

## Science Instrument Concept Evaluation Panel Charters

### Context:

Science instruments (SI) for the NGST will be provided by the US, European, and Canadian science communities via solicitations issued by NASA, ESA, and CSA. It is expected that cost constraints will limit the SI suite to 2-4 instruments. Responsibility to procure these flight instruments will be allocated among NASA, ESA, and CSA such that each agency will separately fund, procure, and deliver a portion of this SI suite -- an instrument or one or more identifiable instrument subsystems -- to NGST.

To facilitate allocation of generic SI functionality (e.g. near-IR imagery, near-IR spectroscopy, mid-IR imagery, etc) among NASA, ESA, and CSA, these agencies commissioned approximately 12 SI concept studies to yield examples of specific instrument options for the NGST. In addition, the project will consider other unsolicited concept studies that are presented at the NGST Science and Technology Exposition during September 1999 and for which written reports are received in the approved format<sup>1</sup> before 1 September 1999. These studies will be evaluated by the NGST Project Scientist who will report findings to NASA, ESA, and CSA in support of a subsequent inter-agency negotiation for allocation of the SIs. The Project Scientist will convene two advisory panels to assist in this evaluation:

### Science Panel:

The science panel will evaluate SI concepts presented to it by the NGST Project for potential science capability relative to NGST mission objectives with disregard for how instruments may be apportioned among the partner agencies. The Project Scientist has tasked the Ad Hoc Science Working Group (ASWG) to serve as the main body of this panel under Chair: P. Stockman. At the Project Scientist's discretion, other specialists may be invited to participate, and ASWG member participation may be limited where potential conflict of interest exists.

This panel will deliver, to the NGST Project Scientist, a report by 1 Dec 99 addressing the following questions.

1. What SI concepts can best carry out each portion of the NGST Design Reference Mission (DRM)?
2. What are the strengths and weaknesses of the various SI concepts for enabling the primary science goals of NGST as prioritized by the ASWG.
3. What is the value of the potential discovery space for the various SI concepts.
4. What are the strengths and weaknesses of the various SI concepts for carrying out a general observing program that would occur after major DRM surveys are completed?
5. Given cost constraints that potentially limit the NGST instrument suite to 2-4 instruments, what suite(s) of instruments best enable the DRM and subsequent follow-up capability?
6. In terms of, and limited to, scientific capability specifically required by the NGST DRM, are there important differences between the capability of these recommended instrument suites?
7. Are there portions of the DRM that can not be carried out with any of these recommended instrument suites?

8. For each instrument of the Panel's recommended instrument suites, what is the minimum field of view de-scope option for which the NGST science objectives can be met within a 5 year mission?
9. Are there important science capability discriminators among the optical, near-, and mid-infrared spectrograph options in terms of enabling the broad range of general science expected to be relevant in the NGST time frame?
10. Are there important science capability discriminators among the optical, near-, and mid-infrared imager options in terms of enabling the broad range of general science expected to be relevant in the NGST time frame?

**Technical Panel:**

The technical panel will evaluate SI concepts presented to it by the NGST Project for technical and cost feasibility relative to the NGST schedule and budget with disregard for how instruments may be apportioned among the partner agencies. This panel will consist of engineers, management, and instrument specialists, and will be chaired by P. Geithner. The panel chair will brief major findings to the Science Panel during Nov 99 and will deliver, to the NGST Project Scientist, a report by 1 Dec 99 addressing the following questions.

- 1) Are the SI concepts technically feasible relative to the NGST Yardstick architecture and schedule milestones for technology freeze, SI CDR, and SI delivery.
- 2) Are the SI concept ROM cost estimates credible?
- 3) Are there important differences among the SI concepts in terms of potential technical risk, operations complexity, and system level impact on NGST?
- 4) Are there important SI technology challenge areas among these SI concepts for which technology development would be needed to enable a credible flight instrument proposal during early FY02?

## Notes:

1. see: [http://ngst.gsfc.nasa.gov/public/unconfigured/doc\\_283\\_1/format.pdf](http://ngst.gsfc.nasa.gov/public/unconfigured/doc_283_1/format.pdf)