

**National Science Foundation (NSF)**  
**Computer and Information Science and Engineering (CISE)**  
**Advisory Committee (AC)**

**Meeting Summary**

The Advisory Committee (AC) for the National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) convened on December 11 and 12, 2024. The meeting was held in person and virtually.

**Wednesday, December 11, 2024 (all times Eastern)**

12:00 PM Welcome, introductions, and review of agenda

CISE AC co-chair Enrico Pontelli opened the meeting. All members of the AC were asked to reflect on the role of CISE in a fast-moving landscape. Attending AC members and NSF staff gave introductions to the group.

12:30 PM NSF and CISE update

NSF Assistant Director for CISE Greg Hager welcomed the CISE AC and shared his view from the first 6 months. Greg thanked the NSF leadership team for facilitating his onboarding. He went on to highlight CISE investments in two 2024 Nobel prizes. Updates were given on CISE funding and programs including the foundational impact of artificial intelligence (AI), advances in CS high school education, and the upcoming 40-year anniversary of CISE in 2026. Following the presentation was a question-and-answer session.

1:30 PM Break

1:45 PM NSF Quantum Activities

NSF Division Director for Computing and Communication Foundations Dilma Da Silva provided an overview of the Foundation's priorities for Quantum Information Science and Engineering (QISE). Quantum Leap Challenge Institutes, ExpandQISE, and QISE within CISE were discussed. Recent trends show an increase in participation from the CISE community in quantum topics. Following the presentation was a question-and-answer session.

2:30 PM Broadening Participation in Computing (BPC)

Carla Brodley from Northeastern University provided an overview of their Center for Inclusive Computing and their goal of narrowing the gap between students in each

university and the students in CS in terms of demographics. The accountability of reporting to NSF was discussed with the suggestion that all funded BPC projects should collect intersectional demographic data -term by term- to measure progress, guidelines for how to report previous BPC efforts, and the need for BPC activities to include more systemic change. It was suggested that CISE support departmental efforts to implement systemic changes toward BPC and transform undergraduate education in the age of AI, stressing the importance of department leadership involvement at the chair/dean level to make the necessary changes. Following the presentation was a question-and-answer session.

Co-chair of the CISE AC Enrico Pontelli provided an overview of the subcommittee for BPCs review of the CISE AC BPC strategic plan. Leading themes were that BPC remains a fundamental challenge that needs to be addressed and CISE has a role to play. Key takeaways from the subcommittee are that broadening participation is not the same as diversity and inclusion, there are systemic challenges, and accountability is important. Among the issues discussed were an emphasis on computing for all, systemic barriers, and accountability. A timeline for the subcommittee was shown and a question-and-answer session.

3:15 PM Break

3:45 PM NSF Cybersecurity and Privacy Activities

NSF Division Director for Computer and Network Systems Ellen Zegura provided an overview of the NSF security and privacy portfolio. The launch of Security, Privacy, and Trust in Cyberspace (SaTC 2.0) was announced, and the Security and Privacy Heterogeneous Environment for Reproducible Experimentation (SPHERE) testbed was described. Following the presentation was a question-and-answer session.

4:30 PM Recap of Day 1 and look-ahead to Day 2 (preview questions)

Co-Chair Enrico Pontelli provided an overview of Day 1 and asked attendees to prepare their questions for the Day 2 discussion with NSF Director.

Departing member's remarks were given by CISE AC member Beth Mynatt (shifted from Day 2). Takeaways included the need for continued work between CISE and the Directorate for Social, Behavioral, and Economic Sciences (SBE) to work on joint agendas and non-trivial barriers, to continue to challenge the community, and the importance of the work of CISE on the health of the community.

5:00 PM Adjourn

## **Thursday, December 12, 2024 (all times Eastern)**

9:00 AM Welcome and overview of day

AC co-chair Klara Nahrstedt provided a brief overview of the previous day and introduction to the agenda for the day.

9:15 AM NSF research security activities

Sara Barber, NSF Science Policy Advisor, discussed the background leading to the creation of the NSF research security office in 2022. She emphasized that research security risk is hard to define, as it is evolving, but at the same time there is a need to communicate the scope of risk to the larger research community, as it is also important to protect the openness of research as much as possible. NSF activities can be categorized into three main efforts: 1) imposing new requirements, as mandated by either the White House or Congress, 2) supporting the SECURE Center, which serves as a centralized resource for the community for training modules, tools, guidance concerning rules, etc., and 3) building a research program to understand scale and scope of risks and gather evidence to inform policy. Most recently the White House has mandated that universities must establish a research security program on their own campus that must at least contain the 4 components of: Cybersecurity, foreign travel security, research security training, and export control training. NSF has developed training modules to give universities a place to start with implementation. Finally, Sara Barber spoke to the guiding principles of NSF evaluation criteria for funding, which centers mitigating risk while allowing science to progress as much as possible.

The following discussion raised concerns about inhibiting (especially basic) research, as well as inconsistencies among universities about security-related policies and risk tolerance. Sara Barber emphasized that it is important for academic practitioners to be part of the conversation as they are the ones who know best how the academic process works, and also the complexities of navigating risk tolerance and policy at universities if there is inconsistency across federal agencies.

10:00 AM CISE AC liaison status reports

Timothy Pinkston, the CEOSE liaison, gave an overview of the in-progress report in the context of the mission of CEOSE and other recent reports. CEOSE (Committee on Equal Opportunities in Science and Engineering) is a congressionally-mandated committee to advise NSF concerning implementation of the provisions of the science and engineering of the Equal opportunities Act, comprises 16-18 members, and submits biannual reports to Congress. The most recent report is the third in a series around the larger theme of “Making Visible the Invisible.” The first focused on inclusive leadership, the second on

intersectionality, and the third focuses on severely underrepresented populations (e.g., disabled persons, neurodiverse persons, Native American and Indigenous populations, and women in the skilled technical workforce). During the drafting of the report, CEOSE received input from a variety of people and groups, and a significant element that emerged was the importance of seeking out and foregrounding individual stories to supplement quantitative data. Two key recommendations in the report are: 1) NSF identify and implement new strategies to increase the participation of persistently and severely underrepresented populations, and 2) NSF should identify and implement new and innovative methodologies and technologies to address data gaps with a focus on mixed methods approaches. The final version of this report will be shared to the AC during the June meeting, where the next report will also be discussed.

10:30 AM      Prep for visit by the NSF Director and Chief Science Officer

The AC reviewed and discussed topics and questions to raise with the NSF Director. Key themes that emerged from the discussion were: changes that might be expected with the next administration regarding budget, priorities, and opportunities; the role of CISE within the NSF given the rapid growth of AI; how the domestic student CS pipeline might be strengthened; and what sorts of partnerships NSF and universities might pursue (e.g. with industry). Some topics discussed such as questions of CS enrollment and how to build computational literacy were flagged as possible topics for AC subcommittees.

11:15 AM      Break

11:30 AM      Meeting with NSF Director and Chief Science Officer

The AC welcomed NSF Director Sethuraman Panchanathan, who highlighted the exciting time for science and technology and NSF's commitment to AI, in particular. He highlighted the success of the NAIRR Pilot and AI Institutes, and included AI education, the democratization of AI, and advancement of AI as overarching goals. Finally, he spoke about the "future" of funding which will benefit from private and philanthropic partnerships (as a significant portion of R&D investment is in the private sector).

Members of the AC Committee asked questions about: 1) considerations and opportunities that CISE should think about with the new administration, 2) whether there were plans for NSF to give more support to CISE given its central role with AI, etc., 3) the Director's perspective about how to handle challenges in strengthening the domestic pipeline of students, and 4) how universities can create beneficial partnerships with industry, given that such partnerships take time to build.

In response, the Director expressed that he was optimistic that AI, quantum, and other industries of the future will continue to receive high priority under the new administration,

and that NSF will seek to establish a positive trajectory with Congress without moving away from the fundamental mission of NSF. He acknowledged the importance of CISE, but encouraged a reorientation to thinking more broadly about “computing at NSF” and synergies both across directorates and external partnerships. Finally, he affirmed developing and retaining domestic talent is of national interest, but it also takes time to scale. In the medium term, focusing on how to retrain and upskill talent already in the workforce should be on the agenda as well. In terms of partnership portfolios, the Director suggested this is an area where there can be growth—NSF should also seek out how to leverage partnerships with industry.

12:00 PM Discussion among AC members following meeting with NSF Director and CSO

After the meeting with the NSF Director, the AC continued discussion on the topics of AI and university/industry relationships. Greg Hager spoke about ongoing discussions between CISE and with the director of the SBE Directorate about ways to best align efforts to address socio-technical aspects of AI. In addition, it was acknowledged that CISE oversees many computing activities not directly related to AI, and that continued investment in both is important. The AC welcomed the Director’s emphasis on computing across NSF, but also brought up that CISE has a history of investing in “high risk, high reward” innovative ideas, and that this is still what makes CISE uniquely positioned to support this kind of research. There was also discussion about exploring possibilities for industry funding for graduate students in conjunction with NSF and/or university funding.

12:30 PM Departing Members’ reflections [ happened Wed.]

Beth Mynatt, Member, CISE AC

12:45 PM Closing remarks

CISE AC co-chairs Klara Nahrstedt and Enrico Pontelli thanked everyone for their participation and gauged interest in AC subcommittees relating to research security and educational issues (i.e., computational literacy, pipeline issues, how to handle expansion from traditional degrees). Greg Hager recognized and thanked KaJuana Mayberry for her time working at CISE, thanked Nahrstedt and Pontelli for chairing the AC meeting, and emphasized the need for ongoing dialogue.

1:00 PM Adjourn

**Meeting attendees**

Klara Nahrstedt

Enrico Pontelli

Scott Acton

Annamalai Annamalai

Azer Bestavros

Vint Cerf

Gabriela Cruz Thompson

Antonio Delgado

Brittany Duncan

Roch Guerin

Kinnis Gosha

Christopher Johnson

Raja Kushalnagar

Ran Libeskind-Hadas

Jeanna Matthews

Amy McGovern

Elizabeth Mynatt

Timothy Pinkston

Weisong Shi