

2018 Program Operations and Development Plan of the Gemini Observatory



NRC-CMRC



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1 Introduction & Executive Summary

Gemini Observatory is an international partnership, comprised of Full Participants and Limited-Term Collaborators, operating twin 8-meter optical-infrared telescopes in Chile and Hawai'i.

Gemini's mission is:

To advance our knowledge of the Universe by providing the international Gemini Community with forefront access to the entire sky.

As of early 2018, Gemini's Full Participants include Argentina, Brazil, Canada, Chile, the United States, and the University of Hawai'i (site host). Additionally, Gemini is working with several Limited-Term Collaborators, including the Korea Astronomy and Space Science Institute (KASI), Ben-Gurion University, and the Weizmann Institute. The operations and maintenance of the Observatory is managed by the Association of Universities for Research in Astronomy, Inc. (AURA) through a cooperative agreement with the National Science Foundation (NSF). The NSF acts as the Executive Agency on behalf of the international partners.

In this 2018 Program Operations and Development Plan (PODP), we present Gemini's planned principal activities for 2018. Gemini, in 2018, will continue to enable our user community's science by providing optical/infrared access with forefront instruments to the entire sky. We achieve this by making operations and maintenance our highest priority, while also spending significant effort on instrumentation and facility development in order to ensure Gemini remains competitive into the future. In 2018 Gemini will operate at a staffing level of 172 FTE integrated across the calendar year.

In addition to regular operations in 2018, Gemini has numerous projects to maintain its competitiveness, support its users, and provide increased capabilities to users. These include continued work on two new instruments, GHOST and OCTOCAM. Gemini will host visits by several existing and new visiting instruments, providing additional unique capabilities to users beyond the suite of facility instruments. In July 2018 Gemini will hold its triennial Science & Users Meeting in San Francisco, CA, bringing together users from around the world to share results and discuss future plans. In support of its users, Gemini will launch a redesigned webpage and release new data reduction software and cookbooks. These and other projects are described in more detail in this report.

The most significant change coming to Gemini Observatory in 2018 is the planned transition to operating as part of the new National Center for Optical-Infrared Astronomy (NCOA), which combines the operations of Gemini Observatory, National Optical Astronomy Observatories (NOAO), and the future operations of the Large Synoptic Survey Telescope (LSST). However, many details of how Gemini will manage its transition to NCOA can only be defined once the NSF gives formal approval to proceed to implementation, and provides directives to AURA regarding the implementation details and timeline. Once formal approval is obtained (expected in early 2018) and any additional directives are known, Gemini will present to the NSF its plans for the transition to NCOA.

Finally, fiscal responsibility remains critical to Gemini's efficient operations and development of future enhanced capabilities. In 2018 Gemini will manage its spending to stay within -2%; +3% of the approved O&M 2018 Budget (\$28.7M).

2 Science and Engineering Operations

2.1 Regular Operations

Regular day-to-day and night-to-night Operations is the Observatory's top priority. This includes the following items.

- Maintain the instruments and telescopes in working order consistent with the requested science time on sky; monitor performance and take remedial action as needed.
- Run the International Time Allocation Committee (ITAC) process to combine the national TAC results into an executable queue and visitor program consistent with available time, conditions, and instrumentation.
- Support the user community (in conjunction with the NGOs) in preparing their observations for the telescope.
- Provide web-based documentation suitable for PI reference on instrumentation, software and Observatory processes.
- Execute queue observing programs on behalf of the community as required; currently this equates to more than 80% of the observing.
- Support visiting observers in their execution of their own and others' programs on the telescopes.
- Ensure integrity of data (headers & quality control information) entering the Gemini Observatory Archive.
- Support visiting instruments as needed and as possible.
- Propose and execute continual improvements in instrumentation, telescope, and enclosure to maintain performance levels.
- Propose and execute continual improvements in operations software on behalf of the community and for internal usability, to maintain performance levels.
- Propose and execute continual improvements in operations processes on behalf of the user community, with guidance and input from the appropriate committees.
- Provide expertise and input to the Development Division in carrying out major enhancements of instrumentation.
- To ensure economical operations and a consistent interface with the user community, maintain approximate symmetry between the processes, equipment, and staffing at the two Gemini sites.
- Staff the "third" and final level of a helpdesk to respond to queries from the user community. (The first two levels are: (i) NGOs, and (ii) instrument specialists at the NGOs.)

A regular system of preventive and corrective maintenance supports the first requirement of maintaining the instruments, telescopes, and enclosures in working order. Preventive maintenance is carried out at the summits on a regular schedule (daily, weekly, etc. depending on the system) using a system of work orders. More major items requiring additional staffing are handled by planning on a variety of timescales. A central list of major maintenance work is held by the Heads of Engineering Operations and is discussed weekly among engineering managers

and at the quarterly planning meetings. Items are tracked according to progress or completion, and new needs are evaluated before adding to the list and determining a possible schedule.

2.2 Science and Engineering Operations Core Projects and Goals

In addition to the above regular operations support, in 2018 we will commence or continue several projects to improve longer-term sustainability impact or to improve service to users.

Real-time Software Upgrades

The real-time control systems for Gemini were designed and built in the 1990s using state-of-the-art software tools and operating systems of that time. These systems are in use every night, but they have not been kept up to date and are now obsolete. We are past the mid-point of a project to upgrade the control software and operating systems of the telescope. During 2017 we successfully completed the first part of these upgrades and we are now working on upgrading the final set of systems. With the completion of this project, Gemini will have standardized the development tools, libraries, software and operating systems of the core telescope control systems, extending their lifetime and greatly simplifying future operations, maintenance and upgrade work. In addition, updated standards and procedures will be generated, so these systems can be kept current for years to come. We expect this work to be finished by Q3/2018.

LSST Fiber Optic Network Connection

The LSST fiber optic between La Serena and Cerro Pachon is physically in place. We are now in the process of procuring the appropriate network electronics to connect the Gemini network to it. We expect this to be our default link to the summit by the end of Q2 2018.

LSST Follow-up System Integration

Gemini is involved in the planning of the NOAO-led LSST follow-up system. The first practical stage of the work is to link Las Cumbres Observatory with the ANTARES broker at NOAO, and the SOAR telescope on Cerro Pachon. Our involvement in this stage of the work is to ensure that what emerges is not incompatible with future integration of Gemini into the same network. In parallel with this we anticipate commencing a Gemini internal project in Q2 of 2018, aimed at setting requirements in parallel with the first stage described above, with a view to completing that by the end of Q3. We expect work on the actual integration to commence, some of it in parallel with the OCS upgrade, in Q4 2018.

Science Operations Improvements

As shown in the Annual Progress Report for 2017, some items of the first round of Science Operations Model Upgrades remain to be completed, and these will take priority over starting new items in 2018. Specifically: (i) in May 2018 we expect to give the final report to the STAC/Board on the effect of balancing allocated time rather than executed time; (ii) we will fully specify the way in which communications on program support will be stored within the new OCS; (iii) we will continue to welcome visits from new NGO staff members; (iv) the external web-page redesign will start in Q2, following the provision of policies and standards via closeout of the Digital Governance implementation plan (see *Section 3.1*); and (v) we will resume work on the external helpdesk, building on the version that was implemented for the internal desk. It is possible that this will be completed by year end, 2018. One item from the first round which will receive initial effort is Adaptive Queue Planning, which will be the subject of requirements gathering both internally and in conjunction with our involvement in the LSST follow-up System. Coding will not begin in earnest within 2018. One additional item that was not included in the first round of review outcomes, is to rewrite the Gemini mask-making software (GMMPS) in a

collaborative project with other AURA observatories. Since this involves external effort we do not specify a completion date, but have already had initial discussions with SOAR and CTIO and may complete requirements analysis by mid-year 2018.

Gemini North Energy Savings

In 2018 we will complete the GN Energy Savings Project, including: (a) Upgrade the GN summit chilled water system with an air cooled fluid cooler and a high efficiency modular chiller and; (b) Replace seven existing HBF AC systems with eight new high efficiency AC systems. We anticipate completion of this project in 2018Q2.

2.3 Information Technology Services (ITS)

Information Technology Services (ITS) supports every area of Gemini Observatory operations with its responsibility to provide, maintain, and upgrade software and hardware for use by the staff and visitors of Gemini. This includes providing computers to new staff and upgrading obsolescent computers while also maintaining high levels of security for Gemini's systems. Additionally, in 2018 we have projects to upgrade VMware systems, replace firewall components, increase NetApp storage, and implement additional network upgrades.

The more major project within ITS in 2018 is to rebuild the Plan for the Week and the HelpDesk. This work began in 2017 with the rebuild of the internally facing HelpDesk. In 2018 we will complete this project, providing a more efficient, flexible, and maintainable system for the future.

2.4 Software

In 2018 we will continue with the Observatory Control System (OCS) upgrade and Telescope Control Console (TCC) software upgrade. While we will prepare for the Adaptive Queue planning project in 2018, significant work on that project will not commence until 2019.

2.4.1 Observatory Control System (OCS) upgrade

Objective: The next phase of this multi-year program will provide a new integrated system for submitting and preparing proposals and for planning and executing the resulting observations. The first projects will focus on enabling communications between the tools employed at various stages in the science program lifecycle. During 2018 we expect to complete the concept of operations for this upgraded system and finalize the core software infrastructure that will support it. In addition, the first prototype of this system will be available for user verification and feedback.

Milestones:

- Observatory Control System Concept of Operations updated - Q1 2018
- Core OCS software infrastructure completed - Q3 2018
- First tool prototype, with editors for instrument and their sequences - Q3 2018
- Begin software modeling work to support OCS planning tools, including Adaptive Queue Planning and LSST integration - Q4 2018

2.4.2 Telescope Control Console (TCC) software upgrade

Objective: An improved version of the TCC that simplifies and rationalizes the user interfaces to maximize observing efficiency and minimize errors, while reducing the longer term costs of maintaining the TCC software by using modern software technologies and delivering a test suite to perform regression testing of the tool.

Milestones:

- Complete Phase I in 2018 (Study and document the current configuration at both sites and define top level requirements for the system).
- Agile Software development and testing effort to be started in Q4/2018 and extending throughout 2019, with initial operations rollout by end of 2019.

2.5 Longevity

For 2018, the primary goal of the Infrastructure Sustainability and Scientific Longevity Program will be to carry out the highest priority items identified in the 2016 Obsolescence Plan. In addition, the Program will be expanded to meet the new objective - to adapt the Observatory to remain scientifically relevant beyond 2025 by renewing and upgrading our facilities. To meet the new objective, we will work with managers and staff in all departments, not only engineering and computing, to find areas where the efficiency of the telescope may be improved, daily operations streamlined, and hardware, software and processes may be updated proactively based on input from experts in all areas of the Observatory. All projects undertaken in the Longevity Program will be carried out in coordination with, and with the assistance of, staff in the departments affected by any changes.

The tasks with the highest priority for 2018 are as follows:

- Repair or replace components needed to maintain Altair, in coordination with the Development group's planned RTC upgrade
- Procure and commission updates and upgrades to the A&G systems, based on the outcomes of 2017 Options Studies
- Procure computing backup infrastructure
- Procure and test replacements or upgrades to components identified in ongoing Options Studies for synchrobus, M2 central electronics module, and SDSU/VME interfaces

2.6 Science Research

The Gemini Observatory values the research activity and results of Gemini staff. Staff research should advance the Observatory mission, including the recruitment and retention of staff who have skills that the Observatory requires. Effort toward research requires planning and accountability. We support staff initiatives to promote the research environment and culture at both sites. In 2018 we will continue to internally review and maintain individual research plans.

3 Science User Support

The Science User Support Department (SUSD) advocates for the users and enables Gemini Principal Investigators to produce world-class scientific results in a timely manner. The SUSD leads post-observing user support. Its staff maintain a data reduction package for the user community that enables astronomers to remove instrumental signatures from data obtained using Gemini facility instruments, and they support users in its use. The SUSD maintains communications between the Observatory and the National Gemini Offices and ensures that NGO staff members receive appropriate training.

3.1 Creation of a New Public Website

Objective: Transition from our current website, which is more like an ad-hoc collection of references, to a website that is User-Centric. This will involve restructuring the website at all levels, so it better addresses the needs of our stakeholders.

Deliverables and Milestones:

- Website concept including requirements for style and structure - Mar 2018
- Website prototype and testing report - Aug 2018
- New website - Jan 2019 (assessment and iteration continues through 2019)

3.2 Data Reduction Software and Documentation Development

Objective: Python data reduction software for all facility instruments and increased science productivity based on Gemini science data. This multi-year project will remove our dependence on antiquated and soon to be obsolete IRAF and enable archive science.

Deliverables and Milestones:

- Final Gemini IRAF release to support FLAMINGOS-2 MOS - Mar 2018
- FLAMINGOS-2 Data Reduction Cookbook release - Mar 2018
- First DRAGONS (Data Reduction for Astronomy at Gemini Observatory North and South) release to support all facility imagers - June 2018.
- Real-time or next-day reduced imaging products available in GOA - Sep 2018

3.3 Gemini Science & Users Meeting 2018

Objective: Bring together a large sample of the Gemini Users' community to present their science results, obtained from Gemini observations; update the community on current Gemini capabilities and future development plans.

Deliverables: The meeting will be held July 22-26, 2018, in San Francisco, CA. We plan to deliver a strong program of science talks with wide representation across science areas, participant nationality, etc. There will also be updates from the Observatory directorate and staff members about Gemini operations, proposal modes, current instrumentation, projects in development, and strategic planning. The program will include a conference dinner and poster session. The main long-term deliverable, lasting beyond the meeting itself, will be direct communication with, and stronger connection to, the Gemini user community.

4 Instrumentation and Facility Development

4.1 GHOST

Objective: Provide Gemini a workhorse instrument capable of quality optical high-resolution spectroscopic observations as a response to community input, STAC recommendations, and Board directives.

Deliverables: The major deliverable is a fully-commissioned high-resolution optical spectrograph to the Gemini community ready for operation.

2018 Milestones:

- Cassegrain unit shipped to Gemini South
- Cassegrain unit and fiber bundle integrated at Gemini South
- Pre-delivery spectrograph acceptance testing

4.2 OCTOCAM

Objective: Provide Gemini a highly capable, broadband imager / spectrograph that simultaneously and continuously covers wavelengths from the optical to infrared, focused on supporting LSST-inspired observations at Gemini South.

Deliverables: The major deliverable is a fully-commissioned broadband imager and spectrograph to the Gemini community ready for operation.

2018 Milestones

- Finalize new management structure
- Complete Preliminary Design Review
- Start Critical Design Stage

4.3 Gemini North Toptica Laser Guide Star

Objective: This project replaces the non-functional Gemini North laser with a Toptica laser identical to that installed for GeMS at Gemini South.

Deliverables: The major deliverable is a fully-commissioned Toptica Laser for Altair to the Gemini community ready for operation.

2018 Milestones

- Install on telescope
- Complete commissioning
- Make laser available to users

4.4 GPI Relocation Studies

Objective: Determine if moving GPI to Gemini North after GHOST arrives at Gemini South is worthwhile.

Deliverables: The first deliverable is a feasibility study report that outlines what is needed to move GPI to GN and explores the scientific value of doing so. Depending on the results of this report, we may also commission an upgrade study that outlines what upgrades we should consider during the move to make GPI more productive at Gemini North. If we decide to move GPI, it would be no earlier than 2019 before we do so, possibly later, depending on the progress of the GPIES and any other outstanding GPI campaigns and the results of these studies.

2018 Milestones & Decisions:

- Complete relocation feasibility study
- Determine whether or not to commission an upgrade study

4.5 Visitor Instruments

Gemini Observatory has a strong commitment to meeting our community's instrumentation needs. Through our Visiting Instrument Program, we have the ability to provide unique

instruments, some of which have broad appeal and others that are most applicable to niche areas of science or those that might be high profile at any given time, for a fraction of the cost of Facility Instruments.

Objective: Provide Gemini users with a wider range of instruments for their science and the opportunity to pursue their science with specific instruments they can access as needed.

Deliverables

The program outcomes will be measured in terms of utility to the community (i.e., the number of science proposals submitted and accepted in any given semester) and in terms of maintaining the scientific relevance of the Gemini telescopes (i.e., the number of publications and impact factor generated by Visiting Instruments.) There is a time lag between data taking and science publication of 2-3 years, and so monitoring the number of proposals will help to bridge this gap.

2018 Events & Milestones

- DSSI (GS) Observing Run - Q1 2018
- DSSI-2 'Alopeke (GN) Observing Run - Q1-Q4 2018
- IGRINS (GS) Commissioning - April 1-8, 2018
- IGRINS (GS) Observing Runs - April - July 2018
- HIPPI-2 (GN) Commissioning - Q2 2018
- GIRMOS Conceptual Design Review - Q3 2018
- MAROON-X (GN) Commissioning - Q4 2018

4.6 Instrument Upgrades

4.6.1 Instrument Upgrade Program

Objective: In order to maintain the competitiveness of Gemini's current instruments, and to provide more opportunities for community instrument teams and scientists to work with Gemini, we launched an instrument upgrade program in 2015 that solicits proposals from the community. The baseline plan is to have annual calls for proposals with funding alternating between \$100,000 USD and \$600,000 USD every year.

2018 Decision Points & Milestones:

- Begin project(s) from 2017 call
- Launch 2018 Call for Proposals

4.6.2 GNIRS Detector Controller

Objective: Replace the obsolete detector controller for GNIRS. The new controller might also fix the current noise problems, but if not, is a necessary first step for debugging the issue. Once complete, we may decide to replace the similar NIRI controller the same way.

Deliverables: The main project deliverable is a fully-integrated new detector controller for GNIRS operations. This project will not be completed in 2018.

2018 Milestones: This project is relatively low priority. 2018's goals include assembling a working ARC controller with an Aladdin detector in a lab environment.

4.7 Altair RTC Upgrades

Objectives: Improve reliability, maintainability, and capability of ALTAIR with a new realtime computer (RTC) by: (1) Ensuring that the baseline functionality and reliability of ALTAIR is maintained for the next 10 years; (2) Providing spares or replacing parts that can become obsolete; and (3) Studying and providing capability improvement as prioritized by science team. We have not yet decided if we will contract this work out or do it in house.

Deliverables: The project's primary deliverable is a new RTC that meets the above aims: maintainable baseline functionality and improved options for increased performance.

2018 Milestones: Detailed 2018 milestones depend on the 2018 decision point of whether to proceed with this work in-house or with an external contractor.

- Initiate project
- Determine detailed requirements for RTC, including basic hardware architecture
- Start work, either as an in-house effort or by initiating a contract with NRC-H

4.8 GeMS NGS2

Objective: Develop and install a new NGS WFS for Canopus. Work is primarily planned to be done via a contract with ANU.

Deliverables:

- A camera constructed by ANU which will be installed in Canopus by ANU and Gemini personnel
- Complete documentation of the system architecture and typical modes of use

2018 Milestones:

- Shipping and Delivery Acceptance
- Integration into GeMS
- On-sky Testing
- High-Level Software changes complete
- SV call
- External User Documentation complete
- Acceptance into Operations

5 Administration & Facilities and Safety

5.1 Finance and Administration

Administration provides cost-effective administrative support and delivers timely and accurate information to management and governance. The Administration and Facilities Group (AFG) supports in the areas of facilities, infrastructure, fleet, administration, visitor services, and travel services to staff and visitors. The Finance team delivers financial guidance and information to management to support executing budgets within the Board authorized limits.

Specific goals for 2018, to be completed by the end of the year.

- Budgetary Responsibility
Finish 2017 within [-2%; +3%] of the requested O&M Budget (\$28.7M). Continue to promote accountability among the budget account managers.

- **Facilities Services**
In the continuous effort to provide safe and superior workplaces for Gemini's employees, AFG-N will complete the replacement of seven existing HBF AC systems with eight new high efficiency AC systems.

5.2 Safety

The Safety program ensures a safe and healthy environment for employees and visitors. Gemini's working culture explicitly emphasizes safety of people and equipment. Safety will fully integrate safety into the Observatory operational activities, and will work jointly with partner telescopes on Cerro Pachón and Maunakea to establish shared Safety programs that combine best practices and resources.

Specific goals to complete by the end of 2018 follow.

- **Staff Safety**
Continue providing and assuring a safe and healthy environment for employees and visitors. Provide modern Safety tools and systems and achieve a 90% completion of the mandatory Level A and 80% of the mandatory Level B safety training.
- **Safety Operations**
Consolidate a Safety group at Gemini that delivers Safety services in a way that is coherent with the Safety programs of co-located NSF-funded centers in Chile. Establish synergies and sharing of Safety resources with CFHT and other Maunakea telescopes.
- **Managers' Safety Responsibilities**
Assist Gemini Managers to perform the Managers' Safety tasks required in OSHA's standards and Gemini's Safety program. Suggest actions to eliminate the Safety hazards identified in the regular Safety walkthroughs.

6 Public Information and Outreach (PIO)

New initiatives for Gemini's Public Information and Outreach in 2018 include:

- Digital Governance (DG) implementation and Web redesign (including web redesign coordination with AURA) - Full implementation of DG framework (working groups etc.) will be completed by Q2, with Web redesign planning underway and implementation initiated by Q3.
- Eclipse planning for 2019 Chile eclipse, educational programming implementation in coordination with AURA-O (schedule/plan TBD by AURA-O, Gemini staff involvement in plan fully defined by Q4)
- Planning for visual identity redesign (logo). Plan approved/denied by Q2, implementation of plan initiated by Q3 if approved.
- Educational assessment of GN local career awareness programming, surveys developed by Q2, executed in Q3, results delivered in Q4 with recommendations for programmatic modifications based on results.
- Support of NCOA communications strategy, development and implementation, schedule/plan TBD
- 2018 GSM support (Science and Evolution of Gemini) in San Francisco, completed by Q3

- Expanded coordination with AURA communications efforts as well as other AURA centers, ongoing throughout 2018 completed in Q4
- Documentation of Blanco (July) and SOAR (October) mirror coatings at GS completed by Q4
- Development of formal policy and new procedures for tours at both GN and GS completed by Q2, full implementation by Q3
- Establishing expanded partnerships with 5 local (Chile) student/school astronomy clubs with a minimum of 2 new programs/events completed by Q4
- Pilot project to form female student (~10 year-olds) astronomy club in La Serena based at Gemini/AURA plan completed by Q2, pilot implementation by Q4

Continuation of existing Gemini PIO programming (all completed by Q4), including:

- Ongoing local outreach programming (Journey, Viaje, AstroDay(s), StarLab) will continue as in prior years and continue to focus on observatory careers and other opportunities provided by Gemini to our local host communities.
- Facility tour coordination and delivery will continue as in previous years (note item above on the development of new formal policies for summit facility tours).
- General communications (publications, press releases, social media) will continue as in prior years with a goal of a minimum of 8 press releases during the course of the year, and quarterly publication of GeminiFocus; monthly production and distribution of e-newscast; and regular social media content as appropriate.
- Annual Communications/Outreach internship will continue at Gemini North, with consideration of additional opportunities for students as appropriate.
- WWW content development will continue as appropriate and support of website redesign as noted above.
- Library functions will continue with emphasis on journal subscriptions, science paper tracking and securing publications for staff as requested.
- Professional conference participation and support (CAP, AAS, staff training experiences)
- Coordination with Science User Support Group communications efforts and implementation of strategic communications plan developed in 2017
- Career resources program integration into local outreach programming and development of additional expanded career sheets (8.5x11") on a minimum of four staff (two from each site)

7 External Relations

In 2018, Gemini's goal is to maintain and grow a strong international partnership amongst the Full Participants in the International Agreement and Gemini's Limited-Term Collaborators.

Toward this goal:

- Members of the Gemini Directorate and Staff will attend each of the Participant's major national astronomy meetings.

- The Gemini Directorate will lead the development of memoranda of understanding with any new limited-term collaborators.
- The Gemini Directorate will work with the Gemini Board to engage potential new full participants to the Gemini International Agreement.
- The Gemini Directorate will work closely with the Gemini Board leading to the International Agreement Assessment Point in late 2018.
- Gemini will host the triennial Gemini Science & Users Meeting. (See *Section 3.3*.)
- Gemini will finalize its Strategic Plan for Beyond 2021. (See below.)

7.1 Strategic Plan for Beyond 2021

The Gemini Board of Directors has approved a Strategic Vision for Gemini Observatory for the decade 2021-2030. The Board instructed the Observatory to develop a Strategic Plan, which is a detailed roadmap for reaching the goals outlined in the Strategic Vision. The Plan must also include and encourage a capacity for responding to new opportunities, changes in budget, and a changing landscape of astronomical facilities. An initial outline has been developed for the Strategic Plan, and this outline was approved at the November 2017 Board meeting.

In 2018 the Observatory will focus on turning the current outline into a detailed plan, which will include the following key elements:

- Preserving and enhancing PI-driven science at Gemini;
- Making Gemini South the premier facility for LSST follow-up in the coming decade; and
- Developing further the adaptive optics capabilities at Gemini North.

The key requirements and milestones will be specified in each of these three areas, under various funding scenarios. A draft of the Strategic Plan will be available by late February, and an update will be presented at the May 2018 Governance meetings. A presentation of an advanced draft of the Strategic Plan will be given to the Gemini community at the July 2018 Science and Users Meeting. The final version will be presented to the Gemini Board at its November 2018 meeting.

8 Transition to NCOA

In late 2016 NSF requested AURA to begin planning a reorganization of NSF-funded ground-based OIR assets, which include NOAO, Gemini, and the future operations of LSST, into a single reorganized executive organization, provisionally named the National Center for Optical-Infrared Astronomy (NCOA). The Organization, Management, and Operation (OMO) Plan produced by AURA in response to the NSF request is currently under review at the NSF, with a decision expected in early 2018. At its November 2017 meeting, the Gemini Board issued the resolution:

2017.B.9. The Board endorses the concept, as outlined in the “NCOA Organization, Management, and Operation Plan” document, for restructuring optical-infrared assets that include NOAO programs and operations, Gemini Observatory, and LSST operations under a single administrative and managerial framework. The Board is reassured that in this concept Gemini retains financial independence and that strategic vision and

scientific directions remain with the International Participants. The Board looks forward to being engaged throughout the implementation process.

As of late 2017, three AURA NCOA Working Groups, each of which includes Gemini representation, are developing various aspects of the NCOA implementation. However, many details of how Gemini will manage its transition to NCOA can only be defined once the NSF gives formal approval to proceed to implementation and provides directives to AURA regarding the implementation details and timeline.

Once formal approval is obtained (expected in early 2018), Gemini will present to NSF its plans for the transition to NCOA. At the start of 2018, the Director and Deputy Director are spending up to 50% of their effort on NCOA planning and preparation. Additionally, several Department Heads, particularly in ITS and Software, are spending up to 20% of their time on NCOA preparation and planning.

9 Human Resources

Human Resources (HR) plays a key role in supporting Gemini Observatory in recruitment, hiring, and retention of employees. Gemini is committed to cultivating a diverse and inclusive workplace. We focus on increasing staff satisfaction and engagement, as measured by achieving a staff voluntary turnover rate below 6%.

Initiatives in HR in 2018 include:

- Upgrade Ulti-Pro Recruitment Module
- Introduce an On-Boarding Program within Ulti-Pro toward streamlining the on-boarding process for both the new hire and HR
- Implement an Ombudsperson Program
- Implement a Mentorship Program
- Provide American Management Association (AMA) training courses to managers in both Hilo and La Serena
- Support staff and management in the transition to NCOA, including the unification of policies amongst the AURA Centers that will form NCOA and changes in reporting lines

Appendix Acronyms and Abbreviations

A&G	Acquisition and Guiding units
AFG	Administration and Facilities Group
AFG-N	Administration and Facilities Group-North
AFG-S	Administration and Facilities Group-South
'Alopeke	An upgraded version of the DSSI speckle imaging visiting instrument
Altair	Altitude Conjugated Adaptive Optics for Infrared
ANU	Australian National University
AO	Adaptive Optics
AC	Air Conditioning
ARC	Astronomical Research Cameras
AURA	Association of Universities for Research in Astronomy, Inc.
CCD	Charge-Coupled Device
CFHT	Canada-France-Hawaii Telescope
DG	Digital Governance
DM	Deformable Mirror
DM0	Spare DM project for GeMS
DRAGRACES	Data Reduction and Analysis for GRACES
DSSI	Differential Speckle Survey Instrument
ESPaDOnS	Echelle Spectro-Polarimetric Device for the Observation of Stars
F&A	(AURA) Facility & Administrative
FLAMINGOS-2	FLoridA Multi-Aperture Imaging Near-Infrared Grism Observation Spectrometer-2
FT	Fast Turnaround
FTE	Full-Time Equivalent
GBOD	Gemini Board of Directors
GeMS	Gemini Multi-conjugate Adaptive Optics System
Gen4#3	Gemini's next facility class instrument (Generation 4, #3)
GHOST	Gemini High-resolution Optical SpecTROgraph
GMMPS	Gemini MOS mask-making software
GMOS	Gemini Multi-Object Spectrograph
GMOS-N	Gemini Multi-Object Spectrograph-North
GMOS-S	Gemini Multi-Object Spectrograph-South
GN	Gemini North
GNIRS	Gemini Near-Infrared Spectrograph
GOA	Gemini Observatory Archive
GPI	Gemini Planet Imager
GRACES	Gemini Remote Access to Canada-France-Hawaii ESPaDOnS Spectrograph

GS	Gemini South (or Gemini Staff, only in time allocation listing)
GSAOI	Gemini South Adaptive Optics Imager
HBF	Hilo Base Facility
HR	Human Resources
IDF	Instrument Development Fund
IGRINS	Immersion Grating Infrared Spectrometer
ITAC	International Time Allocation Committee
ITS	Information Technology Services
IRAF	Image Reduction and Analysis Facility
JTTU	Journey Through The Universe
LGS	Laser Guide Star
LLP	Large and Long Program
LSST	Large Synoptic Survey Telescope
MOS	Multi-Object Spectroscopy
MOU	Memorandum of Understanding
NGO	National Gemini Office
NGS	Natural Guide Star
NGS2	Natural Guide Star Wavefront Sensor upgrade project (for Gemini South)
NIFS	Near-Infrared Integral Field Spectrometer
NIR	Near-infrared
NIRI	Near Infrared Imager and Spectrometer
NRC-H	National Research Council of Canada, Hertzberg Institute for Astronomy
NSF	National Science Foundation
O&M	Operations and Maintenance (budget fund)
OCS	Observatory Control Systems
OCTOCAM	8-band imaging spectrometer instrument selected to be built as Gen4#3
PI	Principal Investigator
PIO	Public Information and Outreach
PV	Priority Visitor
QAP	Quality Assessment Pipeline
QC	Quality Control
RfP	Request for Proposals
STAC	Science and Technology Advisory Committee
STEM	Science, Technology, Engineering, and Mathematics
SUSD	Science User Support Department
SwRI	Southwest Research Institute
TAC	Time Allocation Committee
TEXES	Texas Echelon X[C]ross Echelle Spectrograph
ToO	Target-of-Opportunity