



NATIONAL SCIENCE FOUNDATION
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NSF 22-052

Dear Colleague Letter: Nurturing Diverse, Skilled, Capable, and Productive Communities of CyberInfrastructure Professionals (CIP)

February 24, 2022

Dear Colleague:

The workforce required to develop, deploy, manage, and support effective use of the cyberinfrastructure (CI) supported by NSF is critical for advancing the frontiers of science and engineering¹. Members of this professional staff, henceforth referred to as Cyberinfrastructure Professionals (CIP), play a vital role in ensuring US leadership in science and engineering consistent with NSF's mission. Research software engineers, research computing data professionals, programmers, IT professionals, data scientists, system administrators, and CI facilitators, to name a few, are called upon to leverage current, emerging, and future CI capabilities needed in the ever-growing pursuit of scientific and technology advances for the economic competitiveness and national security of the nation. These individuals and the highly valued services they provide to science and engineering deserve more institutional recognition, support as a community, and clearer pathways for their professional/career development².

The Office of Advanced Cyberinfrastructure (OAC)'s blueprint for learning and workforce development³ outlines a vision and actions aimed at fostering and nurturing a diverse, recognized, and skilled CI workforce community that can accelerate and amplify the transformative impact of CI across all science and engineering (S&E) research and education. The recent Cyberinfrastructure Center of Excellence (CI CoE) Demo Pilot award⁴ that aims to **advance research computing and data infrastructure through the strategic development of tools, practices, and professional development**, is one example of NSF's investments to advance the nation's capacity for computational and data-intensive research, as well as to help institutions recognize and evaluate CIP capabilities and training.

Through this Dear Colleague Letter (DCL), NSF announces two new steps undertaken to implement the NSF vision for developing and sustaining a diverse and dynamic CI

workforce³:

1. CI Professional Mentoring and Professional Development Plan

All proposals submitted to the NSF [Cyberinfrastructure for Sustained Scientific Innovation \(CSSI\)](#) and [Training-based Workforce Development for Advanced Cyberinfrastructure \(CyberTraining\)](#) programs that request funding to support CI professionals are required to have a CI Professional Mentoring and/or Professional Development Plan. When applicable, the PI must upload a document titled "CI Professional Mentoring and/or Professional Development Plan" in the Supplementary Documentation section of Research.gov or Grants.gov. The document must describe the mentoring and/or professional development activities that will be provided for such individuals. The PI is asked to describe in no more than one page the planned activities that are targeted specifically for CI professionals supported by the project, regardless of whether they reside at the submitting institution, any subrecipient organization, or at any organization participating in a simultaneously submitted collaborative proposal.

The mentoring and professional development activities provided to CI professionals supported on the project will be evaluated under the Broader Impacts review criterion. Examples of mentoring and professional development activities include, but are not limited to: career envisioning and counseling; training in preparation of and opportunities to prepare grant proposals, publications, and presentations; guidance on finding opportunities and networks for professional training and career advancement; guidance on effectively collaborating with researchers and other professionals from diverse backgrounds and across multiple science and engineering disciplines; and providing information on, and training in, responsible professional practices.

The requirement for a CI Professional Mentoring and Professional Development Plan may be adopted by other relevant programs across NSF.

2. Research Coordination Networks of CI Professionals (RCN:CIP)

NSF envisions networks of connected and coordinated hubs that recognize and connect CI Professionals, support communications and training, share best practices, and foster mobility and synergies across projects and organizations. To establish community for all stakeholders of the CI workforce, NSF encourages proposals for Research Coordination Networks (RCN) to advance CI Professionals' careers through transformative and/or new approaches for fostering, nurturing, expanding, and sustaining such communities. The RCN: CIP projects are intended to:

- foster exchange and community development among CI Professionals;
- share experience on sustaining and retaining CI Professionals;
- raise the awareness and importance of CI Professionals in academia, and convey the

- information to academic leaders on their career development;
- communicate opportunities for, and importance of CI Professionals collaboration with research and engineering groups;
 - advance best practices for diverse and inclusive recruitment and development of CI expertise at all levels as to ensure the effective utilization of the capabilities of individuals from a diverse set of underrepresented groups;
 - explore mutually beneficial partnerships across the different stakeholders in academia, government, non-profits, and industry; and
 - explore the establishment and sustainability of a network of hubs over the longer term, including governance and coordination among these hubs.

Interested investigators are encouraged to submit proposals in response to the "Research Coordination Networks: Fostering and Nurturing a Diverse Community of CI Professionals (RCN:CIP)" program solicitation, [NSF 22-558](#). The proposal submission deadline is April 25, 2022.

Sincerely,

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REFERENCES

- ¹ Transforming Science Through Cyberinfrastructure, NSF's Blueprint for a National Cyberinfrastructure Ecosystem for Science and Engineering in the 21st Century, <https://www.nsf.gov/cise/oac/vision/blueprint-2019/>.
- ² Building the research innovation workforce: a workshop to identify new insights and directions to advance the research computing community, <https://www.rcac.purdue.edu/ciworkforce2020>.
- ³ Blueprint for Cyberinfrastructure Learning and Workforce Development, <http://www.nsf.gov/cise/oac/vision/blueprint-2019/CI-LWD.pdf>.
- ⁴ NSF #2100003, *CI CoE: Demo Pilot: Advancing Research Computing and Data: Strategic Tools, Practices, and Professional Development*, PI: Dana Brunson, Internet2, <https://carcc.org/rcd-nexus/>.