



National Science Foundation (NSF)

Computer & Information Science & Engineering (CISE) Advisory Committee (AC)

Monday, December 6, 2021 (all times Eastern)

11:10 AM Welcome, introductions, review of agenda, and approval of minutes

The meeting began with introductions from the CISE advisory committee (CISE AC) members.

11:15 AM New members welcome and introductions

Dr. Rob Rutenbar, CISE AC co-chair, introduced the newest member of the AC, Dr. Enrico Pontelli, who is a professor at the New Mexico State University. The minutes for the last AC meeting were approved.

11:16 AM NSF and CISE update

Dr. Martonosi, Assistant Director for CISE, started the presentation using the example of computational photography research in impacting diverse fields such as astronomy and heritage science and NSF's recent awards in supporting advancements in these areas. Dr. Martonosi next provided an overview of the CISE directorate, its main divisions and current leadership, and provided recent numbers on the CISE budget, awards made, and researchers and institutions supported. She also highlighted NSF activities and guiding principles under the funding appropriated by the American Rescue Plan Act of 2021.

In the next part of her presentation, Dr. Martonosi covered the technical themes for CISE and CISE's activities. She provided an overview of early responses to the CISE RFI on semiconductors. She provided an overview of the ongoing activities of the National AI Research Institutes. She also highlighted CISE's role in supporting sociotechnical research by highlighting the Civic Innovation Challenge program.

Dr. Martonosi next provided updates on several CISE programs, including how a growing number are changing their solicitations to no-deadlines, CISE efforts in research infrastructure programs, and the CISE Minority Serving Institutions convenings. She also covered new CISE efforts on interagency engagements like the National AI Research Resource Taskforce.

The presentation concluded with a Q&A session between Dr. Martonosi and the advisory committee.

12:45PM Break

1:45PM Discussion: How the CISE research community comes together

The session began with a discussion about how the community can be better organized to conduct interdisciplinary research that addresses societal challenges. The committee discussed issues such as how interdisciplinary faculty are evaluated for tenure and the hiring practices. They discussed how to create events (e.g., conferences) that effectively promote interdisciplinary work. The committee also considered how different priorities, policies, and practices for publication, tenure, and research advising

across different fields make interdisciplinary collaboration a challenge. Committee members from schools with established interdisciplinary programs shared their perspectives. Practices included joint programs with other departments, joint hiring decisions with input from multiple departments, and degree programs centered on interdisciplinary studies. Next, the committee discussed issues such as evolving preferences amongst students for mixing computer science education with other fields, and the view of industry towards interdisciplinary degrees. Schools may have a perspective that industry prefers graduates of more traditional programs. However, one AC member mentioned that companies highly value graduates with interdisciplinary backgrounds.

2:45PM Break

3:00 PM CISE 35th Anniversary Assistant Director Reunion

Dr. Martonosi introduced former Assistant Director's (ADs) for CISE. The former ADs shared their perspectives from their time as CISE AD and how the challenges of their time influenced the programs and initiatives they led. An emerging theme of the conversation amongst the former ADs was the impact CISE has in catalyzing and leading impactful initiatives, their efforts to steer collaborative computing research across the federal government, and the importance of ADs building on the work of their predecessors.

The former ADs highlighted that NSF continues to be successful due to its bottom-up approach in staying extremely close to the research community, stressed the importance of maintaining a healthy balance between support for basic research and technology translation initiatives, the importance of research collaboration across the world, and the opportunity for computer scientists to take greater leadership roles across public life.

4:21 PM Recap of Day 1 and look-ahead to Day 2

Dr. Rutenbar closed the first day with a recap of all the sessions.

4:25 PM Adjourn

Tuesday, December 7, 2021 (all times Eastern)

11:06 AM Welcome and overview of day

Dr. Magdalena Balazinksa, CISE AC co-chair, began the meeting with an overview of the day.

11:07 AM Continuation of how the CISE research community comes together

Dr. Rob Rutenbar opened the discussion on how the CISE research community comes together, is structured, and participates in interdisciplinary research, as a follow-up to the previous day's panel. The committee discussed having a working group on the topic as a next step, with the working group possibly drafting a white paper.

CISE AC members discussed having the working group perform a landscape analysis, recognizing that a one-size approach will not work. The landscape analysis should not be biased towards a particular model (i.e., school versus department) but should summarize the benefits and disadvantages of various

models. The working group should ensure their findings are sufficiently general to apply across a broad range of environments. The steps also need to be actionable and should not strictly focus on whether computer science should be a school or a college, or just hiring more interdisciplinary faculty without considering what to do after those hirings.

The CISE AC discussed what topics would be most useful for a working group to address. Potential topic areas included:

- Publications, conferences and their structure, promotion and tenure.
- Climate and clean energy topics, or themes from the CISE-SBE collaboration, as a case study.
- Interdisciplinarity in both education and research.
- Ways to advance core computer science while also advancing interdisciplinary efforts.
- Funding models such as centers, institutions, and collaboratoria.
- New grant structures, such as grants that allow two people in different disciplines to start working together.
- How interdisciplinary efforts interact with efforts to improve diversity, equity, and inclusion.

11:44 AM Status of NSF's Technology, Innovation, and Partnerships (TIP) activities

Gracie Narcho, Senior Advisory in the Office of the Director, gave a presentation on the proposed formation of a new directorate on technology, innovation, and partnerships (TIP). The presentation began by discussing motivation for forming such a directorate. She explained how the TIP Directorate would help enhance and expand upon what is happening in other directorates and will intentionally work across the scientific enterprise. She then presented on how such a new directorate would fit with the FY22 president's budget request and the FY22 NSF priorities. Following the presentation was a question-and-answer session.

12:20 PM Break

1:00 PM AD/OH panel on climate and clean energy research across NSF

Dr. Magdalena Balazinska opened and moderated the panel. First, panelists introduced themselves and then the advisory committee members introduced themselves and what their programs/research do in the space of climate and clean energy. Panelists discussed how CISE research can be integrated into climate research and related topics, the difficulty of building new collaborations with people despite mutual interest, and the importance of discussing barriers and not just successes. Sharing and access to data was mentioned as a technical and curation problem, and as a potential area for partnerships.

2:01 PM Break

2:15 PM Prep for Visit by the Chief Operating Officer (COO)

Dr. Magdalena Balazinska introduced the session. The committee discussed covering the two themes that have been the focus of this AC meeting: how can the CISE community come together to address societal challenges and climate change / clean energy.

2:39 PM Break

3:00 PM Meeting with COO

The CISE AC met with Dr. Karen Marrongelle, COO of NSF, and Brian Stone, NSF Chief of Staff.

The CISE AC began by asking Dr. Karen Marrongelle what has been on her mind lately. She discussed the TIP Directorate, teleworking, and accountability as an agency. The CISE AC presented on their discussion on organizing the CISE community to address interdisciplinary challenges. Dr. Marrongelle expressed excitement for this work and that it will likely be applicable to other STEM disciplines as well. The CISE AC then presented on their discussion on how CISE can contribute to climate and clean energy research. The CISE AC then asked if Dr. Marrongelle had any advice to the CISE community. There was a discussion about the importance of connecting CISE research impacts to societal benefits on a range of timescales.

3:30 PM Discussion among AC members following meeting with NSF Director and COO

The CISE AC members agreed that the discussion with the NSF COO and NSF Chief of Staff were concise, with good information and good feedback. They reiterated the feedback from the meeting that it is important for the COO and Director to hear how what CISE is doing now is impacting things now.

The CISE AC then discussed how to move forward on issues concerning climate change, clean energy, and the environment. A potential CISE Climate Summit was discussed. The committee discussed the possibility of creating a small working group to decide what a CISE Climate Summit would look like and how to organize it. The summit would address the role of computing/CISE in the research area of climate.

3:54 PM Departing Members' reflections

The departing member was unable to attend this session.

3:55 PM Closing Remarks

3:55 PM Adjourn