Report of Gemini's Science and Technology Advisory Committee (STAC), May 2023

The STAC held its twenty-fourth meeting on 22-23 May 2023, in hybrid format (meeting in Hilo, Hawaii, and in hybrid format).

STAC Membership

Craig Heinke, Chair	Damián Mast
Henri Plana, Deputy Chair	Rene Mendez
Ivana Damjanov	Jenny Patience
James De Buizer	Benjamin Shappee
Maria Drout	Breann Sitarski
Ryan Foley	Gelys Trancho
Jae-Joon Lee	Ashley Villar

Congratulations

23.0 The STAC congratulates the Observatory on the successful repair of the Gemini-North primary mirror, its recoating, and Gemini-North's imminent return on-sky.

23.1 The STAC congratulates the Observatory on the completion of the GHOST commissioning and system (aka science) verification observations.

23.2 The STAC congratulates the Observatory on the successful commissioning of the GNIRS LR-IFU and the good progress made with the HR-IFU.

23.3 The STAC extends its congratulations to the Observatory for the commendable efforts put forth in the GNAO/GIRMOS OPS/SW PDR. The dedicated work undertaken in this regard is truly praiseworthy. The identification of the necessary interaction and software requirements between GNAO, GIRMOS, and Gemini software will play a pivotal role in ensuring the successful commissioning of the project.

Recommendations/Endorsements

23.4 The STAC endorses most aspects of the Observatory's framework for transitioning new facility instruments from commissioning to regular science operations. The four phases are logical and appropriate. The STAC does suggest that Gemini consider, for SV of instruments after GHOST, arranging the opportunity for community members to suggest themselves as SV team members (e.g. by submitting 1-page statements of interest, or via a Google Form answering a few relevant questions). This is motivated by a desire to avoid any appearance that opportunities are only available to certain community members. Though we recognize that this would add some effort, the number of applicants is not likely to be high.

The STAC notes that “SV” meant Science Verification for GRACES, Zorro & Alopeke, GMOS Hamamatsu detectors, MAROON-X, etc., and for other observatories like VLT, Keck, SOAR, DKIST, CTA, Spitzer, CFHT, Subaru, etc., but has been interpreted as Systems Verification for GHOST (though the same interpretation has been used by MeerKAT). Perhaps it would be better to return to “Science Verification” now, rather than lock in a use of terminology that may confuse the community.

23.5 The STAC endorses the Observatory’s suggested guiding principles regarding compensatory time (CT), specifying that it is for science operations, that targets are to be specified on a per-semester basis, etc. As part of the normal process we expect the STAC to be consulted on the final proposed specific CT agreements.

23.6 Prior to each STAC meeting, it would be helpful to see the risk register report for each of the development projects and a status on the mitigation steps being implemented to minimize a risk’s impact. Risks that have impacts to the technical performance of an instrument or the Observatory, or schedule or cost implications should be included in the register.

23.7 The STAC appreciates the Observatory’s focus on improving safety during operations. The STAC would be interested in including in future Ops Reports a high-level summary of safety metrics over the previous semester.

23.8 We greatly appreciate the valuable insights provided by the current science metrics report released by the Gemini Observatory. To further enhance collaboration and information sharing, we suggest creating an interactive website for science metrics reporting, similar to the successful implementation done by the sustainability group at NOIRLab/Gemini using Looker Studio (e.g. https://lookerstudio.google.com/u/0/reporting/ce686bcc-9477-4f7c-bd3d-7085dd360b29/page/p_llq3sgn10c).

An interactive website would allow stakeholders, including National Gemini Offices (NGOs), to actively engage with the data and filter it based on their specific needs. This would facilitate targeted understanding of the Observatory's scientific contributions and foster collaboration between the Observatory and NGOs.

23.9 The STAC would like to recommend several changes to the Terms of Reference for the STAC, enumerated below:
23.9.1: In the first section, point 4 currently says:
“Assist the Board and the Gemini Director, through the National Gemini Offices, in keeping partner communities well informed as to the status, background and motivation for the Gemini Observatory’s scientific and technical planning.”
We suggest altering this to
“Where possible or when requested, assist the Board, the Gemini Director and the National Gemini Offices in keeping partner communities informed as to the status, background and

motivation for the Gemini Observatory's scientific and technical planning."

23.9.2: Under "Structure and Membership", the sentence
"Each Designated Board member will inform the Board of their choice of new STAC member(s) at the Board meeting preceding the last meeting of the outgoing STAC member." sets an unreasonable expectation that new STAC members will be selected one full year before their first meeting. We suggest a more reasonable target of 6 months, and thus that the line be changed to
"Each Designated Board member will inform the Board of their choice of new STAC member(s) at the Board meeting coinciding with the last meeting of the outgoing STAC member."
Importantly, the last section, on "Instrument Science Teams", plans an intricate and lengthy involvement of STAC members in the design, development, science verification, etc. of instruments. The STAC feels that this process does not seem appropriate, and suggests removing this section.
23.9.3: However, we recommend adding a new section, titled "Instrument Point of Contact", with this suggested wording:
"Each STAC member will be designated a Point of Contact for one or more facility instruments, active or in development. Each instrument will have at least one Point of Contact. The STAC Point(s) of Contact for an instrument will be kept apprised of important news regarding this instrument by the Observatory. In addition, the Point(s) of Contact for an instrument may participate in appropriate reviews for the instrument, during the design, build, commissioning, SV, or other stages of development. The Point(s) of Contact are identified on the Gemini governance webpage, so that they may respond to questions from the community about an instrument."

23.10 The STAC notes the engineering time estimates provided by the Observatory for 2024A. The STAC hopes that the F2/GeMS commissioning is able to go ahead as planned.

23.11 The STAC is aware that the MAROON-X team is experiencing problems as the funding is running out on this instrument which has shown a very strong user base. The STAC wishes to see a plan and a trade study regarding potential support of this instrument in its continuing role as a visitor instrument or in promoting it to a facility instrument.

23.12 The STAC recommends the following instrument priority list:
GNAO/GIRMOS, SCORPIO, GHOST, IGRINS-2, GPI2, MAROON-X, GEMS improvements, GNIRS IFU & GPOL, IUP, GLAO plan. Until the major work of GHOST is complete, we recommend that it be higher priority than SCORPIO.

23.13 The STAC would like to suggest the possibility of using the IUP as a potential mechanism for enabling new software development (e.g., pipelines for existing instruments). Potentially this method might be able to allocate telescope time in place of cash payment.

23.14 The STAC commends the team for explaining the maintenance plan steps for Gemini Observatory. We strongly encourage the Observatory to follow up on these steps and consider

hiring a full-time Maintenance Coordinator. This addition would enable the observatory to prioritize preventive maintenance, reducing time spent on corrective maintenance and improving overall efficiency.

23.15 The STAC encourages the Observatory to ensure that the GNAO and GIRMOS teams have a plan in place to support software development through and after commissioning.

23.16 The STAC would be interested in seeing an analysis on the impact of using program completion as a metric in scheduling. Specifically, we are concerned about the potential bias this may have on ToO programs or programs with targets only observable (due to RA or timing) later in a semester.

23.17 The STAC is willing to work with the Board to suggest names for a subcommittee to develop a plan for the next Gemini Strategic Plan (2030). Before proposed members are approached, the Observatory should complete the Terms of Reference for this subcommittee, including the timeline for presenting their conclusions and recommendations.

23.18 The STAC appreciates that the Observatory developed the compensatory time (CT) policy that will be awarded to instrument build teams. While the STAC favored the policy in general, some concern was raised for a policy of submitting the targets in two months prior, which is in conflict with current SCORPIO policy allowing the team to submit the targets by the normal deadline. It was suggested that this policy can be relaxed for some conditions, such as when the team wants the target duplication to be resolved during the ITAC process like the normal proposals, specifically to preserve anonymity of targets.

23.19 The STAC would be interested in seeing the software development priority list.

23.20 The STAC wishes to sincerely thank Janice Lee for her years of work as Chief Scientist of Gemini Observatory, and wishes her well in her new position at STScI.

STAC Points of Contact:
ALTAIR: Jennifer Patience
DRAGONS: Gelys Trancho, Damián Mast
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GHOST: Henri Plana
GIRMOS: Gelys Trancho
GMOS: Breann Sitarski, Ivana Damjanov
GNIRS: Damián Mast, James De Buizer
GRACES: Ashley Villar
GPI-2: Breann Sitarski
IGRINS2: Jennifer Patience

Instrument Upgrade Program: Damián Mast
NIRI: Damián Mast
ToOs & AEON: Craig Heinke, Ashley Villar
SCORPIO: Ryan Foley, Maria Drout
Visiting Instruments: Jae-Joon Lee
Default for other issues: Chair

Future STAC Meetings:
The dates for the 2023B meeting have not been finalized as of this writing. Pending Board approval, this meeting will likely be held Nov. 13-14, in hybrid format and in Chile.