

## Facility Operations During COVID-19 – Challenges Overcome & Lasting Impacts: Part 1

During the presentation phase of the webinar a panel of speakers from various large facilities discussed their experiences over the past year during the COVID-19 pandemic. Panelists shared helpful actions their facilities took and what lasting impacts will remain. NSF’s Large Facilities were well represented. The webinar series targets a cross section of different professionals who have a role in the development, planning, construction, or operation of large complex scientific facilities and mid-scale projects i.e. Facility and operations managers, property and maintenance managers, cooperative agreement and contracting officers, business professionals, project managers, estimators, schedulers, and controllers, principal investigators and scientists, engineers and construction managers, policy and oversight stewards.

During the collaborative session of the Webinar, the attendees were asked to select one of Five Breakout rooms and each Breakout room had a Facilitator and Scribe to lead and document the issues raised in the discussions. All, of the issues raised, shown in Appendix 1, were compiled in a data set and reviewed from the *Operational, People, End User* and *Financial Perspective*. Each of the issues raised were further collected under sub-headings. Table 1 summarizes the results of the issues raised.

*Table 1 Summary of the issues raised related to Facility Operations During COVID-19 – Challenges Overcome & Lasting Impacts.*

<b>Operational Perspective</b>	<b>Past</b>	<b>Current</b>	<b>Future</b>	<b>Grand Total</b>
Efficiency reduced	5	8	2	15
Extra management burden		9	13	22
Improvements in communication infrastructure		3	7	10
Opportunity to reorganize to improve efficiency			21	21
Productivity reduced	1			1
<b>Grand Total</b>	<b>6</b>	<b>20</b>	<b>43</b>	<b>69</b>

<b>People Perspective</b>	<b>Past</b>	<b>Current</b>	<b>Future</b>	<b>Grand Total</b>
Efficiency reduced	2	3	1	6
Essential staff overloaded	2	6	1	9
New remote working conditions	1	3	27	31
Opportunity to reorganize to improve efficiency			1	1
Pandemic guidance and policy unclear		5	5	10
Public Health/ privacy issue	1	3	5	9
<b>Grand Total</b>	<b>6</b>	<b>20</b>	<b>40</b>	<b>66</b>

<b>End User Perspective</b>	<b>Past</b>	<b>Current</b>	<b>Future</b>	<b>Grand Total</b>
Improvements in communication infrastructure		3	5	8
Long Term Effect			9	9
Mission Impact	4	4	11	19
Pandemic guidance and policy unclear		1		1
<b>Grand Total</b>	<b>4</b>	<b>8</b>	<b>25</b>	<b>37</b>

Financial Perspective	Past	Current	Future	Grand Total
Extra admin burden		1	2	3
Extra management burden	1	7	15	23
Extra unplanned expense	2	12	9	23
Little impact	2			2
Opportunity to reorganize to improve efficiency			19	19
<b>Grand Total</b>	<b>5</b>	<b>20</b>	<b>45</b>	<b>70</b>

Appendix I: Attendee discussions in each breakout sessions in response to questions asked by facilitator.

Breakout Room One

Facilitator: Joe Giaime

Scribe: Mike Landry

**Triage:** What features of operations had to be curtailed and what others were able to continue during the pandemic? Did decisions have to be made to triage operations, how were these decisions made and communicated to users.

- Huge impact on 2 mo. Missions, large crews on ships. 23 countries, 30 scientists. Six-mo. shutdown owing to difficulty of international sailing/travel. Instituted social distancing, individual occupancy, isolation prior to and after sailings. Protocols for mask use. Third-party testing. One trip canceled based on covid testing results. Isolation requirements are significant burden on 2 mo. Sailings. Lessons learned to be published.
- Limited staff on site for essential operations
- Large and distributed staff, logistics to get all telecommuting. Less efficient to telecommute; prioritization required. Managing current situation and managing risks.
- Staff fell lab is safer than the community. Heavy communication requirements. Travel to lab is approved provided negative covid tests obtained.
- Emphasis on remote data analysis
- Expects vaccines critical to fully resume sailing as cannot mitigate all issues observed.
- Not settled on how vaccination/ non-vaccination in staff will be treated.
- Similar issues with vaccine, in particular privacy

Breakout Room Two

Facilitator: Derek Buffitt

Scribe: Richard Oram

Challenges to Operations: What are the biggest challenges to your continued Operations to overcome during the pandemic? Please share your stories of the impact on users and your new ways of working.

- Conflicting/lack of information
- Access control
- Testing and PPE availability

## Large Facilities Workshop – 2021 April Webinar –Summary of Issues Raised in Breakout Sessions

- Technology use was not consistent e.g. not everyone understanding how to use the technology
- SME Input: Found it useful to get input from medical professionals to advise
- Expand communication technologies
- Medical privacy issues
- Debate with personal right to privacy and the need for organizations to know
- Come up with a new way of working with field service technician that travel around the country. Came up with a virtual training/ working model
- Challenge of not having end users be able to come and run their own experiments. Came up with virtual control that would allow PI to run experiment remotely.
- User coming from around the country having different rules. Expectation about access. Result was some experiment needed to be deferred.
- Currently operation treat everyone as if they have not been vaccinated – this is very challenging. At some point this transition needs to be made.
- Instrument scientist that had to be on a vessel needed to meet the medical isolated period
- NSF asking what we were doing but not offering very much guidance

### Breakout Room Three

Facilitator: Chris McKay

Scribe: Kevin Porter

Lasting Impacts: What are the lasting impacts to your Facilities' (new) ways of working that will remain after the pandemic? Did significant aspects of the proposed work have to be postponed and how was this handled?

Notes:

- remote work
- Security
- Use of teleconferencing
- More participation from people than in-person
- More and longer meetings than necessary
- Purposefully minimizing meeting numbers and durations- cut in half
- Negative impacts on students and people new to organization
- Stanford expecting ongoing remote work for many roles
- Some activities cannot be completely remote, but may not need all parties in facility
- Being more deliberate as to how roles become hybrid relative to physical presence
- What about collaborations:

### Breakout Room Four

Facilitator: Lory Wingate

Scribe: Michiel van der Hoeven

New Normal: Will there be a “new normal” for your operations? What future steps and remaining challenges to your Operations do you foresee during re-opening after the pandemic?

- Ideas when targeting back in office. This is dependent on:
  - Schedule and guidance of parent organization and their evaluation

- On quarantine restrictions
- Local guidance by state or locations
- Two-way communications are essential
- Criteria to move to new normal.
  - Wide mass vaccination
  - When travel returns to “normal”
  - Once students safely can return to campus
- What does new normal look like?
  - Hybrid model for employees and users.
  - Additional admin workload, who works where?
  - Balance personal preference bs organization need.
  - How will we deal with virtual working post-pandemic?
  - Review required travel
  - Vaccination? How do we deal with staff reluctant to take vaccine?
  - How do we deal with visitors’ vaccine?
  - Cyber security, what new capabilities are needed?
  - Improved remote monitoring
  - (legal) restrictions on what is allowed to be done remotely
- Lessons learned
  - Adaptability is key and people have learned to adjust to new situations.
  - Remote working could provide a real opportunity to increase diversity and inclusion by helping to solve the two-body problem
  - Review office/cubicles space, enhanced air filtration
  - Return to new normal, is not what it was or stay where we are, finding a better balance between the two

### Breakout Room Five

Facilitator: Erika Smith

Scribe: Alexa Strid

Preparations for the future: From an awards management perspective, what administrative issues were encountered and what practices were developed during the pandemic? What might NSF and facilities do to better prepare for the future?

- Success stories
  - Carry on
  - Infrastructure
- Challenges
  - Supply chain: working with subcontractors and suppliers
  - PPE
  - Additional costs
  - Allowability of costs (PPE/COVID tests)
  - Mandatory COVID testing
  - Postponing manufacturing of components. Now vendors increasing prices
  - Cost of manufacturing delays
- Adapted
  - DOCU Sign
  - UCAR: COVID webpage to view HR updates and sponsor updates.

- Contracts performed weekly check-ins. Results in more connection among teams.
- Different cultures, meeting expectations
- Tech: more efficient
- Spending:
  - Checks
  - Cashless payments
- The ability to have flexibility to meet cultural and legal requirements when operating outside US
- Moving Forward
  - Costs: Increased cleaning costs, transportation costs, PPE
  - Increased cost of manufacturing. Paying for a make-up of goods
- Solutions/ Lessons Learned
  - Wet Ink Signing, Meeting in parking lots
  - DOCU sign
- Did anyone have an emergency response plan? If yes, how useful were they?
  - PMRT: UCAR set up
  - Facilities had plans for natural disasters. Civil Unrest plan for Chile
  - UCAR: has a central cyber security office to evaluate vulnerabilities of any software used (evaluate DOCU Sign)
- Is award management more efficient/ better now?
  - Better: 1
  - Neutral: 5
  - Worse: 2

## The Role of Communications, Education and Public Outreach During and After COVID-19: Part 2

A brief summary of what was discussed in the EPO breakout groups:

The Role of Communications, Education and Public Outreach During and After COVID-19 session that took place on April 7, 2021 as part of the 2021 NSF Large Facilities Workshop included communications and EPO personnel from across the Large Facilities, as well as others with interest. The session included a 30-minute presentation by four panelists focusing on how their Large Facility adapted to meet the communications, education, and public outreach needs during the pandemic, lessons learned, and how they plan to incorporate the lessons learned as the facility opens back up. The panel presentation was followed by small group follow-up discussion, and ended with small group presentations. Many ideas were discussed in the small group sessions, however there appeared to be consensus on the following:

- a) Adaptation of resources and activities to virtual environments increased accessibility to resources allowing the facilities to reach much larger audiences;
- b) Individuals without robust internet access are at a disadvantage with virtual activities. (NOTE: many of the Large Facilities are located in rural areas with limited internet access.)
- c) Virtual is less expensive than in-person, but we have to be cautious. We are uncertain about the impact of virtual engagement vs. face-to-face engagement, and this needs to be looked at more closely. Perhaps a metanalysis study could be commissioned;
- d) We would all benefit from having a repository (collection) of all the virtual activities and lessons learned in a single location online. This could preserve and inform future communications and EPO development at the Large Facilities.

- e) As the facilities open back up, LF staff plan to augment face-to-face visits with the virtual activities developed during COVID. Most are thinking about a hybrid model that can meet the needs of local communities and visitors to the facilities while maintaining their reach across broader geographic regions.

Question asked to all breakout rooms: As facilities are opening back up, what lessons learned can be applied and how does that change what communications education and public outreach look like at the facilities moving forward.

### Breakout Room One

Facilitator: Tim Spuck

Scribe: Joan Burkepile

- Less data was collected due to covid so they could work more on planning and future planning for outreach. Looked for more opportunities to engage remotely vs in person. Did virtual tours once a month with questions. Doing this at different times to include more time zones. Gives high school teachers materials,
- Establishing a network in early career is more of a challenge when working remotely. We need to be cautious about how much we can really do virtually vs working in the larger group in person. Networking is more of a challenge. One positive: in data skills workshops the in-person was limited but virtual opened it up to more people who could not afford to travel.
- Found Zoom meetings to be more effective especially with teams from various sites since there is visual in addition to teleconference call. Would be interesting to see the effectiveness of the spectrum of interactions, in-person vs email vs phone vs Zoom. Is NSF collecting data to determine what we have learned on the most effective use of time on collaborative work. Using social media, is a great way to reach out. Now have had the time to figure out the technology and plan ahead.
- Looked at how to keep people engaged., 360 streaming videos within the community, the accessibility of events reached more people (those with disabilities and those that do not have access to a planetarium in their area). A virtual space is a unique opportunity to create accessibility. There are trade-offs. Need internet, equipment to do virtual.
- Important to get input from a broad group of people to find out what works and what doesn't work for others.

### Breakout Room Two

Facilitator: David Lockett

Scribe: David Lockett

Coordination is essential for manipulating labs. With asynchronous work, you need to be able to work on a task, figure out what is needed from others and share that with the right people asynchronously, then move on to another task while waiting for that information. Short touch base meetings daily enable regular communication for bringing in others to get the information you need immediately. Dynamics and interactions of teams (communications) keep people motivated, keep synergy with daily checks in, spend time checking in with varied roles such as an MC, encouraging time to share.

### Breakout Room Three

Facilitator: Gretchen Stahlman

Scribe: Richard Oram

1. What have you done at your facilities with communication, Education and Public Outreach/Engagement to adapt to COVID19, Opportunities.
  - Started doing an unconference. A space for teachers to join together to share.
  - Virtual booth. Kumospace space. <https://www.kumospace.com/> Event space for hanging out.
  - Ship to shore virtual. Was able to do more connection to student to crew and scientist.
  - Have now gone nation-wide.
  - We have added a social media presence.
2. What lessons were learned,
  - We can do it. We learnt that their things that we can do.
  - We learnt that we could be flexible. There was something of an attitude shift.
3. How will your EPO/E activities change in the future post-COVID based on lessons learned?
  - Positive that we have had to think about the box. Hopefully this will continue.
  - Don't have a timeline yet for starting up any in-person activities.

Other questions that came up.

4. Is any of this detrimental to in person activities?
  - No, we think it may augment
  - I agree regular visitors are not as tech savvy as virtual visitors.
  - Have now gone nationwide.
5. Are there customers that you have not be able to reach?
  - In US. Native American is hard. Internet coverage is not good.
  - In some cases, more laptops have been handed out to students because of COVID.
6. What about fiscal issues?
  - Going virtual has reduced budget significantly.
  - Do a lot of building projects. Have taken supplies to the schools. Students seems to be more involved over a longer period.
  - Making certain that there is equitable access to materials. Shipping costs have been significant.
  - No income from gift shop and site visits but since not travel then it balances out.
  - We are thinking about a virtual gift shop.
  - Wish that we had moved more quickly on looking for private funds.
7. What are future plans for hands on?
  - Very significant problem for hands on since internships have not been possible.
  - Interns have had more access to seminars have been
8. Is any of these new virtual skills detrimental to in person activities?
  - No, we think it may augment
  - I agree regular visitors are not as tech savvy as virtual visitors.
  - Internships want more connections across internship and more opportunities to socialize.

### Breakout Room Four

Facilitator Adam Talamantes

Scribe: Adam Talamantes

- Plan cautiously to make sure meets partners' standards, so if they are more stringent you probably have met them.
- International Covid restrictions from citizens and institutions
  - Minimize risk by limiting partners from specific groups.
  - Public, private,
  - CDC more followed
- Agencies requiring testing vs not, roadblock to collaboration for COVID.

#### Medical Consultation

- Testing
- Tough points
- Isolation procedure
- PCR post and after travel
- Had 2 people catch it, 14 have it
- Health protocols for
  - How to change Vaccine required sailing.  
Leveraging social relationships – who knows them and can get them there? Buy-in?
    - Teachers
      - To their youth
    - Faculty
      - To their youth
      - to emails to target faculty.
    - Community
      - Create inviting space.
      - Plan around community drop-offs
- Who are we reaching?
- Applications, views, guess for numbers.
- Hybrid instruction
  - What do they do in person vs at home?
  - Health concerns
  - Using kits

### Breakout Room Five

Facilitator: Roxanne Hughes

Scribe: Kristin Roberts

- Yes, we expanded but are we reaching diverse audience
- How to maintain accessibility as we move to hybrid portfolios
- Prioritizing user experience



## Large Facilities Workshop – 2021 April Webinar –Summary of Issues Raised in Breakout Sessions

- How to balance and new international national audience balance with pre-pandemic audiences, like valuable local audiences
- How COVID-19 helped us advance some offerings
  - 360 tours
  - New content
  - Existing content found more use
- Virtual events to more conversational and less lecture based
- Value of pre-registration for virtual events.
- Virtual recruiting, successful and will likely stay.

### Breakout Room Six

Facilitator: Peter Michaud

Scribe: Rich Kaczmarek

- Focused on visitors center; virtual mentors, life-research balance (working/operating hours 24/7 (“information revolution” similar to “industrial revolution”), perhaps based on how organized one was); free large course offerings, learned about very large demand/larger audiences in virtual settings, summer camps cancelled (replaced by virtual), some programs put off, how to organize local versus national, versus Global outreach;
- Virtual summer camps with rewards for participation (T-shirts); science-coffee-story sessions; sunsetting some ‘idle’ programs; ½ size of groups; synch and a-synch sessions; mailing and dropping materials off; limited building occupancy (e.g. instructors only); captioning and translating (tricky to begin and even more considering dialect, such as Chilean Spanish);
- Using captioning and translating videoconferencing platforms (Zoom, etc.); sign language; limiting access due to security concerns, vulgarity/trolling/‘cyber-bombing’/offends

Yasmin Catricheo

- Accessibility Issues How to include Indigenous people in activities
  - having face to face is more engaging for them and easy.
- Indigenous peoples tend to not have as much Wi-Fi accessibility or experience with Zoom
- Challenge to think about: how our programs can reach indigenous communities
  - How to include indigenous people can feel represented in scientific activities.

### Breakout Room Seven

Facilitator: Robin Nelson

Scribe: Alexa Strid

- The creation of an interactive summer program that engaged students across the country with and on materials and interaction with scientists.
- Are we reaching students in alternative time zones? National programs need to be all-encompassing. Time zones MUST be considered
- With regard to review panels, international > National > Regional > local
- Problem presented from COVID. How do we go back? Permanent change to how we interact with our physical environment.

## Large Facilities Workshop – 2021 April Webinar –Summary of Issues Raised in Breakout Sessions

- Journey Through the Universe Program: 18 years. Department of education and other business organizations. Difficult to take local program and implement on a national basis. Main issue is time zone.
- Rather be in the classroom
- Getting materials to students
  - Consider the mailing costs
  - Example: in Canada, sending info to remote communities is a challenge.
  - Sending physical materials is a challenge
  - Must consider what's going on in the communities (rural and urban)
  - Reaching underserved communities
- Costs are a major barrier. Falls on all teachers to cover the costs of materials. Will result in decreased participation
- Interactive Summer Programs that have private funding are rare but can be hugely impactful.
- How have we adapted our public outreach since COVID?
  - Annual Astro Day: providing all materials for the kits, so kids can come and participate.  
One way of coping
  - Kids can pick up kits with QR codes that link them to the activity
- Adapted/ Success Stories
  - Translating materials into multiple languages, increase participation.
  - Utilizing other platforms (videos, YouTube)
  - Hitting all age groups
  - Increased advertising