



# Updates and Opportunities at the National Science Foundation

Uma D. Venkateswaran  
Program Director, NSF EPSCoR  
[uvenkate@nsf.gov](mailto:uvenkate@nsf.gov)  
703-292-7732

# Outline

- ❑ NSF updates
  - policy, procedure
  
- ❑ NSF Funding Opportunities
  - SEES
  - CIF21
  - I-Corps
  - INSPIRE
  - SAVI
  
- ❑ Energy
  - NSF and other EPSCoR jurisdictions

# Policy, Procedure Updates

- ARRA Acceleration
- Merit Review:
  - Merit Review Criteria
  - Merit Review Process

# ARRA Acceleration:

## NSF Implementation of OMB M-11-34

- Responsible expenditure acceleration now!!
  - Award specific: Consider the program plan and Terms & Conditions of each specific award
  - Communicate with the cognizant NSF program officer and ARRA recipients - NSF ARRA web page for guidance  
<http://www.nsf.gov/recovery/>
- Grantee approved no-cost extensions (NCE)
  - ARRA grantees may ONLY issue themselves NCE through 9/30/2013, but NOT beyond 9/30/2013
- Waiver requests
  - NSF will only go forward with requests that have a compelling and defensible rationale in accordance with the OMB waiver criteria.

# Merit Review Criteria

- NSB Task Force (spring 2010) to examine review criteria and underlying principles; consider revisions, as needed
- Used stakeholder input (interviews, survey, NSF website); NSB approved Report (January 2011)
- Report's Conclusions:
  - The [Intellectual Merit and Broader Impacts](#) review criteria together capture the important elements that should guide the evaluation of NSF proposals.
  - Revisions to the descriptions of the Broader Impacts criterion and how it is implemented are needed.
- Report's Recommendations:
  - Three guiding review principles, Two review criteria, and Five review elements

# Merit Review Criteria Guiding Principles

- 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.
- 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.

# Merit Review Criteria

Reviewers are 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.

# Review elements

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 institution to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?



# Status and Next Steps

- Report Published on January 10, 2012:  
<http://www.nsf.gov/nsb/publications/2011/meritreviewcriteria.pdf>
- Next Steps:
  - NSF will develop implementation plan
  - Revised criteria description and principles will be included in the next revision of the Proposal and Award Policies and Procedures Guide

# Merit Review Process Working Group

## Provisional recommendations

- Increased use of virtual panels (from current 1% to 5% or more)
- Streamlined *ad hoc* review process to rapidly screen proposal submissions
- Greater use of preliminary proposals for core programs
- Asynchronous panels
- Automated compliance checking
- Enhanced outreach to institutions
- Resubmission of declined ideas by invitation only

# Next Steps

- Engage divisions and programs interested in pilot activities
- Jointly develop implementation plans for pilots
- Continue to engage research community
- Complete detailed analysis of other potential merit review process enhancements
- Senior management review of recommendations
- Launch pilot activities
- Evaluate pilot activity impact

# NSF Funding Opportunities

"Science without Borders" captures the ferment and promise that now characterize the research and education enterprise. The old borders — among disciplines, among institutions, among nations, and among people of all cultures — are dissolving.....”

**Subra Suresh**  
**NSF Director**





# Science, Engineering and Education for Sustainability (SEES)

The screenshot shows the NSF website interface. At the top left is the NSF logo and the text "National Science Foundation WHERE DISCOVERIES BEGIN". A search bar and a dropdown menu for "NSF Web Site" are at the top right. A navigation menu includes Home, Funding, Awards, Discoveries, News, Publications, Statistics, About, and FastLane. The main content area is titled "Science, Engineering and Education for Sustainability NSF-Wide Investment (SEES)". It includes a "SEES Mission Statement" section with the text: "To advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and sustainable human well-being." Below this is a "CONTACTS" section with the email address [nsf-sees-info@nsf.gov](mailto:nsf-sees-info@nsf.gov). A "SYNOPSIS" section follows, defining SEES as a portfolio of activities that highlight NSF's role in helping society address the challenge of achieving sustainability. The synopsis text states: "A sustainable world is one in which human needs are met equitably without harm to the environment, and without sacrificing the ability of future generations to meet their needs. Meeting this formidable challenge requires a substantial increase in our understanding of the integrated system of society, the natural world, and the alterations humans bring to Earth. NSF's Science, Engineering, and Education for Sustainability (SEES) activities aim to address this need through support for interdisciplinary research and education." The final paragraph of the synopsis reads: "Fundamental to all sustainability research is the simultaneous consideration of social, economic, and environmental systems and the long-term viability of those systems. Concepts that underlie the science of sustainability include complex adaptive systems theory, emergent behavior, multi-scale processes, as well as the vulnerability, adaptive capacity, and resilience of coupled human-environment systems. An important research

- 5-year investment area:  
new and existing activities

<http://www.nsf.gov/sees/>

- General inquiries:  
[nsf-sees-info@nsf.gov](mailto:nsf-sees-info@nsf.gov)

- Full list of contacts:  
[http://www.nsf.gov/geo/sees/sees\\_contacts.jsp](http://www.nsf.gov/geo/sees/sees_contacts.jsp)



# SEES - Activities and Opportunities

- Sustainability Research Networks (SRN) – *NSF 11-574*
- SEES Fellows – *NSF 11-575*
- Sustainable Energy Pathways - *NSF 11-590*
- PIRE – SEES projects – *NSF 11-564*
- Research Coordination Networks – *NSF 11-531*
- CNH – SEES projects – *NSF 10-612*
- Climate-related competitions
  - Climate Change Education Partnership (CCEP) Phase II – *NSF 12-523*
  - Decadal and regional Climate Prediction using Earth System Models (EaSM) – *NSF 12-522*
  - Ocean Acidification – *NSF 12-500*
  - Water, Sustainability, and Climate – *NSF 11-551*
- Dimensions of Biodiversity – *NSF 12-528*



# Cyberinfrastructure Framework for the 21<sup>st</sup> Century (CIF21)

The screenshot shows the NSF website header with the logo and tagline "WHERE DISCOVERIES BEGIN". A navigation menu includes Home, Funding, Awards, Discoveries, News, Publications, Statistics, About, and FastLane. The main content area is titled "Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21)". It includes a "Crosscutting/NSF-wide" link, a "CIF21 Vision Statement" section, and a "CONTACTS" section. The vision statement describes CIF21 as a comprehensive, integrated, sustainable, and secure cyberinfrastructure (CI) to accelerate research and education. The contacts section provides information for general inquiries and lists of contacts at NSF and for cyberinfrastructure components. A "SYNOPSIS" section follows, describing CIF21 as a portfolio of activities to provide integrated cyber resources for multidisciplinary research. The page also features a sidebar with "Funding" and "Proposals and Awards" sections, each with various links and guides.

- Contact Information:  
[nsf-cif21-info@nsf.gov](mailto:nsf-cif21-info@nsf.gov)

- Full list of contacts:  
[http://www.nsf.gov/od/oci/cif21/cif21\\_contacts.jsp](http://www.nsf.gov/od/oci/cif21/cif21_contacts.jsp)

- CI Resources:  
[http://www.nsf.gov/od/oci/cif21/cybinf\\_list.jsp](http://www.nsf.gov/od/oci/cif21/cybinf_list.jsp)



# CIF21 – Publications and Programs

- **Publications**

- Cyberinfrastructure Vision for 21<sup>st</sup> Century Discovery: *NSF 07-28*
- Advanced Computing Infrastructure: Vision and Strategic Plan *NSF 12-051*
- CI Framework in MPS - Dear Colleague Letter: *NSF 12-003*
- CI in support of Biological Sciences – DCL: *NSF 12-019*
- IGERT CIF21 – DCL: *NSF 12-059*

- **Programs**

- Computational and Data-enabled S&E (**CDS&E**)  
CDS&E – Math and Statistics (OCI and DMS)  
CDS&E – Engineering: *NSF 12-549*
- Software Infrastructure for Sustained Innovation (**SI<sup>2</sup>**): *NSF 11-589*
- *Big Data Science and Engineering (BIGDATA)*  
Core Techniques and Technologies: *NSF 12-499*



# Science Across Virtual Institutes (SAVI)

- Dear Colleague Letter *NSF 11-087*
- Structured framework to stimulate international interaction and collaboration in emerging multidisciplinary areas
- Leverage complementary intellectual strengths and share unique research facilities
- Mentor and train junior researchers
- Examples:
  - ✓ *Wireless Innovation* – Finland + 9 U.S. institutions
  - ✓ *Mathematical and Statistical Sciences* – India + 2 U.S. institutes
  - ✓ *Physics of Living Systems, Student Research Network* – 6 Countries + 11 U.S. institutes





# Innovation Corps (I-Corps)

NSF National Science Foundation  
WHERE DISCOVERIES BEGIN

Home Funding Awards Discoveries News Publications Statistics About FastLane

Funding

1 2 4

Find Funding  
A-Z Index of Funding Opportunities  
Recent Funding Opportunities  
Upcoming Due Dates  
Advanced Funding Search  
Interdisciplinary Research  
How to Prepare Your Proposal  
About Funding

Proposals and Awards  
Proposal and Award Policies and Procedures Guide  
Introduction  
Proposal Preparation and Submission  
Grant Proposal Guide  
Grants.gov Application Guide  
Award and Administration  
Award and Administration Guide  
Award Conditions  
Other Types of Proposals

NSF Web Site

Email Print Share

[Crosscutting](#)

## Innovation Corps Program (I-Corps)

CONTACTS

Name	Dir/Div	Name	Dir/Div
<a href="#">Errol Arkilic</a>		<a href="#">Rathindra DasGupta</a>	
<a href="#">Richard Voyles</a>			

PROGRAM GUIDELINES

Solicitation [11-560](#)

DUE DATES

Full Proposal Window: October 1, 2011 - December 15, 2011  
October 1 - December 15, Annually Thereafter

Full Proposal Window: January 1, 2012 - March 15, 2012  
January 1 - March 15, Annually Thereafter

Full Proposal Window: April 1, 2012 - June 15, 2012  
April 1 - June 15, Annually Thereafter

Full Proposal Window: July 1, 2012 - September 15, 2012  
July 1 - September 15, Annually Thereafter

Full Proposal Window: October 1, 2012 - December 15, 2012  
October 1 - December 15, Annually Thereafter

PI(s) must contact one of the cognizant I-Corps program officers and receive prior written authorization to submit a proposal. 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.

SYNOPSIS

- Current solicitation: **NSF 11-560**
- Contact:
  - Errol Arkilic: (703) 292-8095; [earkilic@nsf.gov](mailto:earkilic@nsf.gov)
  - Rathindra DasGupta: (703) 292-8353 [rdasgupt@nsf.gov](mailto:rdasgupt@nsf.gov)
  - Richard Voyles: (703) 292-4541; [rvoyles@nsf.gov](mailto:rvoyles@nsf.gov)
- Submission Windows:
  - Oct 1, 2011 – Dec 15, 2011
  - Jan 1, 2012 – Mar 15, 2012
  - Apr 1, 2012 – June 15, 2012
  - July 1, 2012 – Sep 15, 2012
  - Oct 1, 2012 – Dec 15, 2012

**Informational Webinars held on the first Tuesday of every month**



# Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE)

## Goals:

- *Demonstrate that NSF is open to unusually novel cross-disciplinary ideas:* Welcome groundbreaking or unconventional ideas and approaches, and unusually novel, creative interdisciplinary proposals
- *Encourage Program Directors to promote such ideas:* Empower PDs with flexibility and new resources and mechanisms to enable cross-cutting collaboration and risk-taking in developing their awards portfolio

**FY 2012 budget: \$20 million**

**FY 2013 request: \$63 million**

**First pilot INSPIRE activity for 2012-13:** Creative Research Awards for Transformative Interdisciplinary Ventures (CREATIV)

**Second pilot under development for 2013:** Larger projects

# CREATIV

Home Funding Awards Discoveries News Publications Statistics About FastLane

National Science Foundation  
Office of Integrative Activities (OIA)

NSF Web Site

OIA Home OIA Funding OIA Awards OIA Discoveries OIA News About OIA

Office of Integrative Activities (OIA)

## CREATIV

**CREATIV (Creative Research Awards for Transformative Interdisciplinary Ventures): a pilot grant mechanism under the Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE) initiative, to support bold interdisciplinary projects in all NSF-supported areas of science, engineering, and education research.**

**Note to all prospective CREATIV principal investigators:** Before writing or submitting a CREATIV proposal, PIs must obtain written authorizations by at least two NSF program directors from intellectually distinct divisions or programs. To begin the process of contacting program directors, the PI is encouraged to submit the [CREATIV Inquiry Data Form](#). To identify program directors to list on this form, some keyword searching of the NSF web site may be helpful in finding appropriate NSF divisions and programs, for example by using the "Search Funding Opportunities" box in the left-hand column of the [home page](#), or the "Search Award For" box in the [Award Search](#) database. Another potential resource is the NSF Interdisciplinary Research web site, [http://www.nsf.gov/od/oia/additional\\_resources/interdisciplinary\\_research/](http://www.nsf.gov/od/oia/additional_resources/interdisciplinary_research/), where the [Contact Options](#) page suggests various approaches, and the [Points of Contact](#) page lists people who can be helpful at the directorate level.

**DEAR COLLEAGUE LETTER:** [NSF 12-011](#) posted November 8, 2011.

**FREQUENTLY ASKED QUESTIONS:** [NSF 12-012](#)

**WEBCAST:** On November 9, 2011, NSF Director Subra Suresh and the co-chairs of the NSF INSPIRE Working Group presented a live webcast about the new CREATIV grant mechanism. The co-chairs answered questions submitted by the audience. The archived webcast can be viewed at <http://www.tvworldwide.com/events/nsf/111109/>.

**CREATIV Inquiry Data Form:** To initiate the process of a potential CREATIV submission, start [here](#).

[CREATIV Inquiry Data Form](#)

- Dear Colleague Letter NSF 12-011, [www.nsf.gov/creativ](http://www.nsf.gov/creativ)
- In a nutshell:
  - Only internal merit review is required
  - Proposals **must** be interdisciplinary **and** potentially transformative
- To begin process, PI submits inquiry form

# Energy

- SEES - Sustainable Energy Pathways, .....
- Centers – STC, ERC, MRSEC, .....
- Several DIRECTORATE-specific and Foundation-wide programs

Examples:

- ENG/Chemical Bioengineering, Environmental and Transport Systems (CBET)
  - Chemical, Biochemical, and Biotechnology Systems
  - Environmental Engineering and Sustainability
- ENG/Electrical Communications and Cyber Systems (ECCS)
  - Energy, Power, and Adaptive Systems
- Cedar Creek Long-Term Ecological Research project (DEB-0620652)



# EPSCoR RII Track-1 Awards

---

Each RII Track-1 Project has multiple areas of interdisciplinary research that cut across overarching themes.

- Sustainability & Water Resources
- Climate Change – modeling, mitigation, and adaptation
- Energy (AR, IA, KS, MT, ND, NE, OK, PR, SD, TN, .....)
- Environmental Science, ecosystem services
- Genomics, Proteomics, & Bioinformatics
- Materials Research incl. computational modeling
- Nanoscience, nanotechnology, and applications
- Sensor (GIS) development, deployment, remote monitoring



# NSF Proposal and Award Policies and Procedures Guide (PAPPG)

<http://www.nsf.gov/pubs/policydocs/pappguide/nsf11001/>

(updated Jan 2011)

## Part I: Grant Proposal Guide

- Proposal Submission Information

## Part II: Award & Administration Guide

- Award management information



**Thank You**