Gemini Observatory Commentary
on the UCG 2021 Report

*Joanna Thomas-Osip, Andy Adamson, Adam Bolton, German Gimeno, Janice Lee,
Bryan Miller, Fredrik Rantakyrö, and Julia Scharwaechter*

The Observatory thanks the UCG for their report following their July 2021 meeting, and for their support of our remote meeting format as the Observatory has navigated the pandemic.   In preparation for the 2022 meeting, we provide here some updates and responses to the issues raised.

1. **Opportunities for Support through NOIRLab's CSDC**
   1.1. NSF has decided not to fund the full scope of the proposed CSDC activity in the 5-year plan. We are currently in the process of re-planning, which we expect to continue through FY23 in conjunction with NSF's development of plans to respond to the Astro2020 recommendations in the areas of software development and data science.
   1.2. CSDC includes the US National Gemini Office, the operation of the NOIRLab US Time Allocation Committee, and several data-intensive astronomy projects including the Astro Data Lab science platform. Currently, CSDC and Gemini are separately managed Programs within NOIRLab, with separate funding and reporting lines to the NOIRLab Director. A common matrix workforce management framework manages scientific and engineering staff in Gemini and CSDC. This framework is currently limited to managing which staff is assigned to which programs. NOIRLab is currently exploring ways in which teams and projects (not just individual staff assignments) could be managed jointly across multiple Programs such as Gemini and CSDC.
   1.3. Options to implement a more transparent connection between the Gemini and US NGO web pages are under development.
   1.4. Improved support for hosting high-level science products, including the possibility to extend these services to smaller PI-driven programs, is under discussion in the context of available resources. While the priority focus will be on LLP data, the same infrastructure could also apply to data products from smaller PI-driven programs. The concept is to provide a facility similar to the STScI/MAST HLSP hosting service (https://archive.stsci.edu/hlsp), but with additional integration into NOIRLab-based services such as archives, catalog databases, image cutouts, Jupyter notebooks, and (forthcoming) access to reduced spectra.
   1.5. NSF is aware of the enabling role of community funding for PIs to generate data products. NOIRLab is not currently able to provide such funding. This topic is directly addressed in the recommendations of Astro2020, and we expect it will be under consideration as NSF plans its broader response.
2. **GPP**
   2.1. We are using every opportunity to give demos and present updates. So far this includes Gemini staff meetings, the Gemini Science Meetings, and AAS and CASCA meetings.

We will try to give presentations at other participant national meetings. We are collecting names of interested testers and are reaching out to them for feedback.

2.2. The idea of experienced users hosting workshops at various universities is an interesting idea that we will investigate in the transition to operations plan. It is uncertain yet whether we can pay for these.

2.3. We are hoping to create a library of YouTube video tutorials similar to those currently available for the OT and PIT. As a start we are posting recordings of our major talks and demos at the Operations Development web page.

2.4. We have a form for collecting feature requests and suggestions from the general community. Our long-term testers will also have access to testing spreadsheets and be able to comment or vote on other's suggestions. We are considering options for community upvoting in the future (e.g., a Discourse forum such as the Rubin community forum).

3. DRAGONS

3.1. We are building the foundations of a sustainable, extensible, user friendly product using software development best practices including investing in reusable generic algorithms that will make future development more efficient. Further details and timelines will be provided in presentations at the 2022 UCG meeting as well as the concurrent Gemini Science Meeting.

3.2. With the PypeIt team, we have begun to explore potential areas for collaboration in partnership with the USNGO. Optical spectra that were used by the USNGO for testing of Gemini IRAF, DRAGONS, and PypeIt were provided to PypeIt team.

4. GMOS flat-fielding and photometry

4.1. Documentation has been added to the GMOS web pages describing the flat-fielding and photometric calibration for imaging mosaics of the three Hamamatsu CCDs with different QE including mitigation strategies for program design as well as an example of using Gemini IRAF to flatten wide field imaging with relaxed photometric constraints.

4.2. DRAGONS 3.1 will contain a new recipe that allows the three CCDs to be reduced independently.

5. Response to Last Year's Report

5.1. Visiting Instruments are all different, each with one of a kind agreements with the observatory and enforcing a standardization of documentation (to any particular format including ReadTheDocs) would likely discourage new applications.

5.2. Integration of the UCG into the larger NOIRLab structure may not be an efficient use of committee member's time. Instead Gemini staff should be responsible for communicating relevant feedback to the necessary NOIRLab parties.

5.3. As discussed in the commentary on the 2019 UCG report, the effort required to implement milli-second timing accuracy for current instruments is outside our available resources. This will be a requirement for new instruments only.