NATIONAL SCIENCE FOUNDATION
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NSF 20-082

Dear Colleague Letter: Cyberinfrastructure Centers of Excellence

May 12, 2020

Dear Colleagues:

The National Science Foundation's (NSF) Office of Advanced Cyberinfrastructure (OAC) recently established the Cyberinfrastructure Center of Excellence (CI CoE) Program[1].

CISE is issuing this Dear Colleague Letter (DCL) pursuant to the following section in the program description.

> ***Topics and Pathways.*** *NSF anticipates creating such CI CoEs in response to specific needs and gaps. NSF anticipates issuing Dear Colleague Letters to indicate interest in pilot CI CoE proposals on particular focus areas. NSF may initially invest in two-year pilot CI CoE projects which aim to develop concepts and plans and demonstrate feasibility through pilot activities as preparatory precursors to eventual proposals for establishing full-scale CI CoEs.*

Background. As described in the program description, the CI CoE program enhances OAC's support for Centers of Excellence across the range of CI areas comprising computing; data; software; scientific workflows; network infrastructure; resources and services at institutional, regional, national and international scales; and related training and workforce development for those engaged in developing, maintaining and utilizing CI including research end-users. The CI CoE program supports pilot projects conceiving or demonstrating feasibility of eventual full-scale CoEs in targeted CI areas that aim to broadly address the needs of the science, engineering and education communities supported by NSF.

As noted in CI CoE program description, OAC-supported CI CoEs are *service-oriented* hubs of expertise and innovation targeting specific areas, aspects or stakeholder communities, with the aims of driving advancements, expanding utilization and improving efficiency of the national research CI ecosystem through structured, strongly community-engaging and community-serving approaches. CI CoEs provide expertise and services related to CI technologies and solutions; gather, develop and communicate community best practices; and

serve as readily available resources for both the research community and the CI community.

While scientific relevance and technical innovation are integral to successful CI CoE activities, the CI CoE program *does not support* CI or domain science research, nor does it fund projects aimed to benefit single research domains, disciplines or fields. Principal investigators (PIs) interested in pursuing such ideas should consider other OAC funding programs such as the OAC Core Research and Cyberinfrastructure for Sustained Scientific Innovation (CSSI) programs or other NSF funding programs as appropriate. OAC does not support industry activities with commercial aims. Refer to the CI CoE program description for further examples of appropriate activities.

Focus Areas for this DCL. As anticipated in the program description, this DCL identifies focus areas of current interest. In FY 2020, NSF anticipates making awards for early-stage *concept definition studies* and *demonstration pilot* projects as preparatory precursor activities towards potential full-scale CI CoEs. The following topical areas are encouraged for such projects:

- *Architecting and operating research CI ecosystems at regional, national and international scales* towards the strategic goal of enhancing and accelerating scientific collaboration, exchange and discovery, and comprising service activities such as developing and disseminating principles, approaches, and methods; building expertise and communities of practice; and addressing areas such as planning, design, analysis, integration, end-to-end performance measurement and utilization.
- *CI learning and workforce development*, comprising service activities aimed at growing and nurturing the expertise base and interactions among CI contributors, professionals and users, towards strategic goals such as enabling broad adoption of CI tools, methods and resources by the research community to catalyze discovery; and enhancing the ability and skills of researchers and CI developers to collaboratively develop and operate new research CI.
- *Campus-centric networking and cyberinfrastructure*, aimed at leveraging and sharing expertise across the campus CI community, through service activities such as exchange and dissemination of knowledge, best practices and solutions applied to scientific networking, CI facilitation for researchers and the research community, integrated solutions, federated scientific resource sharing and other campus-level CI challenges.
- *Software and data infrastructure practices and transition to production*, encompassing service activities that promote establishment and use of best practices in scientific software and data engineering in areas such as CI robustness and production-level quality; delivery; engagement of and responsiveness to the user community; pathways toward sustainability; and metrics assessing performance and impact in all these aspects.

Concept definition study proposals on service-oriented cyberinfrastructure topics beyond those listed above are welcome; demonstration pilot proposals on other topics are also

welcome but may be considered at a lower priority. However, *CI CoE proposals related in any way to cybersecurity are discouraged* as NSF already supports a CoE in this area[2].

How to Respond to this DCL. Prospective PIs are encouraged to respond to this DCL through the submission of proposals for concept definition studies or demonstration pilots. For planning purposes, the CI CoE program typically supports concept definition studies with total budgets of up to $300,000 and demonstration pilots with budgets of up to $1.5 million, both over durations of up to two years.

As stated in the program description, individuals interested in submitting a proposal for a CI CoE project are strongly encouraged to discuss their project idea with the cognizant CI CoE Program Director(s) in the relevant areas prior to submission. To initiate discussion a project idea, prospective proposers are encouraged to send an email to cicoe@nsf.gov.

Proposal titles should begin with "CI CoE:" and additionally "Concept:" or "Demo Pilot:" as appropriate.

To be eligible for funding in FY 2020, proposals must be submitted no later than June 15, 2020.

Proposals that fail to address the objectives and guidance described in the CI CoE program description and this DCL may be returned without review.

All questions concerning this DCL should be directed to cicoe@nsf.gov and not to the signatories of this DCL.

Sincerely,

Margaret Martonosi
Assistant Director, CISE

Manish Parashar
Office Director, OAC

REFERENCES

[1] NSF CI CoE program description, https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505744.

[2] See the NSF-funded Cybersecurity Center of Excellence, Trusted CI, at https://trustedci.org.