Innovations in Cyberinfrastructure Learning and Workforce Development (LWD)

Advanced Cyberinfrastructure Division (ACI)
Computer and Information Science & Engineering (CISE)

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CISE Division of Advanced Cyberinfrastructure (ACI)

**Mission:** Support advanced cyberinfrastructure to accelerate discovery and innovation across all disciplines

**Science Drivers**

Domain science trends, agency priority areas, major facilities...

**Investment areas**

- High Performance Computing
- Networking & Cybersecurity
- Data
- Software
- People (LWD)

**Leadership, Partnership**

NSF Directorates, NSF and Federal Initiatives, Industry, International

**Directors**
- Director: Irene Qualters
- Deputy: Amy Friedlander
- Science Advisor: Bill Miller
- HPC: Bob Chadduck, Rudi Eigenmann, Ed Walker
- Data: Bob Chadduck, Amy Walton
- Net/Sec: Anita Nikolich, Kevin Thompson
- Software: Dan Katz, Rajiv Ramnath
- LWD: Sushil Prasad

Education and Workforce as infrastructure

**Cyber Scientists**
to develop
new capabilities

**Professional Staff**
to support
new capabilities

**Area Scientists**
to exploit
new capabilities

**ACI**

*Education and Workforce as infrastructure*
LWD: The Career Pipeline

- **Goal:** Build robust careers paths in Cyber-Infrastructure (CI) and Computational and Data-enabled Science and Engineering (CDSE)
- **Techniques:** Leverage existing programs for early-stage researchers. Develop new programs in areas of need/challenge
Faculty Early Career Development Program (CAREER - NSF 15-555)

• Most prestigious award supporting junior faculty as a teacher-scholar
  • Outstanding research, education and the integration of education and research
  • Presidential Early Career Awards ...(PECASE) – 20 best

• ACI research focus:
  • Use-inspired and/or applied, multidisciplinary research
  • computation and data-enabled science and engineering

• Min $400K/5 yrs
• Deadlines by directorate: CISE: July 20, 2016
ACI encourages proposals that are either of primary interest to ACI, or secondary interest to ACI (add ACI in Cover Page).

Dear Colleague Letter: ACI & Career (NSF 15-072)

CAREER program page
http://www.nsf.gov/career

CISE CAREER Proposal Writing Workshop
April 4, 2016, Arlington, in-person and online participation
CISE Research Initiation Initiative (CRII - NSF 15-569)

• Independent research for faculty or research scientists in their first three years (Pre-CAREER)
  • May not have any grant as PI
• ACI research focus:
  • Use-inspired and/or applied multidisciplinary research
  • Computational and data-intensive scientists in addition to computer scientists
• Award ~$175K/ 2 yrs
• Deadline: Aug 10, 2016
Goals of CISE Research Initiation Initiative (CRII - contd.)

• Start a research program and career
  – The PI need not have significant prior research results or maturity
  – Start a path toward research independence
  – Develop collaborations within or across research disciplines
  – Undertake exploratory investigations
  – Acquire and test preliminary data

• Broaden community of researchers
  – Reach underserved sub-communities, under-represented groups, nontraditional institutions
Research Experiences for Undergraduates (REU - NSF 13-542)

- Active research participation by undergraduate students
- **REU Sites** are based on independent proposals
  - **REU Supplements**: component of new or continuing proposals
- Deadline: August 24, 2016
- Up to $360K/3yr;
Research Experiences for Undergraduates (REU – Contd.)

School hosts summer cohort for undergrad research

- **Coherent intellectual focus** to research topics
- At least half the students are from institutions other than the host institution
- At least half from schools with limited research potential
- Research mentoring and support
- Social activities
- Professional development, grad school prep
NSF Research Training
(NRT - NSF 15542)

• To encourage the development and implementation of potentially transformative models for STEM graduate education training
  • Understanding the Brain (UtB) + Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS)
  • Other: Data-enabled Science and Engineering (DESE)
• Award $3M/4-5yrs
• Last round deadlines:
  • Mandatory letters of intent: Dec-2015
  • Feb-2016 deadline
Other LWD Opportunities within ACI

- EAGERs, Workshops, RCNs
  - Seed Exploration of Informal/Formal Training and Education, Broadening Participation
  - Students, Post-Docs, Faculty, CI Professionals
- CC* - CI Engineer -> Cyber Team
- Student Travel Grants
- *Discuss with me and other ACI Program Officers*