Innovation Corps Teams Program (I-Corps Teams)

PROGRAM SOLICITATION
NSF 12-602

REPLACES DOCUMENT(S):
NSF 11-560

National Science Foundation

Office of Integrative Activities

Directorate for Biological Sciences

Directorate for Computer & Information Science & Engineering

Directorate for Education & Human Resources

Directorate for Engineering

Directorate for Geosciences

Directorate for Mathematical & Physical Sciences

Directorate for Social, Behavioral & Economic Sciences

Submission Window Date(s) (due by 5 p.m. submitter's local time):

October 01, 2012 - December 17, 2012

October 1 - December 15, Annually Thereafter

Please note: These are broad submission dates. Refer to Section II. Program Description and the I-Corps website: http://www.nsf.gov/i-corps-home where additional information is available describing dates of mandatory curriculum and proposal submission.

January 01, 2013 - March 15, 2013

January 1 - March 15, Annually Thereafter

April 01, 2013 - June 17, 2013

April 1 - June 15, Annually Thereafter

July 01, 2013 - September 16, 2013

July 1 - September 15, Annually Thereafter

July 01, 2016 - September 15, 2016

October 01, 2016 - December 15, 2016

January 01, 2017 - March 15, 2017

April 01, 2017 - June 15, 2017

July 01, 2017 - September 15, 2017

IMPORTANT INFORMATION AND REVISION NOTES

Revisions:

- The title of the program has been changed from Innovation Corps Program (I-Corps) to Innovation Corps **Teams** Program (I-Corps **Teams**) to help differentiate the program from other I-Corps Programs such as the I-Corps Nodes and I-Corps Sites.
- The required lineage from a prior NSF award has been clarified to explicitly name, in addition to the Principal Investigator (PI), Co-PIs, Senior Personnel, Post Docs, Professional Staff or others who were supported under an NSF award.
- The program description has been expanded to clarify the series of steps the PI must complete prior to submission of an I-Corps Teams proposal.
- The Reporting Requirements have been expanded to clarify information that should be included that is specific to the I-Corps Teams Program.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 16-1), which is effective for proposals submitted, or due, on or after January 25, 2016.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Innovation Corps Teams Program (I-Corps Teams)

Synopsis of Program:

The National Science Foundation (NSF) seeks to develop and nurture a national innovation ecosystem that builds upon fundamental research to guide the output of scientific discoveries closer to the development of technologies, products and processes that benefit society.

In order to jumpstart a national innovation ecosystem, NSF has established the NSF Innovation Corps Teams Program (NSF I-Corps Teams). The NSF I-Corps Teams purpose is to identify NSF-funded researchers who will receive additional support - in the form of mentoring and funding - to accelerate innovation that can attract subsequent third-party funding.

The purpose of the NSF I-Corps Teams grant is to give the project team access to resources to help determine the readiness to transition technology developed by previously-funded or currently-funded NSF projects. The outcomes of I-Corps Teams projects will be threefold: 1) a clear go or no go decision regarding viability of products and services, 2) should the decision be to move the effort forward, a transition plan for those projects to move forward, and 3) a technology demonstration for potential partners.

WEBINAR: A webinar will be held on the first Tuesday of every month to answer questions about this program. Details will be posted on the I-Corps website (see http://www.nsf.gov/news/special_reports/i-corps/program.jsp) as they become available.

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.

- Steven Konsek, telephone: (703) 292-7021, email: skonsek@nsf.gov
- Lydia McClure, telephone: (703) 292-8798, email: lmcclure@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 --- Education and Human Resources
- 47.079 --- Office of International Science and Engineering
- 47.083 --- Office of Integrative Activities (OIA)

Award Information

Anticipated Type of Award: Standard Grant

Estimated Number of Awards: 250

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

Anticipated Funding Amount: $12,500,000 The anticipated funding amount is $12.5 million in FY 2013, pending availability of funds.

Eligibility Information - See Section IV for additional information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs): Contact the appropriate program before preparing a proposal for submission.

Principal Investigator (PI) Limit:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

A PI is limited to one I-Corps Teams proposal during each submission window.

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, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
  - 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: http://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:**

  Recovery of indirect costs (F&A) shall be limited to $5,000. As such, this program does require mandatory cost sharing, and, therefore, is an exception to NSF's cost sharing policy.

- **Other Budgetary Limitations:**

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

C. Due Dates

- **Submission Window Date(s)** (due by 5 p.m. submitter's local time):

  October 01, 2012 - December 17, 2012

  October 1 - December 15, Annually Thereafter

  Please note: These are broad submission dates. Refer to Section II. Program Description and the I-Corps website: http://www.nsf.gov/i-corps-home where additional information is available describing dates of mandatory curriculum and proposal submission.

  January 01, 2013 - March 15, 2013

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  April 01, 2017 - June 15, 2017

  July 01, 2017 - September 15, 2017

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. Additional merit review considerations 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

America's prosperity has originated in part from the ability to capitalize economically on ground-breaking discoveries from science and engineering research. Simultaneously, a knowledgeable, creative workforce has maintained the country's global leadership in critical areas of technology. These important discoveries and capable workforce resulted from substantial, sustained investment in science and engineering. A strong capacity for leveraging fundamental scientific discoveries into powerful engines of innovation is essential to maintain our competitive edge in the future.

The National Science Foundation (NSF) supports fundamental research and education in science and engineering. NSF's dual role, unique among government agencies, results in new knowledge and tools as well as a capable, innovative workforce. These complementary building blocks of innovation have led to revolutionary technological advances and wholly new industries.

Through this initiative, NSF seeks to accelerate the development of new technologies, products and processes that arise from fundamental research. NSF investments will strategically strengthen the innovation ecosystem (http://www.nsf.gov/eng/iip/innovation.pdf) by addressing the challenges inherent in the early stages of the innovation process. This solicitation will support collaborations that are designed to overcome many of the obstacles in the path of innovation.

II. PROGRAM DESCRIPTION

The goals of this program are to spur translation of fundamental research to the market place, to encourage collaboration between academia and industry, and to train NSF-funded faculty, students and other researchers to understand innovation and entrepreneurship.

The purpose of the I-Corps Teams program is to identify NSF-funded researchers who will receive additional support - in the form of mentoring and funding - to accelerate the translation of knowledge derived from fundamental research into emerging products and services that can attract subsequent third-party funding.

The I-Corps Teams grant is six-months in duration. The major focus of the program is for the selected I-Corps teams (an I-Corps team includes the Principal Investigator, the Entrepreneurial Lead, and the I-Corps Mentor) to participate in training - notably an Entrepreneurial Immersion course. The selected teams for each competition make up an individual I-Corps Teams cohort.

The outcomes of I-Corps Teams projects will be threefold: 1) a clear go/no go decision regarding viability of products and services, 2) should the decision be to move the effort forward, a transition plan to do so, and 3) a technology demonstration for potential partners.

The go/no go decision of the proposed effort will be made by the I-Corps team in consultation with the I-Corps Cognizant Program Directors.

Requirements:

To be eligible to pursue funding under an I-Corps Teams award, applicants must have received a prior award from NSF (in a

scientific or engineering field relevant to the proposed innovation) that is currently active or that has been active within five years from the date of the I-Corps Teams proposal submission. The lineage of the prior award extends to the PI, Co-PIs, Senior Personnel, Post Docs, Professional Staff or others who were supported under the award. The prior award could range from a modest single-investigator award to a large, distributed center and also includes awards involving students such as REU Sites.

Before an I-Corps Teams proposal can be submitted, PIs must complete a series of steps that may lead to an invitation to submit a proposal. The steps are as follows:

1. **Team Formation:**

   Identify a set of three I-Corps Team members. The I-Corps team will consist of three roles:

   Entrepreneurial Lead (EL)
   I-Corps Teams Mentor
   Principal Investigator (PI)

   The **Entrepreneurial Lead (EL)** could be a postdoctoral scholar, graduate or other student with relevant knowledge of the technology and a deep commitment to investigate the commercial landscape surrounding the innovation. In rare circumstances, with approval of a cognizant NSF I-Corps Program Officer, it also could be the PI. The Entrepreneurial Lead should also be capable and have the will to support the transition of the technology, should the I-Corps Teams project demonstrate the potential for commercial viability.

   The **I-Corps Teams Mentor** will typically be an experienced or emerging entrepreneur with proximity to the institution and experience in transitioning technology out of Academic labs. The I-Corps Teams Mentor must be a third-party resource and may be recommended by the proposing institution or may be a member of the NSF-supported I-Corps network which is being put together at this time. **More detailed information on the I-Corps network will be available during the scheduled WEBINARS.** The I-Corps Teams Mentor will be responsible for guiding the team forward and tracking progress through regular communication with the Cognizant NSF I-Corps program director.

   The **Principal Investigator (PI)** will be responsible for overall grant management.

2. **Executive Summary Preparation:**

   Prepare a one-page Executive Summary that describes the following:

   - Composition and roles (EL, PI, Mentor) of the team members proposing to undertake the commercialization feasibility research
   - Relevant current/previous NSF awards
   - Brief description of the potential commercial impact
   - Brief description of the current commercialization plan

3. **NSF Contact:**

   Forward the Executive Summary to one of the **Topic-Specific Program Officer(s):**

BIO	Steve Ellis	stellis@nsf.gov	703-292-7876
CISE	Anita La Salle	alasalle@nsf.gov	703-292-5006
CISE/ACI	Irene Qualters	iqualter@nsf.gov	703-292-2339
EHR	Don Millard	dmillard@nsf.gov	703-292-4620
ENG	Rathindra (Babu) DasGupta	rdasgupt@nsf.gov	703-292-8353
GEO	Raffaella Montelli	rmontell@nsf.gov	703-292-4361
MPS	Mary Galvin-Donoghue	mgalvind@nsf.gov	703-292-8562
SBE	Quinetta Roberson	dcroson@nsf.gov	703-292-7308

   or, forward it to one of the I-Corps Cognizant Program Officers:

Errol Arkilic	earkilic@nsf.gov	703-292-8095
Rathindra (Babu) DasGupta	rdasgupt@nsf.gov	703-292-8353
Anita La Salle	alasalle@nsf.gov	703-292-5006

4. **Telephone Interviews:**

   Teams that describe projects with viable commercialization potential will be scheduled to engage in a conference call with NSF's I-Corps Management Team. The purpose of this call is to assess the proposing team's capabilities and commitment to the program. At the conclusion of these initial calls, teams may be scheduled for a conference call that includes both the NSF I-Corps Management team and Instructors from the Entrepreneurial Immersion course. At the conclusion of these conference calls, teams may be invited to submit full proposals.

5. **Proposal Submission:**

   The I-Corps Teams Program will not accept proposals that have not been authorized for submission.

Uninvited proposals will be returned without review.

See Section V on Proposal Preparation for instructions about preparing an I-Corps Teams proposal.

6. **I-Corps Teams Curriculum Participation:**

Entrepreneurial Curriculum Immersion

I-Corps Teams members are required to attend a three-day Entrepreneurial Immersion course together (locations and dates are posted on the I-Corps program web site). The I-Corps curriculum provides real-world, hands-on, immersive learning about what it takes to successfully transfer knowledge into products and processes that benefit society.

The approach to develop the technology disposition will be a structured hypothesis/validation approach. The Entrepreneurial Lead will be responsible for proceeding along a content-guided path to develop, over the course of the six- month I-Corps Teams grant, a final technology-disposition plan.

Commitment to pursue online curriculum

Each team must commit to pursuing a formal hypothesis-validation approach to identify and mitigate gaps in knowledge in the following seven areas:

1. Value Proposition of the proposed product or service
2. Customer/User-case and pain point;
3. Demand Creation;
4. Channel Development;
5. Revenue Model;
6. Partnership Strategy; and
7. Resource Requirement.

NOTE: More detailed information on the on-line curriculum content is available on the I-Corps web site http://www.nsf.gov/news/special_reports/i-corps/

Online content establishing the process and progress tracking throughout the post-award effort will be hosted by NSF or designee. The team's progress will be shared with the entire cohort to facilitate group learning.

Attend Report-Out Session

Each team must attend a two-day report-out session where final technology disposition plans are presented.

Expectations from the I-Corps Teams Grant: Successful completion of the I-Corps Teams grant is expected to contribute to one or more of the following:

- New start-up business
- Licensing
- SBIR Proposal
- A business plan suitable for review by third-party investors
- Students prepared to be entrepreneurially competitive
- New curriculum development or improvement in current curriculum

NSF will seek to collect outcomes from the awardees along the lines listed above during post-award period.

III. AWARD INFORMATION

Anticipated Type of Award: Standard Grant

Estimated Number of Awards: 250

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

Anticipated Funding Amount: $12,500,000 The anticipated funding amount is $12.5 million in FY 2013, pending availability of funds.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Other Federal Agencies and Federally Funded Research and Development Centers (FFRDCs): Contact the appropriate program before preparing a proposal for submission.

Principal Investigator (PI) Limit:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

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

A PI is limited to one I-Corps Teams proposal during each submission window.

Additional Eligibility Info:

Proposers must have an active NSF award or one that has been active within the previous five years from the date of submission of the I-Corps Teams proposal in a science or engineering field relevant to the proposed innovation.

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 Grants.gov or via the NSF FastLane system.

- 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 Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 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: (http://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) 292-7827 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.5 of the Grant Proposal Guide provides additional information on collaborative proposals.

See Chapter II.C.2 of the GPG 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 GPG instructions.

Mandatory Communication with cognizant I-Corps Program Officer: PI(s) *must* contact one of the cognizant I-Corps program officers and receive prior written authorization to submit a proposal.

Cognizant I-Corps Program Officer(s):

Errol Arkilic	earkilic@nsf.gov	703-292-8095
Rathindra (Babu) DasGupta	rdasgupt@nsf.gov	703-292-8353
Anita La Salle	alasalle@nsf.gov	703-292-5006

PI(s) are *strongly encouraged* to discuss the commercial readiness of their effort with a Topic-specific program officer prior to contacting a cognizant I-Corps program officer. This will facilitate determining whether the proposed work is appropriate for I-Corps funding.

Topic-Specific Program Officer(s):

BIO	Steve Ellis	stellis@nsf.gov	703-292-7876
CISE	Anita La Salle	alasalle@nsf.gov	703-292-5006
EHR	Don Millard	dmillard@nsf.gov	703-292-4620
ENG	Rathindra (Babu) DasGupta	rdasgupt@nsf.gov	703-292-8353
GEO	Raffaella Montelli	rmontell@nsf.gov	703-292-4361
MPS	Mary Galvin-Donoghue	mgalvind@nsf.gov	703-292-8562
OCI	Irene Qualters	iqualter@nsf.gov	703-292-2339
SBE	Quinetta Roberson	dcroson@nsf.gov	703-292-7308

When contacting an I-Corps program officer, please provide the following information:

1. Composition of the team proposing to undertake the commercialization feasibility research (Entrepreneurial Lead, I-Corps Teams Mentor and PI). If a Commercialization Mentor is needed, the NSF Program Director may assist in identifying one from the I-Corps network which is being put together at this time.

2. Relevant current/previous NSF awards (including award number, the program that funded the project, and NSF program manager for the project, if available).

3. Brief description of the potential commercial impact.

4. Brief description of the current commercialization plan.

Guide to Submission of an Innovation-Corps Teams Proposal

Note: NSF will be utilizing the Rapid Response Research (RAPID) funding mechanism specified in Grant Proposal Guide (GPG) Chapter II.D.I for the submission and review of I-Corps proposals. The I-Corps Teams RAPID proposal preparation and submission requirements specified below modify, or supplement the requirements specified in the NSF Grant Proposal Guide (GPG) or NSF Grants.gov Application Guide.

An I-Corps Teams RAPID proposal consists of the following parts:

Cover Sheet:

The cover sheet is automatically generated by FastLane or Grants.gov based on information entered into the "Cover Sheet." **Proposers must check the RAPID box on the Cover Sheet.**

Project Summary:

The Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity.

The summary MUST have the following components:

1. The overview section must include a listing of "key" words. The key words/phrases should identify the areas of technical expertise in science, engineering, or education which are to be invoked in reviewing the proposal; and the areas of application that are the initial target of the technology.

2. A summary limited to 200 words addressing the Intellectual Merits of the proposed activity. No proprietary information should be included in the summary.

3. A summary limited to 200 words addressing the Broader Impacts of the proposed activity. Include information on how the innovation will enhance scientific and technological understanding. Describe the potential societal and commercial impact of the project.

Table of Contents:

The table of contents is automatically generated by FastLane or Grants.gov.

Project Description:

The project description is **limited to 5 pages**. The following information should be provided in the project description:

1. I-Corps Team (two page limit)

a. Briefly describe the I-Corps team and provide rationale for its formation, focusing on members' entrepreneurial expertise and relevance to the innovation effort, and members' experience in collaborating on previous projects.

2. Lineage of the Proposed Innovation (one page limit)

a. Provide a table of previous awards with managing program officer (if applicable) identified.

b. Briefly describe how this research has led the team to believe that a commercial opportunity exists for the effort moving forward.

3. Description of the Potential Commercial Impact (one page limit)

a. Provide a brief profile of a typical customer of the proposed innovation.

b. Describe the customer need that you believe will be met by the proposed innovation.

c. Describe how the customer currently meets those needs.

d. Your approach - What is the proposed innovation? How does it relate to the fundamental research already conducted under previous award(s)?

e. How much do you think a customer would pay for your solution?

4. Brief description of the project plan (one page limit)

a. Current Status - In what stage is the development: proof-of-principle, proof-of-concept, prototype (alpha, beta), etc...

b. Provide a brief description of the proof-of-concept or technology demonstration that will be provided at the end of the project.

Please note that per guidance in the GPG, the Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. You can decide where to include this section within the Project Description.

References Cited

Provide a comprehensive listing of relevant reference sources, including patent citations.

Biographical sketches

A biographical sketch for each team member (two pages maximum per team member) must be provided, highlighting technical expertise and track records in successful technology and business development and be prepared in accordance with the requirements specified in the GPG. Exhaustive academic resumes are not appropriate.

Proposal Budget

Funding for the Innovation-Corps Teams Program is $50,000 per award. Recovery of indirect costs (F&A) shall be limited to $5,000.

To complete the I-Corps Teams budget in FastLane:

- Include $45,000 on line G6 (Other Direct Costs)
- Include $5,000 on line I.1 (Indirect Costs)

To complete the I-Corps Teams budget in Grants.gov:

- Include $45,000 in Field F.8 (Other Direct Costs)
- Include $5,000 in Field H (Indirect Costs)

The total amount of the request must not exceed $50,000.

Within the award amount of $50,000, funds must be set aside for up to three persons (the Entrepreneurial Lead, the I-Corps Teams Mentor, and the PI) for mandatory attendance at:

- a three-day grantee entrepreneurial immersion workshop (location and date to be announced), followed, approximately five weeks later, by
- a two-day demo presentation workshop.

The intent of these workshops is to establish the foundation for the formal technology disposition of the project.

Proposers should estimate travel expenses for these two events **plus approximately $1500 per person to cover workshop registration fees.**

Current and Pending Support

The proposal should provide information regarding all research to which the Principal Investigator (PI), I-Corps Teams Mentor, and Entrepreneurial Lead either have committed time or have planned to commit time. If none, state NONE.

Current and Pending Support must be uploaded for each of the team members. Note that this proposal is considered "pending" and therefore MUST appear on each Current and Pending Support submission.

Facilities, Equipment, and Other Resources

Discuss requirements for and the availability of equipment, instrumentation, and facilities required for the proposed project.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Indirect Cost (F&A) Limitations:

Recovery of indirect costs (F&A) shall be limited to $5,000. As such, this program does require mandatory cost sharing, and, therefore, is an exception to NSF's cost sharing policy.

Other Budgetary Limitations:

The funding for each I-Corps award will not exceed $50,000.

C. Due Dates

- **Submission Window Date(s)** (due by 5 p.m. submitter's local time):

  October 01, 2012 - December 17, 2012

  October 1 - December 15, Annually Thereafter

  Please note: These are broad submission dates. Refer to Section II. Program Description and the I-Corps website: http://www.nsf.gov/i-corps-home where additional information is available describing dates of mandatory curriculum and proposal submission.

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January 01, 2017 - March 15, 2017

April 01, 2017 - June 15, 2017

July 01, 2017 - September 15, 2017

D. FastLane / Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions available at: https://www.fastlane.nsf.gov/a1/newstan.htm. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane 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 webpage: http://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 are strongly encouraged to use FastLane 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 the GPG as Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: http://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 *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. 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. (GPG 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 GPG 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

- Potential impact on market
- Time horizon to impact

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Internal NSF 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 is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, 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 and 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.

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 letter, 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 letter; (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 letter.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 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 *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

Special Award Conditions:

Online content establishing the process and progress tracking throughout the post-award effort will be hosted by NSF. Team progress will be tracked using a closed Wiki environment. The I-Corps Wiki is a shared resource accessible only by NSF, the entrepreneurial course instructors, and the peer teams that participate in an I-Corp Cohort.

C. Reporting Requirements

The Principal Investigator must submit a final project report and a Project Outcomes Report for the General Public to the cognizant Program Officer within 90 days following the expiration of the grant.

Failure to provide the final project report 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.

The PI is required to use NSF's electronic project-reporting system, available through Research.gov, for preparation and submission of the final project report. 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 *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

The report must include commercialization disposition along lines similar to the following:

- Patent applications

- Patents granted and derived or both
- Licensing agreements
- Company formation
- Royalties realized
- SBIR proposal submission (with agency name and date submitted)
- Third party financing
- New curriculum development

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:

- Steven Konsek, telephone: (703) 292-7021, email: skonsek@nsf.gov
- Lydia McClure, telephone: (703) 292-8798, email: lmcclure@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@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 http://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 provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 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 http://www.nsf.gov

• **Location:**	4201 Wilson Blvd. Arlington, VA 22230
• **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) 292-7827
• **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 Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). 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:

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