

National Science Foundation (NSF) Advisory Committee for Cyberinfrastructure (ACCI)

Fall (HYBRID) Meeting, September 19th-20th, 2022

Meeting Minutes

Day 1 (September 19th, 2022)

ACCI Welcome, Committee Introductions, and Review of Agenda

Dr. Karen Willcox, Dr. Hakizumwami Biralirunsha, ACCI Co-chairs

Dr. Willcox, ACCI Co-chair, began the Fall 2022 ACCI meeting by greeting everyone on behalf of the co-chairs and ACCI members. Dr. Willcox reviewed the agenda, thanked Dr. Ruth Marinshaw for her tenure as co-chair, and acknowledged the start of Dr. Runesha's term as co-chair. Karen Willcox concluded the session with having ACCI members introduce themselves.

Members in attendance are listed in the minutes in the Appendix.

Updates from the Office of Advanced Cyberinfrastructure (OAC)

Dr. Manish Parashar, Office Director, OAC

Dr. Parashar provided updates including leveraging regional/local infrastructure, strengthening Cyberinfrastructure (CI) professionals, the Minority Serving Cyberinfrastructure Consortium (MS-CC), the CI Center of Excellence: SGX3 (a Center of Excellence to extend access, expand the community and exemplify good practices for CI through Science Gateways). He also discussed the White House [Office of Science and Technology Policy \(OSTP\) memorandum](#), National Artificial Intelligence Research Resource (NAIRR), and concluded with the National Strategic Computing Reserve (NSCR).

Updates from the Computer & Information Sharing & Engineering (CISE) Directorate

Dr. Margaret Martonosi, Assistant Director, CISE

Dr. Martonosi provided updates on federal funding for NSF, CISE overarching technical themes (including CISE in a Post-Moore World), Artificial Intelligence Institutes, and additional investments and awards.

Open Discussion with OAC and CISE Management

ACCI Members

The open discussion began with Dr. Willcox thanking OAC leadership for their presentations. Next, Dr. Willcox moderated the discussion between NSF staff and the ACCI members. Discussion points included resources and sustainability in computing, building sustainable software structure, Broadening Participation in Computing (BPC) plans, Quantum Leap, the future of backend storage, collaborative opportunities with the Directorate for Social, Behavioral & Economic Sciences (SBE), implications of the OSTP memorandum for NSF, the need for more computing/computational science majors, and maintaining and sustaining graduate students.

Debrief from Committee of Visitors (COV) Review

Dr. David Bader, Chair, New Jersey Institute of Technology

Dr. Bader introduced the COV committee members and provided an overview of the COV activities. He summarized the purpose of the COV and outlined the data that was analyzed and reviewed by the committee. Dr. Bader concluded by summarizing the five recommendations of the COV report.

Discussion of the COV Report

ACCI Members

The discussion began with comments about the value of the databook. Multiple COV committee members noted the usefulness of the databook, and that it facilitated in-depth discussions.

Dr. Rathje asked how broader impacts in proposals were discussed during the COV committee meetings. Dr. Bader noted that the COV had intense discussions about what would make broader impacts a more meaningful review criterion and what that would look like. He suggested that OAC could develop examples for NSF to execute.

Dr. David Lassner asked for clarification regarding whether the COV recommendations were specific to OAC or applied more broadly to NSF. Dr. Bader noted that identification of broader impacts are important throughout the Foundation, but confirmed the recommendations are specific to OAC because of the unique capabilities OAC provides that are not found in other directorates at NSF.

Ms. Claire Porter commented on ways to increase broader impacts and making them more accessible. She noted that providing templates for proposal writers to choose and use may help explain how the science impacts the community.

Dr. Michael Heroux commented that after analyzing the data, he felt confident about the process used by OAC to make funding decisions.

Dr. Runesha requested ACCI members vote to approve or reject the COV report. Dr. Heroux motioned to approve the vote. Dr. Rathje seconded the motion. ACCI members voted unanimously to accept the report.

After the vote, as an additional comment, Dr. Valerie Taylor noted the value of assessing broader impacts mechanisms. CISE/OAC leadership affirmed this comment and agreed to continue discussions on it.

Prepare for Session with NSF Assistant Directors and Office Heads

ACCI Members

Dr. Runesha reviewed the three questions for the session.

Session with NSF Assistant Directors, Deputy Assistant Directors, and Office Heads

NSF Assistant Directors (ADs), Deputy Assistant Directors (DADs), and Office Heads (OHs)

Dr. Runesha reviewed the logistics for the session and welcomed the ADs, DADs, and OHs in attendance. The ADs, DADs, and OHs introduced themselves to the meeting attendees. ACCI members followed with their own introductions.

Dr. Rathje asked the first question regarding the OSTP memo. Dr. Millard commented that there is a real need to change the culture of sharing of data, and a need to create an open environment.

Dr. Luo commented that educating and training people to understand how to use data and the corresponding infrastructure that supports it is very important.

Dr. Moore noted that there are concerns that emerging research institutions do not have the resources to build those capabilities, and there is a need to ensure these capabilities are accessible to all, especially HBCUs and Hispanic-serving institutions, and these are institutions to keep in mind when thinking about this policy.

Dr. DeSoto commented that advanced cyberinfrastructure can help with harmonizing data and making it more useful for others.

Dr. Tornow commented on the challenges of creating awards that allow projects to sustain themselves without NSF funding, so the resources and data are not lost.

Dr. Patten commented on the need for more training as data becomes more open and available.

Dr. Martonosi commented on the insufficient and unequal access to data sources, which contributes to researchers leaving the US to access data and software.

Dr. Knoedler commented on the opportunity to use legislation and enable more inclusive conversations nationally.

Dr. Miller noted that training will be critical, and the need to interact in the environment technically and culturally will be critical to the workforce.

Dr. Rathje and Dr. Martonosi commented on the cultural shift to sharing data more openly in the future.

There was a discussion on practicing an integrative approach to data sharing and reproducibility.

Dr. Heroux asked the next question regarding the [Improving Trustworthiness of Computational Results](#) report.

Dr. Martonosi commented on the relationship between this question and the OSTP memo, explaining that researchers and education bring them together.

Dr. Tornow commented on NSF's recent investment in synthesis centers to reuse data and allow the community to pull together a variety of data sources. Recent Biology Advisory Committee discussions noted that computational approaches to biological research were a way to democratize engagement in data research.

Dr. Moore emphasized considering ways to engage K-12 students in early and often to change the paradigm. He noted that pipelines and pathways also need to be considered for bringing in outlying groups.

Dr. Miller commented on the report's inclusion of collaborating with international partners.

Dr. Millard emphasized the importance of the condition of the data - not just the reproducibility, but the verification.

Dr. Runesha thanked the guests for participating in the discussion.

Final Thoughts and Adjourn for the Day

Dr. Runesha concluded the day by reviewing the agenda for Day 2.

Day 2 (September 20th, 2022)

Learning & Workforce Development Working Group Update

Dr. Deborah Dent, Chair, Workforce Development Working Group

The session began with an introduction of the working group members. Dr. Dent then reviewed the CI workforce working group charter, the findings from the workshops, reports, and surveys. Dr. Dent provided a summary that outlined challenges and

opportunities of cyberinfrastructure. Dr. Joel Gershenfeld provided the next steps suggested in the report. The ensuing discussion highlighted the implied culture change based on the recommendations, and how to involve people in CI research and other related matters.

Dr. Dent noted that the draft report will be finalized before the Spring 2023 ACCI meeting and requested that comments be sent to her in October 2022.

Leadership-Class Computing Facility Brief

Dr. Edward Walker, OAC

Dr. Walker presented the Leadership-Class Computing Facility (LCCF) brief. Dr. Willcox and Dr. Rathe recused themselves from the brief.

Dr. Walker noted that the transition of older/established codes is an important consideration. Current efforts focus on defining the architecture to lessen that strategic vulnerability. The deployment date is in 2026.

Dr. Walker addressed a comment regarding LCCF funding for software. He noted that there are additional programs at NSF (in addition to LCCF) that are addressing this. The substantial amount of funding will be in preparation for the community to prepare, and funding will be available for software development and hardware development.

The discussion concluded with comments regarding NSF and Department of Energy collaborative opportunities to expand partnerships in this area.

Major Facilities Cyberinfrastructure Tiger Team

Dr. Roland Roberts, Deputy Chief Officer for Research Facilities, NSF

Dr. Willcox introduced Dr. Roberts and provided a brief background of his work. Dr. Roberts reviewed the Major Facilities Cyberinfrastructure Tiger Team charge, recommendations, next steps, and implementation.

Dr. Heroux asked about efforts to use beginning-to-end provenance management tools. Dr. Roberts noted that the short answer is yes, and Dr. Parashar added that this supports reproducibility and transparency. The CI Compass Center of Excellence provides services to help facilities manage their data life cycle and identify solutions for their specific facility.

Dr. Roberts was asked about the need for more prescriptive security guidelines for the future. Dr. Roberts noted that his team is working with the Office of International Science & Engineering on these issues.

There was a discussion of workforce needs across the CI landscape. Dr. Roberts commented that the major facilities are losing expertise and long-time recruits. User interfaces are an important consideration, and part of the landscape they are addressing.

The discussion turned to how Principal Investigators (PIs) can use these tools. Dr. Roberts suggested that PIs using the tools mention them in their proposals. Dr. Parashar added there needs to be a pathway where you can take these technologies, evaluate them, and integrate them for facilities to adopt.

Dr. Roberts noted that the report is an advisory report for the NSF Director and is not available for public consumption.

Discussion on New ACCI Working Group – Shared CI for Major Facilities/Big Science

Dr. Rommie Amaro, ACCI

Dr. Amaro initiated the discussion by highlighting possible topics of consideration for the new ACCI working group. The discussion focused on the purpose of the new working group, the purpose of a report drafted by the working group, and the possible target audience. There was general agreement that the working group could address gaps that NSF cannot address.

Dr. Parashar clarified that working group members do not have to be in the ACCI.

Dr. Walton took the action of identifying requirements for establishing a working group and report development timelines.

Dr. Amaro took the action of drafting a focused working group charge by the Spring 2023 ACCI meeting.

Reflections on Meeting, Farewell to Departing Members, and Plan ACCI Engagements for the Spring

ACCI Members

Dr. Willcox reviewed the sessions that occurred over the two-day meeting event. Dr. Parashar noted the discussion regarding the COV report was very useful and will help OAC's response for the COV. For the Workforce Development Working Group, Dr. Parashar commented that it is an issue that needs to be addressed and was the single most important issue raised among all the facilities workshops.

Dr. Willcox commented on the importance of modeling and validating data; reproducibility, verification, and validation are important for modeling.

Regarding the session with the NSF Ads, there was some concern that the questions were too specific to data but generally agreed that the session was valuable, and members look forward to another session with the ADs at future ACCI meetings. The discussion concluded that a potential future question for ADs is their insight on what their science priorities and needs are in their respective workforces.

Dr. Rathje offered farewell comments and valued the time she had to work outside her traditional areas. She appreciated working with the ACCI members and the work on reproducibility. Dr. Rathje concluded by noting the ACCI does a good job of bringing a diverse group of people together.

Dr. Watts commented that joining the committee presented him with an opportunity from the social sciences perspective.

Dr. Willcox thanked the members for being part of the committee and for the opportunity to learn together. She also thanked the NSF staff for the efforts coordinating the meeting. Dr. Willcox concluded that computing is more than computer science, and NSF has a large role to play in signaling academia to support more than computer science, machine learning, and AI.

Dr. Parashar commented on the value of the diverse ACCI membership resulting in conversations like these.

Dr. Runesha thanked Dr. Willcox for her guidance as a co-chair and thanked the departing members. He continued by requesting members' availability for the Spring ACCI meeting dates. ACCI members agreed to April 17-18, 2023, for the Spring ACCI Meeting.

The meeting concluded at 2:03PM EDT.

APPENDIX 1: Members in attendance

Anita Nikolich
Claire Porter
David Lassner
Deborah Dent
Duncan Watts
Hakizumwami Runesha
Juliana Freire
Karen Willcox
Michael Heroux
Padma Raghavan
Patrick Heimbach
Rommie Amaro
Ruth Marinshaw
Susan Gregurick
Valerie Taylor
Ellen Rathje
Tiziana DiMatteo

APPENDIX 2: NSF ADs/Office Heads and OAC Staff

NSF ADs/Office Heads

NSF Staff	Title
Margaret Martonosi	Assistant Director / CISE
Manish Parashar	Office Head / OAC
Joanne Tornow	Deputy Assistant Director/BIO
Alicia Knoedler	Office Head/OIA
Timothy Pattern	Deputy Assistant Director/GEO
Tie Luo	Deputy Assistant Director/MPS
Brent Miller	Acting Deputy Office Head/OISE
Andy DeSoto	Senior Advisor/SBE
Robert Marinelli	Office Director/OPP
Don Millard	Deputy Assistant Director/ENG
James Moore	Assistant Director/EHR
Roland Roberts	Deputy Chief Officer for Research Facilities/OD

OAC Staff

Daniel Bullock
Alejandro Suarez
Amy Walton
Ashok Srinivasan
Carl Anderson
Deborah White-Wilkins
Edward Walker
Kevin Thompson
Manish Parashar
Robert Beverly
Robert Chaddock
Seung-Jong Park
Thomas Gulbransen
Juan Li
Andrey Kanaev
Varun Chandola
Christine Christy
Annabel Virella