACO will carry out to engage with both established and burgeoning CI user communities across a broad range of S&E disciplines with possible interest or active participation in the ACCESS coordination services. Communications & outreach activities should include, but are not limited to, development and maintenance of a unified web portal for public communications about ongoing or planned ACCESS activities, editing and dissemination of regular community communications (such as newsletters), and development (under direction from the ACCESS Executive Council) of annual public reports highlighting ACCESS-supported research activities and other milestones.

Note that ACO communications & outreach activities are not meant to replace such activities within individual ACCESS tracks. The ACO is expected to use its position as a facilitator to amplify the effect of each ACCESS track's outreach efforts and provide supplemental ACCESS-wide communications & outreach activities as it sees fit.

The ACO staff should comprise the senior personnel for the ACO award. It should include an ACO director with prior accomplishments and experience with leading and managing distributed resource projects. The ACO staff should also include administrative support for the various internal and external committee activities and communication functions.

Detailed information on the proposal format is provided in Section V. *Proposal Preparation and Submission Instructions*.

III. AWARD INFORMATION

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 subawards 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.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization: 1

An organization may submit only one proposal but may be a subawardee on other proposals responding to this solicitation.

These eligibility constraints will be strictly enforced in order to treat everyone fairly and consistently. In the event that an organization exceeds this limit, the proposal received within the limit will be accepted based on the earliest date and time of proposal submission (i.e., the first proposal received will be accepted and the remainder will be returned without review). **No exceptions will be made.**

Collaborative projects may **only** be submitted as a single proposal in which a single award is being requested ([PAPPG Chapter II.D.3.a](#)). The involvement of partner organizations should be supported through subawards administered by the submitting organization.

Limit on Number of Proposals per PI or Co-PI: 1

An individual may be the PI or co-PI on no more than one proposal that responds to this solicitation. There is no limit on the number of proposals with which an individual may be associated in other capacities, such as senior personnel.

These eligibility constraints will be strictly enforced in order to treat everyone fairly and consistently. In the event that an individual exceeds this limit, the proposal received within the limit will be accepted based on the earliest date and time of proposal submission. **No exceptions will be made.**

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 FastLane or Grants.gov.

- Full proposals submitted via FastLane: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal & Award Policies & 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. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- 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.C.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.

The following provides additional guidance beyond that contained in the PAPPG or NSF Grants.gov Application Guide.

Proposal Titles:

Proposal titles must begin with "ACO:".

Collaborative Proposals:

Only personnel directly connected to the project should be listed as **collaborators**.

Collaborative efforts may **only** be submitted as a single proposal (See [PAPPG Chapter II.D.3.a](#)), in which a single award is being requested. The involvement of partner organizations should be supported through subawards administered by the proposing Service Provider organization.

Project Description

The page limit for the Project Description section of the proposal is **25 pages**.

In addition to the instructions described in the PAPPG or NSF Grants.gov Application Guide, the Project Description must include the following specific sections (under "Intellectual Merit" unless otherwise noted):

- **ACCESS Executive Council Plan:** describe the near-term plan to establish the ACCESS Executive Council, including incorporation of PIs into the Council once they are identified, and the initial charter creation.
- **ACCESS External Advisory Board Plan:** describe the initial plans of the ACCESS External advisory board, including an initial charter, along with mechanisms to allow for modifications at the request of the ACCESS Executive Council.
- **ACCESS Communications & Outreach Plan:** describe plans for communications & outreach activities, specifically initial mechanisms in which the project would collect and disseminate communications from each ACCESS track.

In all plans mentioned above, proposers should include relevant staffing in support of each activity.

Supplementary Documents

In the Supplementary Documents section, upload the following information where relevant:

- (REQUIRED) A list of all organizations involved in the project, together with their roles within the project and the levels of funding for each.
- Letters of collaboration from individuals who are described in the Project Description as involved in the project in a senior capacity but who are not members of the lead proposing organization, or from representatives of organizations collaborating with the lead organization, are allowable, as described in the PAPPG [Chapter II.C.2.d\(iv\)](#). **Note that letters of endorsement should not be included in proposals.**

Any substantial collaboration with individuals not included in the budget should be described in the Facilities, Equipment and Other Resources section of the proposal (see PAPPG [Chapter II.C.2.i](#)) and documented in a letter of collaboration from each collaborator. Such letters should be provided in the Supplementary Document section of the FastLane Proposal Preparation Module and follow the format instructions specified in PAPPG Chapter II.C.2.j. Collaborative activities that are identified in the budget should follow the instructions in PAPPG Chapter II.D.3.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

Budgets for proposals must include funds to support project staff travel to PI meetings held twice per year.

The year one budget should include all start-up costs and transition activities from XSEDE or other related coordination services.

C. Due Dates

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

June 16, 2021

D. FastLane/Research.gov/Grants.gov Requirements

For Proposals Submitted Via FastLane or Research.gov:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. 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/ProposalPreparationandSubmission.html. For FastLane or Research.gov user support, call the FastLane and Research.gov Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov or rgov@nsf.gov. The FastLane and Research.gov Help Desk answers general technical questions related to the use of the FastLane and Research.gov systems. 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 webpage: <https://www.grants.gov/web/grants/applicants.html>. 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 the NSF FastLane system for further processing.

Proposers that submitted via FastLane or 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 acknowledgement 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 *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. 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.C.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.C.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 underrepresented minorities 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 Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

Reviewers will be asked to assess the plans required in the Project Description (these are described in Section V.A. *Proposal Preparation Instructions* above):

- ACCESS Executive Council Plan;
- ACCESS Advisory Board Plan; and
- ACCESS Communications & Outreach Plan.

B. Review and Selection Process

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

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 applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees 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 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 a Grants Officer in the Division of Grants and Agreements. 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.

Special Award Conditions:

Any award made as a result of this competition may be governed by a cooperative agreement, which will contain project-specific and ACCESS program-wide conditions agreed upon by the awardee and NSF at time of award.

These conditions may include:

- Development of a Project Execution Plan containing items such as a Work Breakdown Structure (WBS), risk register, project schedule, description of project governance mechanisms, relevant performance metrics, etc.;
- Regular interactions with the various ACCESS Coordination Services track-specific awardees, to be organized by NSF separately; and
- External oversight activities developed in coordination with the ACCESS track-specific awardees, such as evaluation and advisory board activities.

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 project report, and a project outcomes report for the general public.

Failure to provide the required annual or final 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 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.

Additional reporting requirements may apply. Such requirements will be negotiated with the PI institution prior to award and will be incorporated into the special terms and conditions of the award.

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:

- Robert B. Chadduck, Program Director, CISE/OAC, telephone: (703) 292-2247, email: rchadduc@nsf.gov
- Alejandro Suarez, Associate Program Director, CISE/OAC, telephone: (703) 292-7092, email: alsuarez@nsf.gov

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188
- FastLane Help Desk e-mail: fastlane@nsf.gov.
- 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 (FASSED) 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.E.6 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 awardees 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 applicants 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

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