

Demystifying the Funding Process at the National Science Foundation



“Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.”

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Former NSF Program Director – CISE Directorate,
Cyber-Human Systems Program



Thoughts from a Former NSF Program Officer...



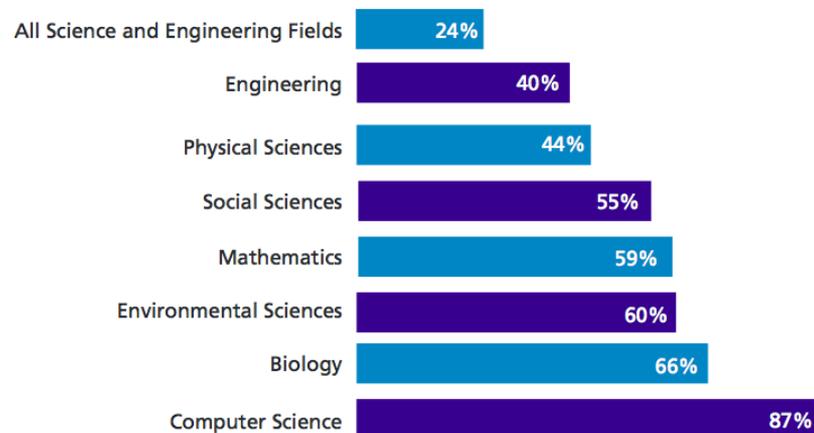
Thanks to Jim Hendler for some tips and to George Hazelrigg for other materials.

Unique Features of NSF



- Supports fundamental research and education across all fields of science and engineering
- Emphasis on integrating research and education
- Close interaction with Universities
- Rotator System: About 50% Program Directors are on loan from universities, labs, or industries
- FY2014 NSF Appropriation of \$7.2 billion (total) – FY2015 Budget ~ \$7.5 billion

NSF Support of Academic Basic Research in Selected Fields (as a percentage of total federal support)



Note: Biology includes Biological Sciences and Environmental Biology; excludes National Institutes of Health.
Source: NSF/National Center for Science and Engineering Statistics, Survey of Federal Funds for Research & Development, FY 2011



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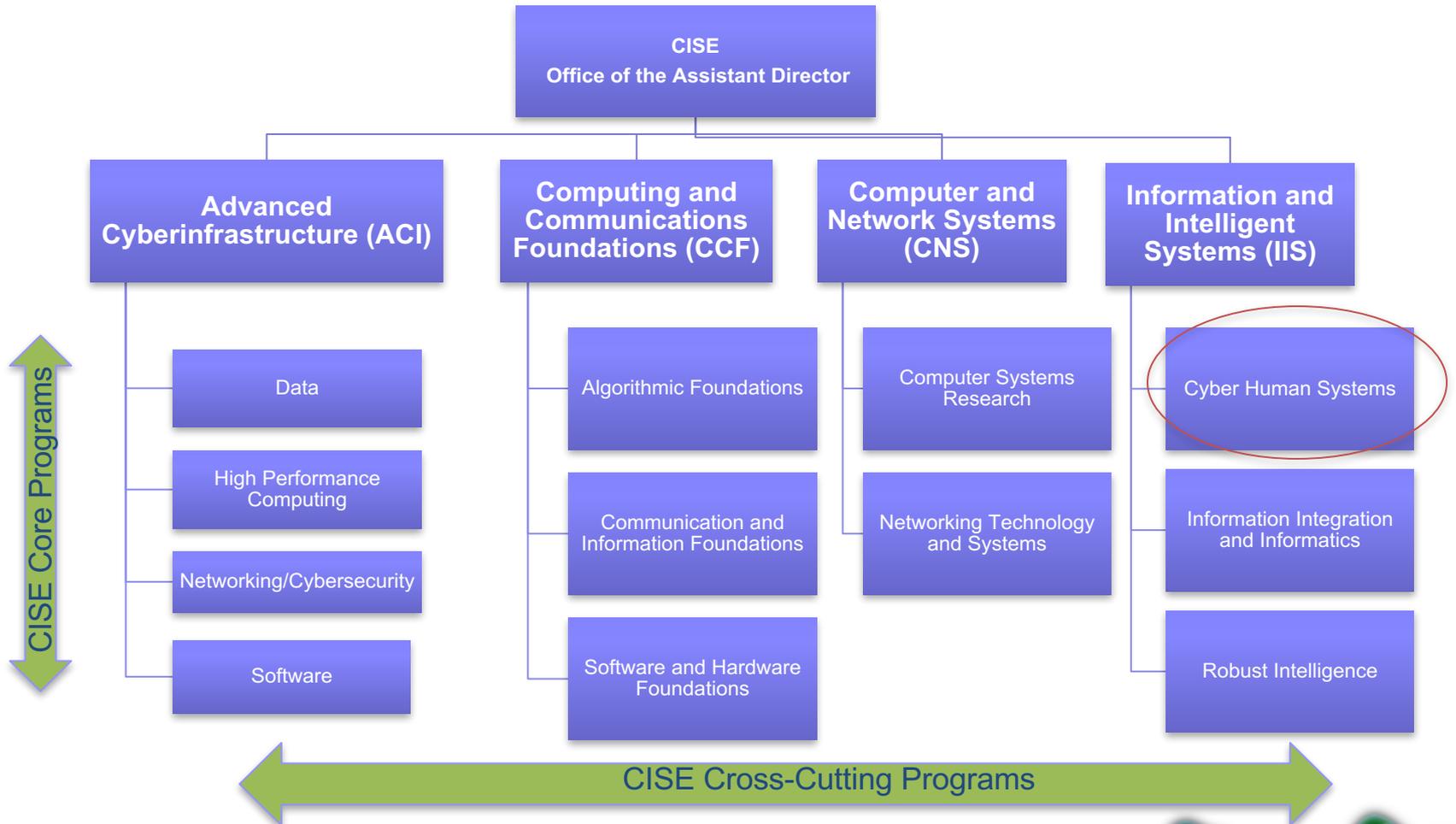
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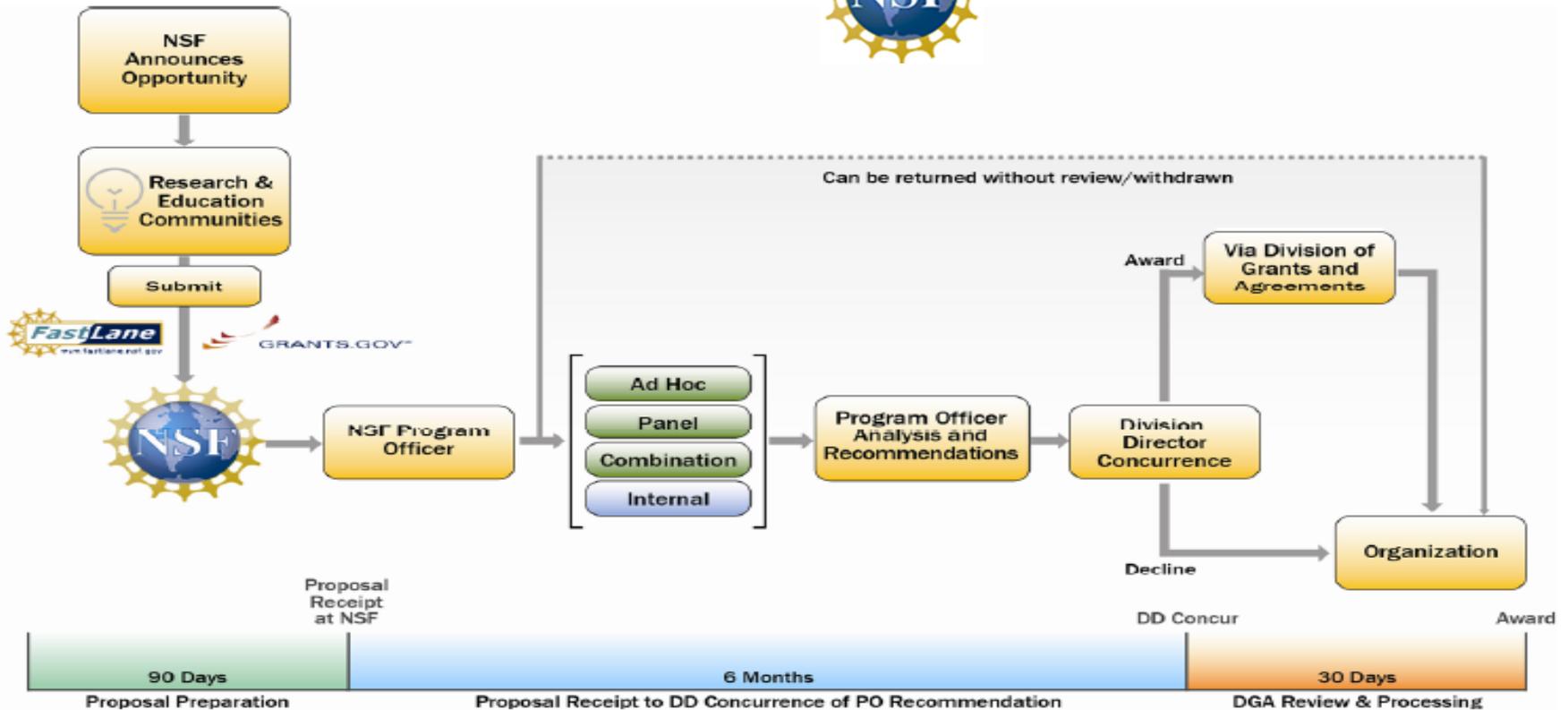
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NSF & CISE (Computer and Information Science and Engineering) Organization and Core Research Programs



NSF Proposal & Award Process



NSF AWARD SEARCH



Hint: The text field below 'Search Award For' searches for the award number or title.

Search Award For:

Restrict to Title Only:

Program Information

NSF Organization:

Program Officer:

Element Code:

Reference Code:

Hint: This "Program" box searches both program element and program officer for best results, please use the program look up function.

Program:

Field of Application:

Hint: Historical data is from prior to 1976. This data is not included in the search results.

Active Awards Only:

Active and Expired Awards:

Expired Awards Only:

Historical Awards:

Search Results

[Back](#)

Results are sorted by award date, with the most recent awards at the top. Click on a column heading to re-sort the results. The up/down arrows at the right of each column title control whether the sort is ascending or descending. To view the abstract, click on the award number or title. Click on the data in other columns to perform a new search with that parameter.

[Refine Search](#)

141 awards found, displaying 1 to 50.
[First/Prev] 1, 2, 3 [Next/Last]

Award Number	Title	NSF Organization	Program(s)	Start Date	Principal Investigator	State	Organization	Awarded Amount to Date
1056028	CAREER: High Dimensional Statistics -- Adaptive Networks, Structure and Robustness	ECCS	ENERGY.POWER.ADAPTIVE SYS	09/01/2011	Caramanis, Constantine	TX	University of Texas at Austin	\$400,000.00
1054394	CAREER: Wide-Area Control of Large Power Systems Using Distributed Synchrophasors: Where Network Theory Meets Power System Dynamics	ECCS	ENERGY.POWER.ADAPTIVE SYS	03/01/2011	Chakraborty, Aranya	NC	North Carolina State University	\$400,000.00
1055560	CAREER: Modeling and Control of Neuronal Networks	ECCS	ENERGY.POWER.ADAPTIVE SYS	03/01/2011	Sarma, Sridevi	MD	Johns Hopkins University	\$399,999.00
1026591	CDI-Type II: Computing with Biomolecules: From Network Motifs to Complex and Adaptive Systems	ECCS	CDI TYPE II	10/01/2010	Stoianovic, Milan	NY	Columbia University	\$550,000.00
1028120	CDI-Type II: Collaborative Research: Computing with Biomolecules: From Network Motifs to Complex and Adaptive Systems	ECCS	CDI TYPE II	10/01/2010	Teuscher, Christof	OR	Portland State University	\$299,964.00
1028237	CDI-Type II: Collaborative Research: Cyber-Amplified Reintegration in Robotics	ECCS	CDI TYPE II	10/01/2010	Koditschek, Daniel	PA	University of Pennsylvania	\$1,286,200.00
1028238	CDI-Type II: Collaborative Research: Computing with Biomolecules: From Network Motifs to Complex and Adaptive Systems	ECCS	CDI TYPE II	10/01/2010	Stefanovic, Darko	NM	University of New Mexico	\$1,100,000.00
1028319	CDI-Type II: Collaborative Research: Cyber-Amplified Reintegration in Robotics	ECCS	CDI TYPE II	10/01/2010	Full, Robert	CA	University of California-Berkeley	\$712,113.00
1028081	Collaborative Research: Factor-Graph Approach to Monitoring and Failure Assessment in Smart-Grid Networks	ECCS	ENERGY.POWER.ADAPTIVE SYS	10/01/2010	Kavcic, Aleksandar	HI	University of Hawaii	\$75,000.00
1029178	Head-Eye Coordination, Motion Detection and Feedback	ECCS	ENERGY.POWER.ADAPTIVE SYS	10/01/2010	Ghosh, Bijoy	TX	Texas Tech University	\$345,560.00

Review Criteria

- ***Intellectual Merit***
 - ✓ Technical aspects
 - ✓ Advancing knowledge and understanding within own or other fields
 - ✓ Potentially transformative concepts
- ***Broader Impacts***
 - ✓ Societal benefits
 - ✓ Significance beyond the Intellectual Merit
 - ✓ Outcome of the research (i.e. health impact, infrastructure)
 - ✓ Or from additional activities (i.e. education, dissemination)
- ***Both Criteria are reviewed for:***
 - ✓ Originality, creativity
 - ✓ Description of project plan with well-justified assessment
 - ✓ Qualification of teams
 - ✓ Adequacy of resources



- **HC** **High Competitive (HC):** proposal is outstanding with respect to the review criteria and you would like to see it funded.

30%

- **C** **Competitive (C):** proposal is of high quality with respect to the review criteria and you would like to see it funded if possible.

- **LC** **Low Competitive (LC):** proposal is lacking in aspects of the review criteria or not of sufficiently high quality relative to other proposals on the panel (but a resubmission might be high competitive or competitive after revision)

- **NC** **Not Competitive (NC):** proposal is lacking in critical aspects of the review criteria or not competitive relative to other proposals on the panel (and you do not encourage resubmission)

- **NDP (Triage)** **NOT DISCUSSED IN THE PANEL (NDP):** Clearly not fundable based on scores of G or below.

Panel Summaries

Each panel summary must address:

- A brief statement of what the proposal is about:
- Intellectual merit:
 - Strengths
 - Weaknesses
- To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts?
- Broader impacts, including enhancing diversity and integrating research and education:
 - Strengths
 - Weaknesses
- Results from prior NSF support (if applicable):
- Soundness of the data management plan:
- Soundness of the post-doc mentoring plan (if applicable):
- Additional suggestions:
- Panel recommendation:
 - ___ Highly Competitive
 - ___ Competitive
 - ___ Low Competitive
 - ___ Not Competitive
- Justification, including key strengths and critical weaknesses:

I. What Makes a Good Proposal?*

1. *Respond to the call*

- Ensure the fit is there
- Read and follow the requirements
 - Program announcement and GPG; solicitation

2. Back up what you propose to do with what you've already done

- However, too much overlap = incremental = bad!

3. Show enthusiasm for your work

❖ **Rule of Thumb**

- *Someone on the panel must think yours is THE BEST!*

*see Jim Hendler, "How to get that first grant: A young scientist's guide to (AI) funding in America and Adopted from David Mendonca

What Makes a Good Proposal?

4. Know your audience

- NSF reviewers will want to know:
- What is the proposal about?
- How will you do it? (technical approach)
- Can you do it? (you/team and facilities)
- Is it worth doing? (Intellectual Merit and Broader Impacts)

5. Readability is important

6. Be visible! A reputation as someone who “gets things done” looks great on a review form

Common Pitfalls: Proposal

- Submitting good science to the wrong program
- Resubmitting without major revisions
- Hiding the punch line on page 14 of 15
- Readability
- Not finding the most appropriate collaborations for interdisciplinary research
 - » Collaborations need to feel truthful but relevant (your best friend may not be the right one)

Common Pitfalls: Review

- Not writing to the panel
 - ❖ Assume diverse areas of expertise and backgrounds
- Thinking that the panel will not check your references
- Thinking that the panel will not read in between the lines of budgets and letters (particularly partnership letters)
- Not publishing enough when you get an award: past performance is important

II. Serving on a Review Panel

- Why?
 - Service to your community
 - Learn the system
 - Improve your future proposals—avoid pitfalls!
- How to volunteer?
 - Note and CV to your PD—maybe once per year

III. Should I Meet My Program Officer?

- Why?
 - What do you intend to gain?
 - ❖ Social visits don't help
- If you do...
 - Prepare by reviewing portfolio of current grants
 - Provide advance written summary of your idea
 - » e.g., NSF format *Project Summary*
 - Bring questions (e.g., fit, budget, review process)
 - Listen
 - *Remember that PD is not the panel!*

How Could a Meeting Help?

- Your program director can:
 - Give advice on proposal submission
 - Help you understand the review of a previous proposal
 - Point you to resources you can use to help write a better proposal next time
 - Give general guidance on good proposal writing

Program officers look forward to constructive meetings with PIs

Summary

- There is no magic to writing a good proposal, it is a skill that can be learned.
 - Learn from mentors
 - Learn from your mistakes
 - Learn from good examples
- ❖ Becoming familiar with the NSF system can help.
 - Identify opportunities
 - Serve on panels
 - Interact with Program Officer

Sample Programs to Support Early-Career Researchers & Students

For a comprehensive list of CISE funding opportunities, visit:
http://www.nsf.gov/funding/pgm_list.jsp?org=CISE

- Faculty Early Career Development (CAREER) Program
- Computing Research Initiation Initiative (CRII)
Enabling early research independence
- Graduate Research Fellowship Program (GRFP)
- Research Experiences for Undergraduates (REU)

Computing Research Initiation Initiative (CRII)

Enabling early research independence

- Aims to contribute to the growth and development of future generations of scientists and engineers who will dedicate their careers to advancing CISE research and education.
- Provides the opportunity for individuals who are in their first academic position post-PhD to recruit and mentor their first graduate students.
 - Allows for a full budget for grad student salary only (and some travel, equipment) but no PI salary.
- **Deadline: September 2017 (Fourth Wed in Sept Annually)**

Grants for Rapid Response Research (RAPID)

The RAPID funding mechanism is for projects having a severe urgency with regard to availability of, or access to data, facilities or specialized equipment, including quick-response research on natural or anthropogenic disasters and similar unanticipated events.



RAPID

- Requests may be for up to \$200K and for one year of duration
 - The project description is expected to be brief; no more than five pages
 - Only internal merit review is required for RAPID proposals. Under rare circumstances, Program Officers may elect to obtain external reviews. If external merit review is to be used, then the PI will be informed
- 

EARLY-concept Grants for Exploratory Research (EAGER)

- The EAGER funding mechanism may be used to support exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches.
 - This work is considered especially "high risk-high payoff" because it involves radically different approaches, applies new expertise, or engages novel disciplinary or interdisciplinary perspectives.
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EAGER

- Requests may be for up to \$300K and for two years of duration
 - Only internal merit review is required. Under rare circumstances, Program Officers may elect to obtain external reviews. If external merit review is to be used, then the PI will be informed
 - No-cost extensions, and requests for supplemental funding may be requested but are subject to full external merit review
- 

Dear Colleague Letters

NSF 15-120

Dear Colleague Letter: Supporting Research Advances in Smart and Connected Communities

September 14, 2015

Dear Colleagues:

The National Science Foundation's (NSF) Directorates for Computer and Information Science and Engineering (CISE), Education and Human Resources (EHR), Engineering (ENG), Geosciences (GEO), and Social, Behavioral and Economic Sciences (SBE) wish to notify the community of their intention to support, foster, and accelerate fundamental research that addresses challenges in enabling Smart and Connected Communities (S&CC).

Advances in the effective integration of networked information systems, sensing and communication devices, data sources, decision making, and physical infrastructure are transforming society, allowing cities and communities to surmount deeply interlocking physical, social, behavioral, economic, and infrastructural challenges. These novel sociotechnical approaches enable increased understanding of how to intelligently and effectively design, adapt, and manage Smart and Connected Communities. **Through this Dear Colleague Letter (DCL), NSF aims to accelerate fundamental understanding and stimulate basic research on frameworks that integrate and operate on data from multiple sources and at multiple temporal and spatial scales, new sociotechnical systems that are interconnected and interdependent, and new technologies for innovative applications and services to enable more livable, workable, sustainable, and connected communities.** Beyond supporting isolated efforts deemed as "islands of successes," NSF seeks to develop the scientific and engineering foundation and underlying environment that enables and spurs innovations of technologies and systems that can be integrated into the overall S&CC vision.

Principal investigators interested in submitting supplemental or EAGER proposals (or with other questions pertaining to this DCL) must first contact the program director most closely aligned with the research activities to be proposed:

- David Corman, CISE/CNS, Program Director for Cyber-Physical Systems, at dcorman@nsf.gov;
- Wendy Nilsen, CISE/IIS, Program Director for Smart and Connected Health, at wnilsen@nsf.gov;
- Sushil Prasad, CISE/ACI Program Director for Learning and Workforce Development, at sprasad@nsf.gov;
- Rahul Shah, CISE/CCF Program Director for Algorithmic Foundations, at rshah@nsf.gov;
- Laura Stanley, CISE/IIS, Program Director for Cyber-Human Systems, at lstanley@nsf.gov;
- John C. Cherniavsky, EHR/DRL, Program Director for Critical Techniques and Technologies for Advancing Foundations and Applications of Big Data Science & Engineering (BIGDATA), at jchernia@nsf.gov;
- Radhakisan Baheti, ENG/ECCS, Program Director for Energy, Power, Control, and Networks, at rbaheti@nsf.gov;
- Bruce Hamilton, ENG/CBET, Program Director for Environmental Sustainability, at bhamilto@nsf.gov;
- Elise Miller-Hooks, ENG/CMMI, Program Director for Civil Infrastructure Systems, at elisehm@nsf.gov;
- Massimo Ruzzene, ENG/CMMI, Program Director for Dynamics Control and Systems Diagnostics, at mruzzene@nsf.gov;
- Chengshan Xiao, ENG/ECCS, Program Director for Communications, Circuits and Sensing Systems, at cxiao@nsf.gov;
- Nicholas Anderson, GEO/AGS, Assistant Program Director for Major Research Instrumentation, at nanderso@nsf.gov; and/or
- Heng Xu, SBE/SES, Program Director for Secure and Trustworthy Cyberspace, Critical Techniques and Technologies for Advancing Foundations and Applications of Big Data Science & Engineering, and Resource Implementations for Data Intensive Research in the Social, Behavioral and Economic Sciences, at hxu@nsf.gov.

Cyber Human Systems – Core Program Yearly Solicitations

https://www.nsf.gov/funding/pgm_list.jsp?org=IIS

- **Small Projects** - up to \$500,000 total budget with durations up to three years;
- **Medium Projects** - \$500,001 to \$1,200,000 total budget with durations up to four years; and
- **Large Projects** - \$1,200,001 to \$3,000,000 total budget with durations up to five years.

New this year (**my interests**):

• *improve the intelligence of increasingly autonomous systems that require varying levels of supervisory control by the human; this includes a more symbiotic relationship between human and machine through the development of systems that can sense and learn the human's cognitive and physical states while possessing the ability to sense, learn, and adapt in their environments;*

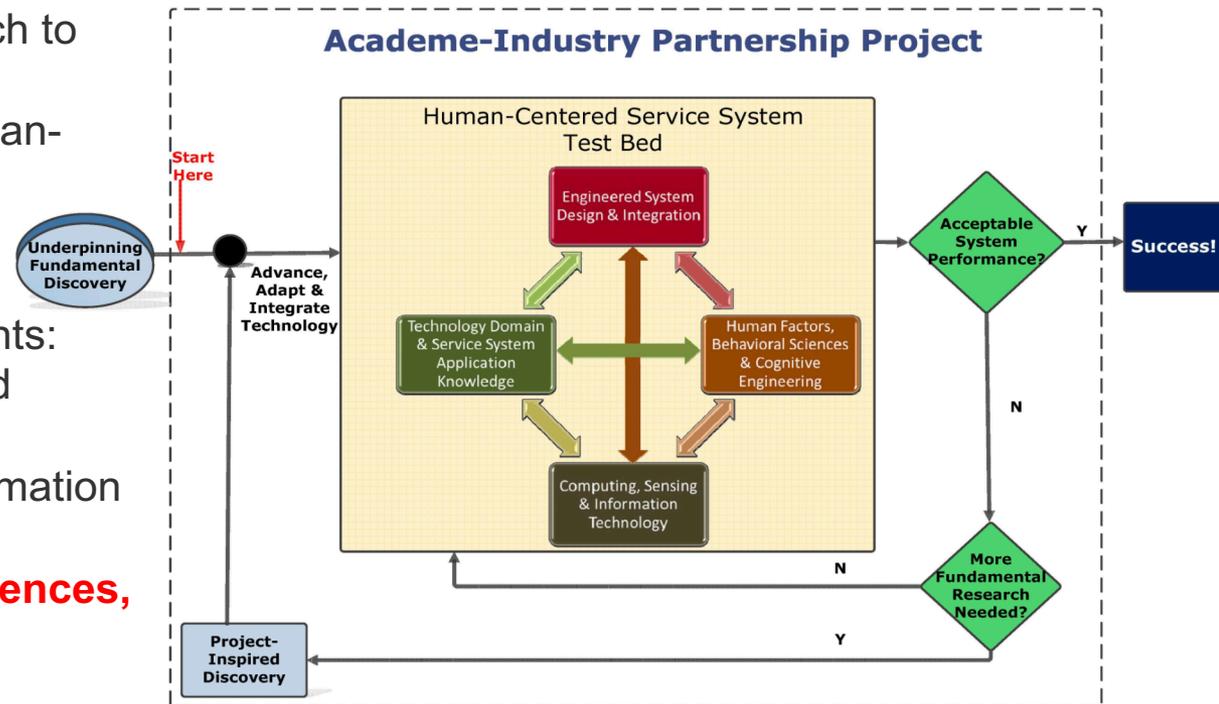
• *enhance computing environments, including virtual and/or augmented reality, to enable and improve scientific, engineering, and education production and innovation;*

Partnerships for Innovation: Building Innovation Capacity - Smart Service Systems

<https://www.nsf.gov/eng/iip/pfi/bic.jsp>
November Deadline 2017, \$1M

Supports academe-industry partnerships to carry out research to advance, adapt, and integrate technology into a specified, human-centered smart service system.

Must have 3 research components:
1. Engineered system design and integration;
2. Computing, sensing, and information technologies; and
3. Human factors, behavior sciences, and cognitive engineering.



Go Meet Your Program Officers!



NSF CISE CAREER WORKSHOP 2017
MARCH 20, 2017-- ARLINGTON, VA

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OVERVIEW

[REGISTER NOW](#)

Welcome to the 2017 NSF CISE CAREER Proposal Writing Workshop, to be held at the [Hilton Arlington](#) near the NSF headquarters on Monday, March 20, 2017. This event will introduce junior faculty to the NSF CAREER program, and help them prepare their CAREER proposal. The NSF CAREER program serves a critical role in the National Science Foundation's efforts to identify, foster and support the nation's most promising junior faculty in both research and education.

Junior professors who are just starting their careers often have limited experience with grant writing and evaluation. They also have little or no interaction with the program directors at NSF. In this workshop, early-career faculty members will have the opportunity to improve their skills in proposal writing, as well as interact with NSF program directors from different divisions (ACI, IIS, CNS, and CCF) as well as recent NSF CAREER awardees. The workshop is also open to multidisciplinary researchers with a CISE-specific focus, including cyberinfrastructure. The major components of the workshop include presentations on proposal writing, experience sharing, mock panels, and proposal clinic.

The workshop has been designed to accommodate up to 200 junior faculty members

IMPORTANT DATES

Jan 30: Registration Deadline

Feb 5: Notification of Acceptance

Feb 19: Schedule Announcement for day-after meeting with CISE PDs

Mar 20: CAREER Workshop

ORGANIZERS

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