

**NICI Campaign Request for Proposal
Memorandum of Understanding Form**

**Exhibit A
Statement of Work**

1. Scope of Work. The Campaign Team shall perform all tasks necessary to successfully execute the NICI planet finding campaign which meets all of the Requirements, as set forth in more detail below (the "Work").

2. Contacts. (a) The primary contacts under this Memorandum of Understanding are as follows:

Gemini: Joseph Jensen, Instrument Program Scientist (the "Gemini Representative")

Campaign Manager: _____, (the "Campaign Manager")

Campaign Principal Investigator: _____ (the "PI")

(b) The Campaign Manager and the PI are designated as key personnel of the Campaign Team, and cannot be changed without the consent of Gemini, which consent will not be unreasonably withheld. The Campaign Manager and PI can be the same person.

(c) Although regular informal communications between Gemini and the Campaign Team are encouraged to manage observing runs, explore possible ideas, gather information, etc., all communications that might be construed as direction or permission to modify any aspect of the NICI Campaign requirements must be made by means of written communications between the Gemini Representative and the Campaign Manager. Both parties will explain this requirement to all staff involved in this work, and will ensure that all requirement modifications go through the primary contacts.

(d) The Campaign Team recognizes that the Gemini Representative is the only person with authority to provide direction with regard to the campaign, and that no other person, committee or board has any authority to direct or influence any aspect of the Work. In the event that The Campaign Team receives direction or a suggestion from any other source that it feels has merit, it will communicate the same to the Gemini Representative with its recommendations, and the Gemini Representative will make a decision in consultation with the Campaign Manager.

3. Requirements.

3.1. Requirements. The Campaign Team shall execute the NICI planet finding campaign so that it will meet all of the following (the "Requirements"):

(a) General Description. NICI is designed to detect faint companions to relatively bright stars. It uses an on-board 85-element curvature wavefront sensing adaptive optics system to concentrate the starlight, and a coronagraph to block as much of the starlight as possible. NICI has two imaging channels with separate Aladdin III detectors to simultaneously image in two adjacent narrow bands across the 1.6 micron methane feature. NICI is optimized for discovering gas giant planets and brown dwarfs around nearby stars. Gemini has selected the Campaign Team to execute a search for planets and to discover as much as possible about their properties. The Campaign is described in detail in the Proposal.

(b) Top level requirements include:

- (1) Conduct the planet search survey as described in the Proposal
- (2) Participate in NICI commissioning runs when possible
- (3) Participate in Campaign observing runs when possible
- (4) Submit biannual progress reports to Gemini
- (5) Reduced data products appropriately formatted, documented, and ingested into the Gemini Science Archive for public access
- (6) Submit final written report to Gemini

(c) The Campaign Team shall receive an allocation of up to 500 hours of NICI observing time to execute the Campaign. The time will be allocated by the Gemini Director, with the approval and input of the ITAC, the Gemini Science Working Group over the NICI campaign, and the Gemini Board of Directors. The observing time will be scheduled by the ITAC in blocks of several nights distributed over two to three years. During scheduled NICI Campaign nights, the Campaign observations will be executed unless observing conditions are not good enough, in which case observations will revert to other queue observations with any available Gemini instrument. Observing time will continue to be allocated by the ITAC until 500 hours are exhausted, the Campaign goals are met, three years have passed, or a decision is made by the Gemini Director to halt the Campaign.

(d) If the Campaign Team believes at any time that they will be unable to meet the Requirements, the Campaign Manager will immediately inform the Gemini Representative in writing. The Gemini Representative will then work with the appropriate entities to make a decision whether to modify the campaign scope, modify the Requirements, or cancel the Campaign. The Campaign Team will be consulted and involved in the decision making process, but the final decision will be made by the Gemini Director, and The Campaign Team will follow Gemini's direction in this regard.

(e) The Campaign Team will not be responsible for meeting the Requirements or completing the Work if NICI is delivered significantly late or if it fails to achieve the expected sensitivity. The Gemini Director will decide, in consultation with the Campaign Manager and PI, if the Requirements should be modified to accommodate deviations from predicted performance, or if the Campaign should be cancelled. Gemini will notify the Campaign

Manager and PI in writing if the Requirements are to be modified or the Campaign cancelled. Gemini will not be financially liable for expenses incurred by the Campaign Team.

(f) The Gemini Director will review progress on the Campaign twice a year after receiving the biannual Progress Reports, and will decide whether or not to continue allocating time to the Campaign Team.

4. Specific Tasks and Deliverables.

4.1. Progress Reports. By 31 March and 30 September each year, The Campaign Team will submit written progress reports to Gemini describing the scientific, technical, schedule, and financial progress of the Work as of the end of the previous month. These reports will be presented to the ITAC and to the Science Working Group overseeing the NICI Campaign. These reports will include:

- (a) information regarding the status of the Campaign;
- (b) an updated schedule to consist of the most current project plan to completion. This plan will be maintained in Microsoft Project, or equivalent;
- (c) a list of the major milestones with the original, previous, and current date by which they will be attained - any significant changes from the previous date will be explained, and each subsequent list will include all the explanations from previous lists;
- (d) problem areas related to the Work, including potential for delays;
- (e) action items for Gemini and The Campaign Team (both open and closed), and associated status; and
- (e) proposed changes in key personnel.

4.2. Interim Reports and Press Releases. The Campaign Team is required to submit the following interim reports to Gemini:

(a) After each observing run in which Campaign data has been collected, the PI or the observer should submit an informal written report to Gemini describing the successes or results of the run, problems encountered, and suggestions for improvements to make Campaign observations more efficient during future Campaign observing runs.

(b) If the Campaign Team makes a significant discovery, they will notify Gemini in writing and work with the Gemini Public Relations officer to jointly decide how to most appropriately publicize the results (e.g., no action, public web pages, press releases, Nature paper, etc.). The Gemini Director must approve all public announcements or press releases of NICI Campaign results.

4.3. Final Report. (a) The Campaign Team will produce a Final Report six months after the end of the Campaign observing that contains all the results, discoveries, interpretation, error analysis, discussion, and conclusions of the Campaign. The Final Report may contain

reproduced preprints or referenced papers from refereed journals that describe the Campaign results.

(b) The Campaign Team will deliver the complete Final Report to Gemini by the date specified in the Schedule (nominally six months after the last Campaign observing run), and Gemini shall promptly review it. The Campaign Team will incorporate into the Final Report all changes reasonably requested by Gemini which are necessary to make it consistent with the Requirements, and shall submit the revised Final Report to Gemini for approval.

4.4. Reduced Data. (a) The Campaign Team will deliver final reduced images of all Campaign targets observed in the proper multi-extension FITS format with the Final Report. Reduced images must be properly flat fielded, corrected for instrumental effects (such as distortion), and pairs of images taken through the two cameras subtracted. These data will be ingested into the Gemini Science Archive. A public data release of reduced data products through the Gemini Science Archive is required. Reduced data must be accompanied by documentation specifying all reduction steps in sufficient detail to allow an experienced astronomer to recreate the reduced image. The reduced data must have FITS header keywords containing reduction details consistent with Gemini standards for processed data. Raw data from the Campaign will also be available to the public by the date specified in the Schedule (nominally six months after the last Campaign data is taken).

(b) Data reduction software is not a deliverable, and the Campaign Team may use proprietary or commercial software to produce the reduced data products. Whenever possible, Gemini would encourage the Campaign Team to provide algorithms, scripts, and software to Gemini that may be used by Gemini staff to produce the data reduction scripts that will be part of the Gemini IRAF package.

(c) Gemini will not make the raw or reduced Campaign data available for public download until the proprietary period ends as described in the Schedule. The proprietary period is nominally expected to end 6 months following the final Campaign observing run. This is much longer than the typical proprietary period

5. General Tasks and Responsibilities.

5.1. Gemini Furnished Labor. Gemini will provide the following labor in support of the campaign execution.

(a) During nights when a Campaign Team member is not present at the telescope, a Gemini astronomer will execute the Campaign observations as regular queue observations.

(b) Gemini staff members will back up Campaign data and store it in the Gemini Science Archive. Data will be distributed to the Campaign Team through the Science Archive.

(c) Gemini staff members will provide assistance integrating data reduction software provided by the Campaign Team on a best-efforts basis.

(d) The NICI Instrument Scientists will be included on the Campaign Team, along with other Gemini staff members (including Systems Support Associates) associated with NICI (at their sole discretion). Gemini may change or reassign these individuals at any time, and will inform the Campaign Manager in writing of any changes. The Gemini NICI instrument team includes:

Tom Hayward, Instrument Scientist
Bernadette Rodgers, Instrument Scientist
TBD Gemini Adaptive Optics scientist
TBD Gemini Science Fellow
TBD Systems Support Associate

5.2. Travel for Observing Runs. Gemini will not pay for the cost of traveling to Gemini-South to participate in instrument commissioning or Campaign observing runs. Gemini may request that the Campaign Team members be present when possible for assigned observing blocks. Gemini understands that this will be done on a best efforts basis only. Gemini will provide transportation from the La Serena Base Facility to the summit and for lodging for one visiting Campaign observer.

5.3. Delay. The Campaign Team will promptly notify Gemini in writing of any event which may result in a delay in performance or completion of the Work. The Campaign Team will not be liable for delays in performance or completion of the Work that are a direct result of causes beyond its reasonable control, and not otherwise due to its willful misconduct or negligence. The Campaign Team will, however, resume performing the Work in a manner to expedite the original schedule for completion of the Work to the extent reasonably possible promptly upon termination of the cause of such delay. Neither Gemini nor the Campaign Team will be liable for delays in performance or completion of the Work due to late delivery of NICI to Gemini or failure of NICI to meet design specifications or achieve the predicted sensitivity on the telescope.

5.4. Information Transfer. Gemini and The Campaign Team shall respond to requests for information related to this Work Scope in a timely fashion. All such requests for information will specify a date by which said information is required. Each party will use its best efforts to provide the requested information by the date requested.