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

Dec 11, 2015

The STAC held a meeting on Dec 11, 2015 to review the final reports from the Gemini Instrument Feasibility Studies (GIFS) and develop recommendations for the upcoming Request for Proposals for the next major Gemini instrument (Gen 4#3).

STAC Participants:

Alberto Ardila
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Sarah Martel
Paul Martini - Chair
Laura Parker
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Gemini Participants:

Stephen Goodsell
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Rank-Ordered Recommendations on the Gen 4#3 RfP Process:

1. Core Capabilities: The STAC has identified the following core capabilities for Gen 4#3:
    a. Wavelength range from 0.4 to 1.6μm
    b. Resolving power (λ/Δλ) of at least 4000 with a 1" slit

2. Performance: The STAC emphasizes both instrument throughput and operational efficiency. We define instrument throughput to be measured over the core capability wavelength range, and operational efficiency to mean maximal time on science targets. We particularly emphasize the value of rapid target acquisition, that many targets will be several magnitudes fainter than the sky, and the value of minimizing the time required for nighttime calibrations.

3. Schedule: One of the main science drivers for this instrument is the observation of transients discovered by LSST, and there is significant strategic value in having this instrument *commissioned* in time to take advantage of early LSST science. The STAC strongly recommends that schedule is one of the key evaluation criteria.

We also encourage the Observatory and Gen 4#3 Steering Committee to carefully review how their actions could significantly impact schedule, particularly the instrument contract form and process, schedule and requirements for instrument reviews, and communication of key information to the successful team. We recommend that the Observatory communicate an outline of the planned RfP process early in 2016 so that instrument teams can begin to prepare in advance of their formal release of the RfP.

4. Desired capabilities: The STAC considered many other capabilities that would substantially extend Gen 4#3, but ranked them lower than schedule. The STAC was most excited about extending the spectroscopic coverage into the K-band. Other desirable capabilities (not rank-ordered) are the ability to take advantage of the AO system, an IFU, and further extension to the UV.

We encourage the RfP to welcome these capabilities, as well as others not specified here. Given their potential impact on schedule, these capabilities could take the form of upgrades after the core capabilities have been commissioned.

The STAC commends the four GIFS teams for their comprehensive and thoughtful work.