National Science Foundation
Advisory Committee for Business and Operations
Spring 2020 Meeting Minutes
Monday, June 29, 2020

Attendance:

Tilak Agerwala	IBM Emeritus and IBM Vice President (retired)
Benjamin Brown	Acting Facilities Division Director and ESnet Program Manager
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	Director of Team Innovation, Exaptive, Inc. (Committee on Equal Opportunities in Science and Engineering (CEOSE) Liaison to the Committee)
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 at 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)

The Spring 2020 meeting of the NSF Business Operations Advisory Committee (via the Zoom platform) was called to order by Co-Chair Pamela Webb at 1:00 pm.

Co-Chairs Pamela Webb and Chuck Grimes introduced themselves, followed by Dr. Tilak Agerwala, Mr. David Mayo, Dr. Benjamin L. Brown, Dr. Joseph Mitchell, Ms. Kim Moreland, Dr. Theresa A. Pardo, Mr. Adam H. Goldberg, Dr. Joel Parriott, Mr. John Kamensky, Mr. William J. Valdez, Mr. Larry Koskinen, Ms. Maureen E. Wylie, Mr. Robert Lavigna, Dr. Alicia J. Knoedler (CEOSE), and Ms. Rachel E. Levinson. Mr. Adam H. Goldberg will join the meeting late and Dr. Lee Cheatham and Dr. Robert M. Dixon were not able to attend.

Ms. Webb provided an overview of Zoom etiquette and noted the Fall 2019 Recommendations from the B&O Advisory Committee are present in the electronic book provided to each meeting attendee.

Updates: BFA; OIRM; Budget/OLPA

CFO Update. Teresa Grancorvitz noted BFA senior staff changes and reported the following BFA responses to the COVID-19 pandemic:

- As of June 14th, NSF has awarded 481 RAPID/EAGER grants totaling $68,881,600, or about 90 percent of NSF's Coronavirus Aid, Relief, and Economic Security Act (CARES Act) FY 2020 supplemental funding. In addition, $2,377,600 is committed, but not yet awarded.
- NSF published guidance to implement flexibilities authorized by OMB M-20-17, Administrative Relief for Recipients and Applicants of Federal Financial Assistance Directly Impacted by the Novel Coronavirus (COVID-19) due to Loss of Operations.
- NSF issued guidance on NSF's implementation of OMB M-20-20, Repurposing Existing Federal Financial Assistance Programs and Awards to Support the Emergency Response to the Novel Coronavirus (COVID-19).
- Engaged NSF partners to create and disseminate FAQs for NSF Proposers and Awardees and NSF Panelists, as well as Guidance for Major Facilities and Contracts.
- Supported NSF program offices in drafting, editing, and clearing three Dear Colleague Letters related to Research on Coronavirus (COVID-19).
- Conducted virtual outreach to assure grantees of continued payments, through grantee email blasts, updates to NSF's interpretation of M-20-17, and ACM$ system notifications.
- Conducted planned annual grant monitoring activities with additional flexibilities afforded to grantees under the pandemic.
- Monitored daily payment trends given reduced grantee operating capacity. Continued to process an average of 83 payments per day, with daily volumes ranging from $10 to $43 million.
- Developed the 'BFA Financial Indicators–COVID-19' dashboard to assist oversight, decision-making, and reporting around award obligations and outlays for COVID-19 research funded under the CARES Act and NSF base appropriations.
- Collaborated with OIRM/DIS to expedite loading new COVID-19 funding codes into iTRAK and eJacket to accelerate RAPID Awards.
- Communicated with NSF's Contracting Officer's Representative community to ensure consistent and coordinated information is provided to NSF contractors during the quarantine period.

In March 2020, the Office of Inspector General's (OIG) audit firm, Kearney & Company, held an entrance conference to begin the FY 2020 financial statement audit. NSF management and the auditors emphasized the need for collaboration and flexibility in executing the audit during the COVID-19 pandemic, while prioritizing the health and safety of staff and the mission support work of the agency. The financial statement audit is underway and proceeding on schedule.

BFA continues to carry out planned FY 2020 advanced monitoring and audit resolution activities that provide support and oversight to awardees. As of June 9, 2020, 21 of 30 advanced monitoring site visits have been completed. Of the remaining 9 previously scheduled site visits, visits to 4 institutions have

been cancelled and will be reassessed in the next fiscal year. The other 5 visits have been rescheduled for June and July as virtual site visits.

NSF kicked off its annual initiative to report progress on the OIG's Management Challenges with a meeting with the Chief Financial Officer, Management Challenge Owners, and other senior agency staff members. BFA staff are currently reviewing draft progress reports from the Management Challenge teams and will engage in a period of comment, coordination, and updating to finalize the progress reports for submission to OIG in July. The FY 2020 Management Challenges are:

1) Managing Major Multi-User Research Facilities
2) Meeting Digital Accountability and Transparency Act of 2014 (DATA Act) Reporting Requirements
3) Managing the Intergovernmental Personnel Act (IPA) Program
4) Managing the Antarctic Infrastructure Modernization for Science (AIMS) Project
5) Encouraging the Responsible and Ethical Conduct of Research
6) Mitigating Threats Posed by Foreign Government Talent Recruitment Programs

The OIG identified Managing the Enterprise-wide Internal Control Environment as an Emerging Challenge (an area to watch that could be elevated to a formal Management Challenge in future years). NSF is currently working on implementing the requirements of OMB Memorandum M-20-21 and the Digital Accountability and Transparency Act (DATA Act) Information Model Schema 2.0. With these requirements, NSF will transition to providing the monthly DATA Act submission starting in July 2020, including detailed reporting around COVID-19 grants and contracts funded under the CARES Act.

In April 2020, NSF received a memo from OIG resolving all recommendations in OIG Report No. 20-2-003, "Fiscal Year 2019 Implementation of the Digital Accountability and Transparency Act of 2014 Performance Audit." The memo represents OIG's acknowledgement that the actions NSF described in its Corrective Action Plan (CAP) will sufficiently address four recommendations in the audit report relating to the three findings. OIG will not close the recommendations until it can validate NSF completion of these actions after the next OIG audit in FY 2021. The resolution memo is the result of consistent and successful effort by NSF and OIG staff to reach concurrence and common understanding.

The FY 2019/2020 engagement with GAO on major facilities oversight continues based on Congressional report language (Senate Report 115-275 and House Report 114-605) and will evaluate the following:
- Comparison of the cost and/or schedule estimates for one or more large facilities projects under construction with GAO best practices for cost or schedule estimating.
- Assessment of the earned value management data for one or more large facilities projects under construction.
- Review NSF plans for mid-scale research infrastructure investments under the MREFC account.

The April 2020 GAO report entitled *National Science Foundation: Cost and Schedule Performance of Major Facilities Construction Projects and Progress on Prior GAO Recommendations (GAO-20-268)* had no new recommendations, and concluded GAO's good practices regarding NSF's revised policies and procedures on cost analysis are fully implemented. NSF is making progress on the remaining corrective actions from previous reports. The FY 2020/2021 engagement letter from GAO is still pending.

NSF is engaged with the Office of Management and Budget (OMB), the Office of Personnel Management (OPM), and other agencies on implementation of the Program Management Improvement Accountability Act (PMIAA). Earned Value Management metrics for NSF's major facilities projects in construction are provided to the Office of Federal Procurement Policy (OFPP) in support of a federal project status dashboard pilot. NSF has developed competency and proficiency level definitions specific to NSF's use of Integrated Project Teams for oversight, and will conduct a workforce analysis to identify and address competency gaps for the major acquisition and major facilities portfolio by August 2020. This effort aligns with GAO report recommendations from its 2018/2019 review of major facilities oversight, GAO-19-227. The entire effort will be completed in FY 2021.

NSF's 2020 Strategic Review has completed an evaluation of strategic elements related to Development and Design Stages in support of improved long-term portfolio planning as part of PMIAA's annual portfolio review requirement. Implementation strategies for the recommendations are being developed. OMB's current portfolio focus is on major acquisitions, and NSF currently has no "high risk" portfolios. NSF is growing its Enterprise Risk Management (ERM) community of practice. It has formalized its ERM governance structure and practices. It established Risk Captains, who will leverage the improved ERM organizational governance structure for consistency in risk information flowing from programs and offices to NSF leadership for collaboration on enterprise-level risks. The agency's ERM community of practice is organizing NSF's thinking about the threats and opportunities to its mission, and will be issuing guidelines for risk profiles to incorporate key COVID-19 areas. Due to the risk potential of increased CARES Act funding, NSF is developing a new baseline for improper payment risk assessment.

G-Invoicing is the Government's long-term sustainable solution to improve the management and accounting of Interagency Agreements (7600 A/B, MIPR, 1611). It impacts NSF's Incoming and Outgoing Interagency Agreements, and will provide an online platform to support the management and transparency of these agreements. G-Invoicing aligns with the Renewing NSF initiative's pillars: making information technology work for all; and streamlining, standardizing, and simplifying processes and practices. The mandated implementation date was revised to October 1, 2022, to provide time for:
- Agencies' change management efforts and prioritization of initiatives/resources (e.g., new COVID-19 requirements);
- Treasury to implement G-Invoicing enhancements;
- Software providers to develop enhancements and for agencies to prepare for consumption; and
- Treasury to explore potential tools for conversion of open agreements into G-Invoicing.

NSF's G-Invoicing project team continues to work with Treasury and our iTRAK system integrator to design an implementation strategy for NSF, as well as engage NSF stakeholders throughout the project.

Unique Entity Identifier (UEI) Initiative: All organizations that do business with the government register with the System for Award Management (SAM). All federal agencies use SAM for managing awards, reporting information, and making payments. Currently, SAM uses the proprietary Dun & Bradstreet Data Universal Numbering System (DUNS number) to organize this information. GSA is replacing the proprietary DUNS number with a government-owned number called the UEI. The transition to the UEI was slated for December 2020, but it has been delayed to a date to be determined. NSF and most

Federal agencies support a December 2021 implementation date. NSF is working closely with the federal community on how to meet this challenge.

Performance: In mid-February, as part of the FY 2021 Budget Request to Congress, NSF published two of its annual deliverables under the Government Performance and Results Act: the FY 2019 Performance Report and the FY 2021 Performance Plan. One thread running through both documents is the Agency Priority Goal (APG) on Partnerships. The Partnership APG successfully completed its first two-year period of performance in FYs 2018-2019, and the agency renewed it for a second period during FYs 2020-2021. The current version of the Partnerships APG is milestone-oriented, unlike the 2018-2019 version which aimed to increase formal partnerships by 5 percent. The 2020-2021 goal aims to develop an agency-wide partnerships strategy, combining the efforts of the Renewing NSF (internal process improvement) team on Partnerships with the previous APG team. Two Strategic Reviews took place in the spring of 2020, with only slight delays due to the agency's transition to full-time telework. NSF submits the Summary of Findings to OMB on June 26, 2020 and expects to receive OMB feedback in advance of the 2022 OMB Submission in September.

OIRM Update. Javier Inclán noted OIRM senior staff changes and reported the following updates:

OIRM Supports the Transition to Virtual Work During the Pandemic

- As the agency pivoted to support virtual work during the COVID-19 response, NSF focused on ensuring remote access capabilities and collaboration services would be available for agency staff. DAS collaborated with the Division of Information Systems to expedite the rollout of Zoom for Government, the new virtual meeting platform for the agency that facilitates video meetings and content sharing. NSF also strengthened its infrastructure to support remote work, taking steps to optimize, balance, and monitor the use of remote technology solutions to ensure increased capacity could be met, and expanded the use of software-based tokens to provide expanded opportunities for secure remote access to agency systems.
- The Divisions developed a Virtual Connections Support page on the NSF intranet, which offers instruction on activating accounts, scheduling video conference calls, improving the user experience, and more. It provides resources to optimize the telework experience and tips for moderating online panels. In addition, DAS has provided Zoom training for over 1,200 NSF staff. DAS provided pre-event, live production, and post-event virtual meeting support for the first-ever 100% virtual National Science Board meeting on May 5 and 6. The event included NSF and public attendees, breakout sessions, and live YouTube streaming. DAS also provided support for the Director's online Town Hall on May 7 and live assistance to conduct online panels, Committee of Visitor and Advisory Committee meetings, and scientific community outreach programs.
- During this period of remote work, NSF continues to provide secure, reliable day-to-day operations for our IT systems and services. During the NSF Headquarters building closure, DIS staff and contractors have shifted to offsite work including 100% virtual IT Help Central support for internal and external customers, as well as remote monitoring and maintenance of NSF's network infrastructure, systems, and services. DIS also supported the development and

implementation of COVID-19 visualization work, including the design and deployment of an internally-facing dashboard that provides summary metrics on COVID-19 related awards, as well as a publicly-facing visual clustering tool that provides a graphical view of COVID-19 related NSF RAPID awards.

- The NSF mailroom has continued to operate on site and expanded its services to support others in completing their work remotely. For example, the mailroom is supporting remote offboarding for separating staff, IPAs, and contractors by coordinating the turn-in of equipment, credentials, and passports by FedEx.

- DAS collaborated with the Division of Acquisition and Cooperative Support on a process to reduce the risk of onboarding contractors during this period of COVID-19. Social distancing resulted in the inability to fingerprint candidates, leading NSF to incur a risk if it onboarded contractor employees with fingerprinting deferred until a later time. DAS and DACS mitigated that risk by establishing criteria and a waiver request process for identifying mission-critical contactor employees eligible for immediate onboarding and requiring onboarding for all others be delayed.

- The Division of Human Resource Management (HRM) services were able to convert to serving customers virtually with the exception of onboarding mission critical appointments. HRM has been able to continue offering Employee Assistance Program (EAP) services, back-up care services, wellness services and more during this time as a way to help ease the effects of the pandemic and virtual workforce on employees.

- Pulse Surveys: HRM implemented a series of short surveys to assess the impact of the pandemic on staff. To date, there have been two pulse surveys. Overall, staff seem to be adapting quite well to the new environment. The second survey was distributed in early June and results will be used to implement additional support for employees during this time. A few key points from the first survey are below:

  - Of those who responded, the great majority provided a positive response to the seven scaled items with the highest being 96% of all respondents believing NSF has responded to the situation the best way possible; and the lowest being 48% believing that COVID-19 has had little impact on their ability to do their job (with 37% of respondents neutral on this item).
  - 88% of all respondents indicated feeling strongly supported by NSF.
  - 86% of all respondents indicated feeling that the communication about COVID-19 have been helpful.
  - 82% of all respondents indicated feeling that they have the resources they need to support their health, safety, and well-being.
  - 50% of respondents indicated having caregiving responsibilities. There was no correlation between caregiving responsibilities and ability to complete work.

New Emergency Response Resources Developed

- DAS completed several initiatives to improve employees' ability to respond to emergencies. They developed an Emergency Planning and Procedures Guide to highlight the most important information in the Occupant Emergency Plan for staff and contractors to know and practice in the event of an emergency. They launched an Emergency Preparedness and Response Training course that helps staff and contractors recognize and respond to potential emergencies and hazards. They also improved the agency's emergency notification system by upgrading to InformaCast Fusion.

Number of Unseated Panels Significantly Reduced

- As a result of recommendations by the Panel Reservation Working Group, the total number of unseated panels in FY 2020, as of Quarter Three, has been reduced to nine (9). This is down from a total of 260 at the same time in FY 2018 and 113 in FY 2019. The Panel Reservation Working Group was initiated by DAS in collaboration with the Directorate Liaison Group in mid-2019 and consists of cross-Directorate representation. The group was formed to re-assess and explore continuous improvement options for panel room reservations and equitable Directorate room assignments in the conference center. After assessing the historical usage data, the group agreed to limit a Directorate's panel room requests to 110% of the five-year average of actual room usage by the Directorate. This accommodates program changes and anomalies while enabling all Directorates to receive the panel rooms they need to meet their mission requirements. As the results for FY 2020 demonstrate, the change has been a huge success. DAS will continue to work with the Panel Reservation Working Group on further improvements.

Proposal Processing Unit Closed

- In an effort to streamline and modernize operations, DAS stopped printing proposals centrally and closed the Proposal Processing Unit on March 31, 2020. Program staff, panelists and ad hoc reviewers are encouraged to use electronic versions of proposals but can print hard copies themselves if needed.

Federal Employee Viewpoint Survey (FEVS) 2020

- The 2020 Federal Employee Viewpoint Survey was delayed this year due to the pandemic. The survey administration will be the same as with prior years, with a 6-week field period and specific launch and close dates. NSF's FEVS will launch on Tuesday, July 21 and close on Tuesday, September 1.

Personnel Manual (PER)
- The first round of updates, all Collective Bargaining Agreement (CBA) impacted, were completed and published in May 2020. A total of 21 policies were updated. HRM is working to update the remainder of the PER chapters by October 2020.
- HRM held four live Q&A sessions for employees and managers to attend and get clarification on training or policy questions related to the PER/CBA updates.

IT News

- NSF continues to prioritize modernizing IT services to improve the external research community's interactions with NSF and to facilitate the work performed by Foundation staff. In addition to completing system updates related to the 2020 Proposal & Award Policies & Procedures Guide (PAPPG), NSF developed and implemented a new format for Biographical Sketches and Current and Pending Support which will now become mandatory October 5, 2020 NSF also continued efforts to migrate legacy Awards functionality to MyNSF, to expand Proposal Submission Modernization (PSM) functionality in Research.gov, and to provide enhanced data analytics and reporting services. While continuing to modernize existing services, NSF is also supporting continued expansion of new technologies and capabilities such as robotics process automation (RPA).

- NSF continues to add redundancy and resiliency for agency IT services and systems through ongoing modernization and increasing deployment of cloud services. As a follow-on to NSF's multi-year Database Modernization project, completed in November 2019, NSF continues to prioritize data cleanup and modernization of legacy platforms and tools to ensure the security and reliability of agency infrastructure services. In May, NSF completed the security authorization of the agency's Amazon Web Services (AWS) cloud environment, which enables the agency to begin migrating NSF's merit review systems to the cloud, beginning with PIMS and the Institution system which were migrated to the cloud May 29, 2020 and continuing with eJacket which migrated on June 19.

Budget Update. Caitlin Fife provided a detailed overview of NSF's Budget, which includes a 6% cut in FY 2021 in conformance with the Administration's request. There were some congressionally-approved transfers in FY 2020 from program to administration due to the effects of COVID-19 and the general pay increase in January. NSF is close to obligating all CARES Act funding, and awarded another $34 million to support COVID-19 efforts.

Mr. Lavigna asked Mr. Inclán about NSF's plans for returning to work, being physically in the building, and if there have been any discussions of instituting long-term telework after returning to the building. Mr. Inclán stated that these discussions have taken place. NSF is using a phased approach to physically returning to the building and there have been discussions pertaining to long-term telework in lessons learned discussions. These discussions have included pros/cons of long-term telework and the possibility of a hybrid approach. However, it is too soon to say how this will look in the future.

Dr. Agerwala asked Ms. Fife if there has been any coordination among agencies regarding funding the different types of work. Ms. Fife stated that these coordination efforts have taken place, even prior to COVID. She provided the example of the collaboration efforts between NSF and NIH within the BIO Directorate, to ensure funds are granted responsibly.

Ms. Wylie asked Ms. Grancorvitz about OMB guidance to reduce administrative requirements. She wanted to know if there was any opportunity to suggest more reductions. Ms. Grancorvitz stated that

these opportunities do exist and that groups within BFA have begun brainstorming sessions to identify ideas to facilitate administrative burden reductions.

OLPA Overview. Amanda Greenwell presented an overview of OLPA, specifically what it is and how it operates within NSF. Some highlights of the presentation:
- OLPA has recently completed a reorganization. Ms. Greenwell discussed the new organization structure and the purpose of each new branch.
- The NSF Blog has been updated and reimagined.
- The 'NSF on The Hill' initiative has evolved in the era of COVID, from physical to virtual meetings.
- NSF will swear in the new Director on July 2, 2020.

Dr. Agerwala stated that he noticed that over the past several years there has been a growing distrust of science and asked if NSF had noticed a change in those attitudes with the emergence of COVID. Ms. Greenwell stated that NSF/OLPA has not tracked that particular metric. However, NSF/OLPA has noticed that there has been a positive response to the tools OLPA implemented over the past few years.

Understanding the Top Five Impacts of the COVID-19 Pandemic on the National Research Community and the NSF Response

Presenters: Keith Boyea, BFA; Alex Wynnyk, BFA
Panel: Sylvia James, EHR; Steve Meacham, OIA; Joanne Tornow, BIO
Discussants: David Mayo, Kim Moreland, Pamela Webb

NSF requested BOAC input on the following questions:
1. What are the top five COVID-19 impacts on federal and NSF grant awards, sponsored activities at research institutions? Short term (pandemic inception to the start of fall semester), medium term (~18 months after that) and, if relevant, long term?
2. What were the major impacts on researchers and faculty (including early-career faculty), administrators, postdoc researchers/students as a result of on severely curtailed research and related activities due to COVID-19?
3. What was the impact and what measures were put in place for institutional operations to quickly shut down and then safely restart laboratory research and other related activities?
4. How has the NSF response addressed the impacts to date and what future needs are anticipated?

Presentations

Overview of NSF COVID-19 Responses

Alex Wynnyk noted the importance of early communication, and shared internal and external web links. NSF received additional funding of $75 million from the CARES Act. OMB provided certain program flexibilities which allowed NSF:
- Flexibility with System for Award Management (SAM) registration
- Flexibility with application deadlines
- Allowability of salaries and other project activities

- Allowability of costs not normally chargeable to awards
- Prior approval requirement waivers
- Exemption of certain procurement requirements
- Extension of financial and other reporting
- Extension of currently approved indirect cost rates
- Extension of closeout
- Extension of single audit submission

NSF's internal responses to COVID-19 included:
- In-person panels moved to virtual platforms
- NSF-sponsored conferences are encouraged to move online or reschedule to a later date
- All staff are now teleworking
- All non-essential travel canceled

Alex noted potential risk Indicators for BFA monitoring and oversight:
- Change in institutional spending patterns
- Increase in awardee audit findings
- Indications of internal control issues
- Increase in overdue technical reports
- Significant decrease in revenue streams
- Financial viability indicators decreasing

Keith outlined COVID-19 impacts on NSF contractors and major facilities:
- Impact on Small Businesses, particularly through Government Purchase Card Program: Micro purchases are down approximately 25%, and office supply purchases have decreased.
- Uncertainty for contractor return to building and long-term work location: NSF has been successful in meeting its mission using remote work. The current plan calls for non-essential contractors to be one of the last groups of individuals returning to the building.
- CARES Act Section 3610 compliance and administration: Although NSF has not received a request, there are questions and concerns regarding the requirements of 3610.
- Protection of Major Facility life and property: NSF has developed a plan to address.
- Impacts to Major Facility schedules and costs: NSF has provided guidance to address.

Dr. Brown asked a question concerning the future of baselining project costs and if NSF is addressing. Mr. Boyea stated that it is too early in the process to address, but NSF may address in the future. Mr. Kamensky asked a question in reference to the 2009 Recovery Act, which required many agencies to change processes, but some agencies had reverted to previous processes – has this occurred at NSF? Mr. Wynnyk stated that NSF already had many of the flexibilities addressed by the Act already in place, the biggest of these being flexibilities for salaries. He provided the example of lab workers who are unable to work in the lab. Mr. Wynnyk stated that he doesn't anticipate all of these flexibilities remaining in place after the COVID issue has passed.

Mr. Kamensky asked whether virtual panels would remain in place. Mr. Wynnyk stated that this decision would be made on the program side. Mr. Boyea stated that there will be a 'New Normal', however, there have been no concrete decisions.

COVID-19 Research - Joanne Tornow, AD/BIO

Dr. Tornow began with a general overview of the SARS-COV-2 virus, and followed with overviews of:
- The Ecology of Infectious Disease within the BIO directorate, and each office within the directorate.
- The outcomes of some of the research conducted, specifically a 2013 research project that led to the identification of bats as the source of an outbreak.

There are two specific areas of research on which NSF is focusing. First, to learn more about the virus, approximately 500 Rapid Awards, totaling over $100 million, were granted in the following categories:
- Understanding the characterization of the virus
- Predicting the spread of the virus
- Tracking the disease
- Limiting the spread of the disease
- Societal impacts (how Americans cope with the stress).

The second area of focus is on preparing for the next pandemic, with a focus on moving from a reactive approach to a predictive model.

Research Recovery Planning - Sylvia James, Deputy AD/EHR

Dr. James discussed guidance and flexibility for NSF grantees, noting that NSF has a good relationship with the research community and is relying on these relationships to make NSF aware of the challenges the community has been experiencing. She noted the major disruptions in the community regarding lab closings, with data and sample collection interrupted without appropriate mitigation steps. Some research institutions may be forced to close. NSF has a task force developing plans to address challenges in people and infrastructure, and a key focus is looking to the STEM community.

Mr. Valdez asked what NSF was doing for Minority Serving Institutions (MSIs). Dr. James stated that some of the flexibilities that have been instituted include:
- extending deadlines;
- flexibilities with appropriations, being able to supplement;
- looking at challenges in STEM especially within the minority community and developing a mitigation strategy; and
- looking at supplemental funding.

BOAC Discussants/Committee Discussion
Top five areas: Institution Finances, Students, Faculty, Uncertainty, and Future Research - Kim Moreland

- *Institution Finances*
  - Reduced Revenue
    - From Clinical, housing/dining, athletics, and tuition revenue streams.
    - Endowment payouts.
    - Delayed payments.
  - Institution has implemented several cost-cutting measures.

- *Impact on Students*
  - Goal is to conduct 50% of classes in person, starting September 2nd, everyone will leave after Thanksgiving.
  - Concern about faculty teaching in person due to health.
  - The institute will implement certain measures, such as barriers and testing.
  - International Students
    - Immigration Executive Orders are impacting Visas for these students.
    - These students usually pay full tuition, which also impacts revenue for the institution.
    - Some international offices have been closed.

Impact on Faculty and Impact of Uncertainty - David Mayo

- *Impact on Faculty*
  - Caltech is a small institution.
  - Caltech labs have started to re-open and must follow the most restrictive re-opening guidelines.
  - Lab techs must maintain social distancing; therefore, shoulder-to-shoulder collaboration will not be allowed.

- *Impact of Uncertainty*
  - Challenge to having multiple government agencies funding research, because the guidance is varying.

Impact on Future Research - Pamela A. Webb

- Concerns about funding -the following questions are being asked:
  - Will there be a change in funding priorities?
  - How will this impact research abilities?

- However, there have been some positives.
  - Public view of science and scientists is evolving.
  - Public is seeing science in motion.
  - Governors are relying on science and scientists.
  - Grantees are communicating with the community very well.

Other notable observations:

- There is a need to 'harvest' all information learned; for example, a national portal for funding.
- There is also a need to determine how organizations will define accountability for COVID related funding.
- Federal Response - include FDA approvals and authorizations.
- There was a great deal of angst leading to an information overload.
- Challenge - many agencies had varying implementation flexibilities; did not follow the NIH/NSF model of implementing the memo as written by OMB; other agencies included additional restrictions.
- OMB Memorandum M-20-26 - extended some flexibility but added a requirement that needed to be addressed before the flexibility could be used.
- Additional Requirements - no clear requirements/clear guidance for what auditors will be looking for (the standards auditors will be using).

Discussion

Ms. Wylie thanked the presenters for their presentations. Ms. Wylie proposed for NSF to address standardization issues with the CFO community, adding it as a discussion point. She also noted for CFOs, the possibility of developing a relationship with the audit community (IG's) as NSF did with the Data Act. Also suggested that the federal community drive this discussion.

Dr. Agerwala thanked the panel for their observations and their presentations. In addition to the other observations, Dr. Agerwala suggested that there were additional areas to be analyzed, such as using digitalization and virtual processes to mitigate some challenges. He also suggested including the use of collaboration tools and cyber infrastructure of the future to collect data, in addition to other technology solutions.

Ms. Levinson provided comments on flexibilities and opportunities, being able to look at some of the instances, such as standardizations and uniform practices.
- The OMB revisions – how and what was this impact?
- Review Panels – there had been a great emphasis on in-person meetings. However, there has been great success on virtual panels; there is an opportunity for NSF to see how effective virtual panels are.
- RAPIDs - the agility that NSF exhibited was amazing - wanted to applaud this effort.

Dr. Brown commented on the discussion in reference to the topic of whether the community should be publishing or pushing and the progress of these efforts.

Enterprise Risk Management (ERM) in the COVID-19 Environment

Presenter: Mike Wetklow, BFA
Discussant: Larry Koskinen

NSF requested BOAC input on the following questions:

1. Do you have feedback on NSF's approach to ERM and / or COVID-19 considerations?
2. What lessons learned or best practices have you seen in practice during COVID-19 that might benefit our organization?
3. Have you encountered successful approaches to collaborating with universities and grantees to manage the impacts of COVID-19 that you would recommend to NSF?
4. Do you have any additional suggestions about how NSF can use ERM to leverage / integrate the results of its COVID-19 crisis management efforts?

Mike Wetklow began by providing an update on the latest developments on the ERM process. He explained that ERM is about opportunities and is a powerful tool to preserve and create value for NSF's agency missions. He noted that NSF's Data Analytic Assurance Program (DAAP) supports the NSF mission by addressing the proliferation of data, leveraging artificial intelligence and automation, managing and reducing the cost of compliance efforts, and building stronger organizations. Next steps:

- Start-up functionality: How to do a Risk Profile?
- Compliance: OMB Policy and Guidance
- Integrate: Strengthening Roles and Responsibilities and breaking down silos
- Value and decision making: Predicting, preparing, creating value and seizing opportunities

Mike discussed the development of the NSF ERM Organizational Governance Model which illustrates how risks are identified and how ERM should be used throughout NSF to respond to and mitigate risks. He then presented an example of using ERM in a risk posture document from May 18, 2020, in response to COVID-19. He asked the group for feedback on NSF's approach to ERM.

Mr. Koskinen provided background on the various types of risks the Department of Housing and Urban Development (HUD) tracks, including program risks, C-suite risks, and fraud risks. He noted that engagement with key stakeholders and processes is a critical component of integrating the ERM framework into any organization. He discussed how HUD takes raw text from hundreds of thousands of reports from the Single Audit Clearinghouse and applies innovative text mining and sentiment analysis to create predictive risk models. HUD uses a software known as ARGUS to deal with the proliferation of data. HUD has created a 7-dimension model of risk governance:

- Data and technology
- Risk governance
- Risk culture
- Risk appetite and tolerance
- Risk assessment and measurement
- Risk reporting and insights
- Risk management and monitoring

ERM General Observations

1. NSF ERM Program Strength. NSF's risk program is very technically strong and well designed, led by one of the architects of the 2016 OMB Circular A-123 rewrite—an excellent foundation.

2. Risk Management Work Product Design. The program would benefit from developing a series of risk declaration and mitigation work products keyed to the specific requirements of strategic planning, performance management, operating budget, capital investment, and assurance processes.

3. Risk Management and Planning Process Integration. The program would also benefit from a whole-agency review of the timing of the deliverables described above so that these risk inputs meet the individual lifecycles of planning and budget—the right product, at the right time, to the right people, for the greatest impact.

4. Blockchain and Predictive Analytics. Implementing a blockchain grant management environment at NSF places the agency in a strong leadership position among federal grant-makers. This whole-of-government class innovation will have positive risk management repercussions in: 1) nimble and transparent management of government grant resources down to the sub-grantee; 2) significant increase in data science opportunities for predictive analytics; and 3) reduced oversight burden on grantees while increasing assurance.

5. Annual ERM/FRM Assessment. NSF would benefit from conducting annual maturity assessments for both enterprise risk management and fraud risk management, and seek ways to appropriately share insights from those evaluations with OIG and GAO to better align their oversight activities, facilitating a shift from burdensome compliance-based auditing to more nimble risk-based program assurance.

ERM Committee Action/Feedback

1. Do you have feedback on NSF's approach to ERM and / or COVID-19 considerations?

NSF is taking a positive, science-based approach to workforce design/engagement during the pandemic. Opportunities exist, however, to increase the use of risk management to further management's objectives to maintain both the health of NSF employees and the health of the NSF enterprise. See #4 below.

2. What lessons learned or best practices have you seen in practice during COVID-19 that might benefit our organization?

The high visibility of NSF leadership, clear instructions, and assurances that employees will not be forced to return to potentially high-risk work settings is a singular best practice. NSF employees are confident in leadership decisions and processes. Their productivity seems to remain high.

3. Have you encountered successful approaches to collaborating with universities and grantees to manage the impacts of COVID-19 that you would recommend to NSF?

The pandemic has demonstrated the need to invest in enterprise-class business process support tools (like the NSF blockchain grant environment), and in-deep adoption of telecollaboration tools for distributed teams. NSF leadership could increase the power of these digital work team environments by focusing on human factors. For instance, simply encouraging employees to turn on their webcams during digital meetings can significantly increase the quality of communication and trust building—a phenomenon well understood by cognitive scientists. Digital team competence should be trained for,

evaluated for, and rewarded. NSF culture must become professionally close, but physically distant. This cultural competence will accrue benefits long after the pandemic crisis is resolved.

4. Do you have any additional suggestions about how NSF can use ERM to leverage / integrate the results of its COVID-19 crisis management efforts?

Returning employees to face-to-face work is a risk-based investment decision. This decision has two risk aspects: 1) the health of the employee; and 2) the health of the enterprise. These two aspects intersect on a traditional risk heat map and can yield a composite risk score to aid decision-making. Employee return-to-work should not be forced, but neither should it be completely voluntary.
Employee risk can be described in terms of individual health, household members' vulnerability, child or elder-care responsibilities, age, etc. Enterprise health can be described in terms of single points of failure, key worker knowledge, internal control separation of duties, etc. For instance, a highly motivated employee may desire strongly to return to the office, but his or her position is high-risk. The employee would be making an implied risk decision regarding the health of the enterprise, and, potentially, his or her health as well. Calculations can/should be made by managers one person/position at a time. Return-to-work based only on an imposed deadline is irresponsible.

Other BOAC discussion:

Dr. Agerwala noted that collaboration tools and a distributed IT infrastructure are going to be paradigm-shift but they come with their own set of risks and before embarking on that path, a good job of risk assessment is necessary. The coronavirus pandemic has made it appear that these kinds of situations are going to occur with increasing frequency and that there are a number of unknowns, so to what extent do our traditional approaches address environments where there are a large number of unknowns? Mike responded that not all risks will be identified but ERM can help in preparedness.

Ms. Pardo asked how NSF has worked with agency leadership to orient them to this culture shift regarding how we think about risk appetite and tolerance and how we make decisions about those levels of tolerance. She discussed how she has noticed many universities and institutions have been creating risk management programs, including the University of Albany, and noted the increasing importance of telecollaboration tools and the need to further research potential of telecollaboration. Mike responded with ways to introduce the ideas of risk appetite and tolerance to leadership by rephrasing these terms, looking for opportunities where people are already using these ideas naturally, and choosing the opportune time to introduce the ideas of risk appetite and risk tolerance.

Mr. Koskinen noted that complex, high performing organizations are going to have to think about physical presence as an investment and risk decision. Mr. Lavigna responded that when we talk about return to work, we sometimes think of it as a "when" not an "if", but if this current situation is a new paradigm with moving to a workforce that is going to be largely remote, he believes this creates challenges around engagement, commitment, performance, and productivity. We must figure out how we are going to interact with people in this new paradigm to continue to have such high levels of engagement. If we do not make this transition to the new paradigm it will have implications for talent attraction and retention because other organizations will make the transition.

Meeting with Dr. Crim

Dr. Crim thanked the BOAC for its work and reiterated that advisory committees are essential to what NSF does. He began his remarks by discussing the end of Dr. Cordova's term at the end of March after 6 years as NSF's Director, and noted that Dr. Sethuraman Panchanathan's commission was signed and he is now NSF's new director. NSF celebrated its 70th Anniversary in February, and signed a new collective bargaining agreement, the first in 38 years. Other personnel news:
- Margaret Martonosi from Princeton arrived as the Assistant Director for Computer Information Science and Engineering
- Sean Jones is the Acting Deputy Division Director for Mathematical and Physical Sciences
- Rebecca Kaiser is the first Chief Officer of Research Security Strategy and Policy

NSF is spending out our 2020 Budget of $8.3 billion dollars, an increase from $8.1 billion in 2019. The pending 2021 budget of $7.7 billion dollars has been sent to Congress.

Essentially everyone at NSF is teleworking in response to COVID-19 apart from some security and maintenance personnel. NSF received 38,000 proposals so far in 2020, has made decisions on 27,000 proposals and has made 5,800 awards. These numbers are comparable to numbers from this same time period in 2019, illustrating NSF's preparedness to transition to 100% telework during this time. However, Dr. Crim made it clear that while NSF was still incredibly productive it is not a stress-free time and in response NSF introduced many workplace flexibilities. COVID-19 is going to have a large impact on the research community. In response to COVID-19, NSF created a Recovery Planning Task Force.

Ms. Moreland summarized the discussion regarding the Top Five Impacts of the COVID-19 Pandemic on the National research Community. She congratulated NSF for its management of the RAPID program and expressed gratitude for the streamlined processes and continued open lines of communication during COVID-19. She noted the importance of the effective implementation of the OMB flexibilities, though it would have been helpful if there were some way to harmonize OMB regulations so each agency didn't have to implement them individually.

Recalling the discussion of risk indicators, she expressed concern about the financial well-being of universities due to potential changes in patterns of spending. There could be significant revenue hits. She noted concern about the auditing process as it is difficult to keep track of the use of personal protective equipment (PPE). Internal controls might be a potential problem for universities due to the uncertainty universities are facing for their faculty and administrators in terms of figuring out what controls need to be in place.

Some students are stuck outside of the country unable to get a visa to come in and work. This is going to have a tremendous effect on the science and the quality of the research that universities conduct. We should use this time to work with the Foundation and OMB to predesign a set of responses that will serve us in emergency situations and take advantage of the lessons we learn that will help streamline normal research processes.

Mr. Koskinen recapped the discussion of Enterprise Risk Management in the COVID-19 Environment. He noted the new ERM governance framework is benchmark quality - it is one thing to design it and quite another thing for leadership to use it. The integration of risk and operations is proceeding very well. He discussed the "black swan" event NSF finds itself in, and how it is important to be prepared for these types of situations. He noted that data analytics can empower risk and the important opportunities to move the oversight community from a compliance-based approach to an assurance risk-based environment. He noted the importance of reconsidering physical presence of employees as a necessity in the workplace as it can be more expensive and limiting as more people can be included in conversations virtually than was previously possible given to physical space limitations. Risk-based return to work is not only possible but is imperative considering the health risk to the employee and the institutional risk based on the position the employee inhabits in the organization. If you have a high-risk employee for health reasons in a high-risk job who would like to come back to the office, it is important to be able to tell that employee to stay home for a longer period of time for their own health and the health of the organization. This timeline-based return to work may be a big risk and the right path forward may be managers talking with their employees one on one to evaluate the riskiness of their position and their health and welfare. Risk managers can help with this process. Dr. Crim agreed the ERM approach is useful in preparing for "black swans", determining the return to the office processes, and the auditing process.

Dr. Brown noted that our world is changing particularly regarding the future of work and the future of research. The Foundation is in a unique position to blend thought and leadership around diversity, inclusion, and equity around the physical cyber infrastructure, and the digital divide. NSF can embrace all these topics in a wholistic way to show us a way forward where we emerge stronger in the research enterprise. Dr. Crim agreed NSF is a unique organization and it is largely due to the fact that NSF supports research in all of the areas mentioned, but NSF is constantly trying to improve its support and knowledge of these topics to have open and honest conversations about current issues in the world.

The meeting adjourned at 5:30 p.m.