

**National Science Foundation
Advisory Committee for Business and Operations
Spring 2021 Meeting Minutes
March 10, 2021**

Attendance:

Tilak Agerwala	IBM Emeritus and IBM Vice President (retired)
Benjamin Brown	Director, Facilities Division, Advanced Scientific Computing Research, U.S. Department of Energy, Office of Science
Lee Cheatham	Director, Office of Technology, Deployment and Outreach, Pacific Northwest National Laboratory
Robert Dixon	Consultant, Higher Education Management
Adam Goldberg	Director and Executive Architect, Department of the Treasury, Office of Financial Innovation and Transformation
Charles Grimes (co-chair)	Independent Consultant and U.S. Office of Personnel Management COO (retired)
John Kamensky	Senior Fellow, IBM Center for the Business of Government
Alicia Knoedler	Vice President for Research and Innovation, Miami University
Larry Koskinen	Chief Risk Officer, U.S. Department of Housing and Urban Development
Robert Lavigna	Director, Institute for Public Sector Employee Engagement
Rachel Levinson	Executive Director, National Research Initiatives, Arizona State University
David Mayo	Director, Office of Sponsored Research, California Institute of Technology
Joe Mitchell	Director of Strategic Initiatives, National Academy of Public Administration
Kim Moreland	Associate Vice Chancellor and Director, Research and Sponsored Programs, University of Wisconsin – Madison
Theresa Pardo	Director, Center for Technology in Government, University of Albany, SUNY
Joel Parriott	Deputy Executive Officer and Director of Public Policy, American Astronomical Society
William Valdez	President, Global Innovation Associates LLC
Pamela Webb (co-chair)	Associate Vice President for Research, University of Minnesota
Maureen Wylie	Federal Chief Financial Officer (retired)

Following group-wide introductions by Co-Chairs Chuck Grimes and Pamela Webb, the group heard informational updates from Teresa Grancorvitz, BFA; Wonzie Gardner, OIRM; Caitlyn Fife, BFA; Amanda Greenwell, OD/OLPA about important developments in their respective areas. Their materials reside in the on-line briefing book for reference. The group then moved to its four topics for the meeting:

Award Performance Reporting Compliance Challenges

NSF presenters: Kandis Boyd, BFA; Dr. Thyaga Nandagopal, CISE and Jeff Vieceleli from BFA.

Discussants: Kim Moreland, U of Wisconsin; David Mayo, Cal Tech; and Pamela Webb, U of Minnesota

The presenters covered three types of required reports (Annual Project Reports, Final Outcome Reports, and Project Outcomes Reports) and reminded BOAC that NSF sends notices to PIs and Co-PIs, awardee email addresses, and program offices every 30 days from the time they are due to the time they are ultimately submitted (including when they are overdue). Currently, NSF is facing more than 2,000 overdue project reports, and has prepared a list of the top 25 institutions with overdue reports, including MIT, Cornell, the University of Minnesota-Twin Cities, Georgia Tech, and the University of Washington as the top 5. There are significant impacts to institutions for overdue reports, which may include blocked funding for future awards or award actions (e.g., approval for time extensions), potential audit issues, and lack of properly recognized credit for accomplishments. Overdue reports may indicate PI-specific problems or grantee systemic issues as well. For NSF, the impact of overdue reports causes slow-downs in year-end processing, increased workload, audit issues, lack of compliance with oversight standards, and lack of needed information on training of students or other core NSF goals or priorities.

More recently, institutions are expected to be cited in the Federal Awardee Performance Integrity and Information System (FAPIS) if they don't submit their reports within one year. If NSF were to report tomorrow, there would be more than 1,000 reports filed across 480 grantees and more than 1,200 PIs and CO-PIs. During the Q&A session, NSF was asked how much funding is involved with this level of non-compliance and reported more than \$500M. Data are available by directorate/discipline.

Improvement possibilities that were noted by NSF presenters included:

- Create a working group to brainstorm ideas
- Review the text of the reminder notices
- Review who is receiving the notices
- For Annual Project Reports, add more time to the due date reminder (120 days)
- Pilot turning off draw down of payments as soon as the report is overdue
- Update Research.gov reporting dashboard
- Send non-compliance emails to the Vice President of Research at awardee organizations
- Require the use of the Sponsored Projects Office (SPO) email alias to the distribution list

It was noted during Q&A that it is hard to answer why NSF would give an institution more money if they can't explain what they are doing with what they had already received. There was a discussion during Q&A about the challenges that PIs face in performance of the research. NSF presenters confirmed that many PIs are candid about what has gone awry, but it was also noted by one BOAC member that professors have to deal with students who experience life events that require extra time, and PIs can fail to submit and share that perspective because of the negative connotation associated with the difficulty in getting the work accomplished. It was noted as well that there can be a misunderstanding about who can submit the progress reports; some co-PIs think only PIs are able to submit but that is not the case. Suggestions were offered that it might make sense to get the university finance office involved, since some academics don't care about the money (but just the research). Another suggestion was to consider withholding final payment until the report is delivered. Another member noted that there is a

new law that was passed in December 2020 called the Federal Program Inventory, slated to go into full effect in 2024 that may increase the responsibility and weight of having the reports tied back to NSF.

The discussants (Kim Moreland, Wisconsin; David Mayo, Cal Tech; and Pamela Webb, Minnesota) asked faculty from their respective institutions about seven key topics related to NSF reporting. Cumulatively, 901 PIs were sent the questions, and 186 responded (a 20% response rate). As this was an informal data collection, no attempt was made at follow-up. The questions and generalized responses were as follows:

- Is the NSF system working? Does it need Improvements?
 - Nearly half thought the system works well, and there was appreciation for only having to report yearly.
 - Some had difficulty locating instructions, or felt the system had excessive redundancy in the questions or parts of questions.
 - Some felt that the system was clumsy or cumbersome, and particularly noted that responses have to be “chopped up” to fit into the boxes provided.
- Do you find the format and the reports reasonable?
 - There were quite a few positive comments.
 - PIs themselves understand that reports are appropriate and necessary. Many also believe next year grant funds should be withheld to ensure reporting.
 - Some felt that the format works well for smaller projects but not as much for complex or multi-site research.
 - Some indicated they would prefer to have rolling reports for data entry throughout the year as milestones are reached.
 - One challenge noted was that there may not be much to report at the end of the first year but the form and format is required which made them uncomfortable that they didn’t have much to say.
- Do you know when the reports are due?
 - Discussants estimate that 70% of their PIs indicate they know when the reports are due.
 - Heavily rely on the email reminders and like them.
 - Some PIs aren’t receiving the reminders (could be going to their spam filters).
 - The way the reminders are worded scares and confuses PIs.
- Are your reports generally completed on time or do you face barriers with getting them in?
 - Discussants estimate that 18% of their PIs faced challenges.
 - Most common problems reported included uploading of representing publications within the reports, redundancy, and figuring out which boxes should be completed and when/if they should fill out optional boxes.
- What would make these reports easier to construct and submit?
 - The topic most mentioned was publication reporting - is it necessary to upload the entire publication or could a link be provided?
 - It was noted that NSF requires a particular PDF format that’s outside of the typical format. PIs would like a conversion service if mandated to do this.
- What would make these reports easier to construct and submit?

- PIs want to better understand the degree of detail that NSF wants and suggested providing discipline-specific sample reports so they can prepare these documents in a way that has meaning and value to NSF. Part of that is also understanding how the reports are used.
- There was a desire to have fewer overlapping questions, and to tailor the reports to the part of the award lifecycle where the question was most useful – for example, questions about contributions and overall impact are most relevant as a part of a final report but not an annual report.
- PIs asked to have the reports auto-populate and have linkages to other databases to make the report preparation easier, or to allow “no change” for reports that are for subsequent years but do not require an update.
- Some PIs reported that different program officers seem to want different types of detail, so more harmonization or guidance would be helpful.
- Do you receive feedback on your reports from your program officers?
 - Most PIs reported that they do not receive feedback from their program officers other than sometimes an acknowledgement of receipt or acceptance.
 - Some felt that their program officers provided helpful advice, while others weren’t sure what their PO wanted in the report.
- Do you know how NSF uses your reports?
 - PIs responded overwhelmingly that they do not know how NSF uses their reports (only 5% indicated they did know).

The discussants also responded, when asked by NSF what institutions can do to help, that research administration professionals have limited ability to help PIs because of the system access controls on Research.gov. Researcher administrative staff could help with report preparation if allowed more access, but administrators can’t see what was submitted, and can’t determine if the report was rejected.

Recommendations from the discussants included:

- Reduce redundancy of data fields
- Simplify the uploading and managing of publications
- Ensure the system is easy for PIs to use
- Provide sample reports and instructions
- Provide clarity on what program officers want to see in reports
- Provide clarity in the reminder language
- Begin an information campaign to help PIs understand how NSF uses the report data

Other recommendations or ideas from members included considering deploying Orchid to help with reducing administrative burden associated with re-keying and enhancing training (particularly important for smaller grantees who may not have a lot of research administration staff.)

Approval of the Subcommittee for Information Technology on Renewing NSF

NSF Presenters: Dorothy Aronson, CIO/CDO, Dr. Sean Jones, MPS

Discussant: Tilak Agerwala, IBM (emeritus)

The presenters shared the background and history of how this initiative arose, including the 2016 executive order that requested streamlining because of the STEM enterprise, and the goal to facilitate the national continued global leadership to science and innovation. NSF is agile and capable of adapting to an evolving landscape; the challenge and opportunity faced was to update the fabric of the agency and to be highly responsive to the community. NSF selected six bold steps:

- Appoint a Chief Data Officer (Complete)
 - This step also included implementation of a data management plan (complete) and creating a community of practice of 200 people working together to implement standards.
- Develop a plan to address external users' IT needs
 - This included formulation of an action team to go out and learn more about external customer needs.
- Create an intuitive and adaptive IT training strategy
- Create a new mechanism to coordinate and incubate IT innovation
 - An innovation management group to meet every other week and create interesting products.
- Streamline IT governance
 - Continuously gather ideas from NSF community and beyond in a structured process.
- Investment owners prioritize ideas for 2-year budget
 - Routinely seek advice from industry leaders on NSF IT strategy, including BOAC.

The presenters asked BOAC to support formation of a group (subcommittee) of experts – professionals, industry, other – to provide input annually (but meet quarterly) to continuously gather ideas and formalize them. After 2 years, we would reevaluate the group's purpose and progress.

Discussion around this request included the following key points:

- It was clarified that the intent here is focused on NSF internal IT strategy, not U.S. IT strategy. The vision is a working group of industry leaders, federal agencies, and CIOs from universities (a diverse group). Federal partners would be there to level set and answer questions and concerns on what the government can and can't do and where the federal enterprise is headed. This would allow advice from different perspectives.
- It was noted that there may be a challenge to get input from industry, particular for concepts that are considered critical and/or in a highly competitive field. Mechanics of selection of committee membership and decisions on identifying individuals will be dependent on the technology under discussion and the time frame being considered.
- The group will need to consider the landscape for the post "remote workforce" and cyber security challenges. There is a need to figure out how the group can be most effective when also considering HR and cyber perspectives.
- It was noted that a top-down approach might be what's needed, and that this group of experts can attest to collaboration tools that can support remote work and cyber security. It was noted that Dorothy Aronson reports to the Director so there is a direct connection to the top.
- Opportunity in the current environment was noted; that we are accelerated by the pandemic, that there are important innovations are underway at NSF. The IT team has a

once in a generation opportunity to look at post bureaucratic organization design. What is the future of science investment in a boundary-less world?

RECOMMENDATION: BOAC supported the formation of a subcommittee to get this external input on the NSF strategy, with an expectation of having a real charter statement and charge available for BOAC's formal review and vote at its next meeting.

The Future of Work: Remote Work

NSF Presenter: Bill Malyszka, OIRM

Discussants: Bob Lavigna, Institute for Public Sector Employee Engagement; and Theresa Pardo, University at Albany, State University of New York

This timely topic was covered by Bill Malyszka, who kicked off the discussion with a presentation exploring NSF's navigation through the pandemic. BOAC was provided a viewpoint of what the organization looked like pre-pandemic, how NSF adapted, what NSF learned, how NSF engaged its workforce and identifying what was needed with respect to adapting to this new normal.

Prior to the pandemic the entire workforce except for 11 people was assigned to NSF HQ as their duty station. Employees regularly teleworked 1-2 days a week, onboarding was held in-person, and many processes still used paper. To sum it up, we were one building one workforce. On March 13th, 2020, NSF quickly pivoted to send most of their workforce home and migrated to using technology tools including Zoom and Microsoft Teams. All review panels were held virtually, and the employee experience was online. Special attention was paid to continuing NSF interpersonal relationships and the collaboration culture through such events as virtual Paint Parties and Fitness Classes. Challenges such as navigating dependent care were met.

NSF learned that its workforce is resilient and that its work can be done anywhere (the infrastructure is fit for more than just working in a single building). Managers who may have previously held the "out of sight, I can't see what you are doing" mindset learned to adapt to newer approaches for work oversight. Now a year later, managers overall feel productivity has increased and confidence is growing for supervising staff in a remote work environment.

Despite all the challenges, NSF managed to have positive gains on the 2020 FEVS report with employee engagement increasing by 6 points and the response on reasonable workload gaining one point. NSF was even recognized with an award for engaging the workforce.

Bill was invited by BOAC to share tips that NSF had learned welcoming new hires and those new to government. Bill's response, "I am really proud of our staff and how they adapted the onboarding process from coordinating IT setup, issuance of PIV cards, and hosting virtual New Hire Orientation. We have been able to stay connected by promoting more informal social gatherings and encouraging our managers to do activities not related to work like participating in the online escape room."

When asked how NSF tracks performance, BOAC members learned that NSF measures business metrics, including metrics around mission delivery, deliverables, and grants issued.

The discussants confirmed that their organizations similarly had to make the shift from in-person to remote work overnight, adapting both with technology but also how their organizations interact with people. It was pointed out that there is a sense that arrangements may never revert to pre-pandemic norms. A survey of 20,000 responses indicated 85% said they want to continue to work remotely part-time and 28% who said they want to continue to work remotely fulltime. Suggestions were made by the discussants to ponder a set of questions, including, “what is the nature of the changes?” and “what is the value gained from those changes?” In addition, “how has your adaptation to technology allowed you to meet your mission and support your workforce?” Research from previous crises like the West Nile Virus and the 9/11 attacks showed that most processes developed during crisis did not sustain although some changes proved to be valuable. Leveraging technology in ways that will sustain us in a “new normal” environment represents opportunity for organizations.

NSF was asked how the new normal affected grantees. NSF responded by stating that prior to COVID, NSF never held grant conferences virtually but by converting to virtual panels during the crisis, the organization has been able to increase participants by fivefold (as many as 2,000 individuals at a single conference). Having remote panels has also allowed for increased diversity amongst the merit review panelists. In situations where some may have been unable to attend due to travel, the virtual platform has leveled the playing field and the expansion has been quite immense.

One member discussed looking at remote work as a right versus a privilege. Her perspective is that remote work is an arrangement that should not be dictated by performance. She stated that performance issues should not be the reason an employee returns to work but rather be handled separately. One key question for managers to consider is whether management preference is a valid reason to return a person to work and instead inquiring where the balance point should appropriately lay between employee preference and manager preference.

The conversation transitioned slightly to look at the state of remote work from a technological aspect. It was pointed out that investments in technology and telepresence have paid off significantly for some organizations. NSF was praised for how well the organization was able to adapt. An earlier point was acknowledged that we are all on the screen, but we need also to ask the question about what happens when some of us are on the screen and some are in-person. This will impose a new burden on managers to manage a hybrid workforce versus our current remote work environment. A member responded that an investment in physical presence is expensive. Because of the fact we are in a virtual environment, people can be brought together who would not have been put together in a physical environment. The member has noticed that the level of commitment, collaboration, and effort has increased and has created an important experience. From her perspective, going hybrid is an all or nothing approach. While her organization is going back to the office, they have already set a policy in place that all meetings will be held virtually, otherwise their hybrid approach will not work.

As the discussion continued, the point was made that for some people, remote work has been great but for others it has been more balancing and juggling. The member noted, “We are going to have to do more observations. I do not know if the conditions in place today will be so when we all get vaccinated. We are seeing people working longer hours, too. This is especially the case with many in our executive population. We are going to have to have some personal conversations on what it is we expect from people because they are tired now and will be more tired 6 months from now.”

NSF Strategic Plan Feedback

NSF Presenters: Janis Coughlin-Piester, BFA; Stephen Meacham, OD/OIA; Jennifer Plozai, OD/OLPA
Discussants: Chuck Grimes, Consultant; and John Kamensky, IBM Center for the Business of Government

Janis gave BOAC a glimpse into NSF's 2022-2026 Strategic Plan by identifying the goal of the organization to "strengthen at speed and scale." To achieve this goal Janis mentioned the need to be nimble, which is something for which most federal agencies are not known. This conversation set the stage for the final session of the meeting, a briefing for Director Panchanathan.

Discussants highlighted that you need to have strong leadership interest in any endeavor and pointed out the Iron Triangle (in most ambitious undertakings you can expect to do something Good, Cheap, or Fast but not all 3. You can only choose 2 options.) If NSF is to strengthen by speed and scale, the outcome may be good and fast but there would need to be recognition that it will not be cheap. At the same time, it was pointed out that the COVID-19 vaccine took 1 year to develop while previously, the most rapid vaccine creation was for the Mumps which took 4 years to develop. Technology may be able to assist with the "fast" here, but the "good" is of paramount importance as well.

There was a question about what is meant when the Director wants to strengthen at speed and scale when it comes to the strategic plan. BOAC learned that Dr. Panchanathan wants to strengthen fundamental research (by taking) basic research and transferring it outward even inside our own internal structure. We need to be able to scale up. He is using the phrase to think broadly across the spectrum of how we can improve and have a bigger impact.

The conversation then merged with the previous topic on remote work options, citing the importance of making decisions about remote work being a personal choice versus an organizational choice and noting that as organizations, we have to bend but ultimately need to decide how we want to work. Some choices, such as allowing remote panels to increase diversity and NSF's reach, may serve well if the quality of the review process is maintained. Other interim processes may or may not be good long-term models.

Meeting with Dr. Panchanathan and Dr. Crim

Dr. Panchanathan summarized his plans for NSF's future in the final session of the day. His vision is to advance the frontiers of research into the future, ensure accessibility and inclusivity, and secure global leadership through innovation and partnership. He noted that today, phenomenal talent is being left behind and that is not acceptable. He is committed to developing curiosity-driven discovery-based exploratory research which is a quality that makes NSF unique. The current remote environment has allowed him to partner and collaborate with a wide array of people. The session ended with remarks from Dr. Crim recognizing Dr. Panchanathan for his efforts to fund NSF's vision followed by thanks to the attendees for their participation.