NATIONAL SCIENCE FOUNDATION
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NSF 15-053

Dear Colleague Letter: Future Directions for NSF Advanced Computing Infrastructure (ACI)

March 18, 2015

Dear Colleague:

This Dear Colleague Letter (DCL) invites proposals to fund conferences that identify needs for advanced computing infrastructure in support of future computational research as well as the role the National Science Foundation (NSF) should play in providing such support in the time frame 2017-2020 as well as longer term.

Example conference topics include: current and emerging scientific frontiers that are limited by capabilities of today's large-scale computational ecosystem; use of cloud computing systems for advancing science and education at all scales; common hardware or software platforms that address large and small-scale modeling and data analytics; roles of campus, regional, and national resources and services in the overall computational ecosystem; scalable operating models for effective dynamic delivery of computational resources and services to geographically distributed researchers; collaboration models that reduce barriers across different environments while preserving efficiency and innovation; effective learning and workforce development to ensure next generation capability in the most advanced computational science for all disciplines; work-flow and data-flow requirements not currently met in today's computational ecosystem; economic and incentive models for optimizing scarce resources within a diverse landscape; and metrics for advanced computing infrastructure and science impact. Other topics should be considered as they represent important elements of future computing infrastructure in support of advanced computational research.

The findings of these conferences will complement the National Academy of Sciences (NAS) Study on Future Directions for NSF Advanced Computing Infrastructure to support US Science in 2017-2020. NAS is currently soliciting feedback on an interim report at http://www.nap.edu/catalog.php?record_id=18972.

Topics of concern to the community that this interim report is not addressing sufficiently may also be considered.

The conference discussions should cover diverse aspects of the above topics, from the needs that arise in computational applications across fields of science, to hardware and software systems that may form the basic infrastructure, to shared services that enhance productivity and broaden participation, to virtual and distributed organizations providing these services. The conferences should raise important questions, collect available answers, and describe paths for finding answers to questions that remain open. If possible, conferences should distinguish between infrastructure in support of classical computational methods that enable scientific progress today and needs for novel infrastructure that may enable scientific progress in the future.

Both interdisciplinary conferences and events within science domains are of interest. Organizers may choose broad and/or focused issues for discussion, as most suitable for best conference outcomes. Organizers are encouraged to also invite graduate students experienced in using computational research infrastructure as well as participants that can articulate the needs of non-traditional and underrepresented groups.

While there is no prescribed size of the conferences, organizers should carefully consider tradeoffs between audiences that can represent diverse viewpoints and small gatherings that may produce focused and timely outcomes.

Conference reports and other outcomes should be made available publicly by Fall 2015.

NSF is looking to fund five to ten conferences in response to this Dear Colleague Letter.

Guidance on submitting a conference proposal may be found in NSF's Grant Proposal Guide at http://www.nsf.gov/pubs/policydocs/pappguide/nsf15001/gpg_2.jsp#IID9.

Note that guidance in the GPG for conference proposals also applies to proposals for symposia and workshops.

For proposal submission, select NSF 15-001 Grant Proposal Guide as the Program Announcement, CISE/ACI as the Division and ETF as the Program.

Questions about this Dear Colleague Letter should be addressed to: Rudolf Eigenmann, reigenma@nsf.gov.

Sincerely,

Irene Qualters
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