



The Role of the Program Scientist

Presented to

**Astrophysics and Heliophysics Explorers
PI Masters Forum 7**

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Program Scientists at NASA Headquarters

- Program Scientists are *scientists*, typically with a Ph.D. and years of experience as a practicing publishing scientist before becoming a federal bureaucrat.
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- The Program Scientist is the senior NASA scientist responsible for the science content of a flight program or flight project that is required to carry out an SMD science investigation.

- The Program Scientist **is** the Headquarters scientist most interested in your success.
- The Program Scientist is **not** simply an advocate for the mission team.



The Role of the Program Scientist

Some Program Scientists are responsible for a “Program”:

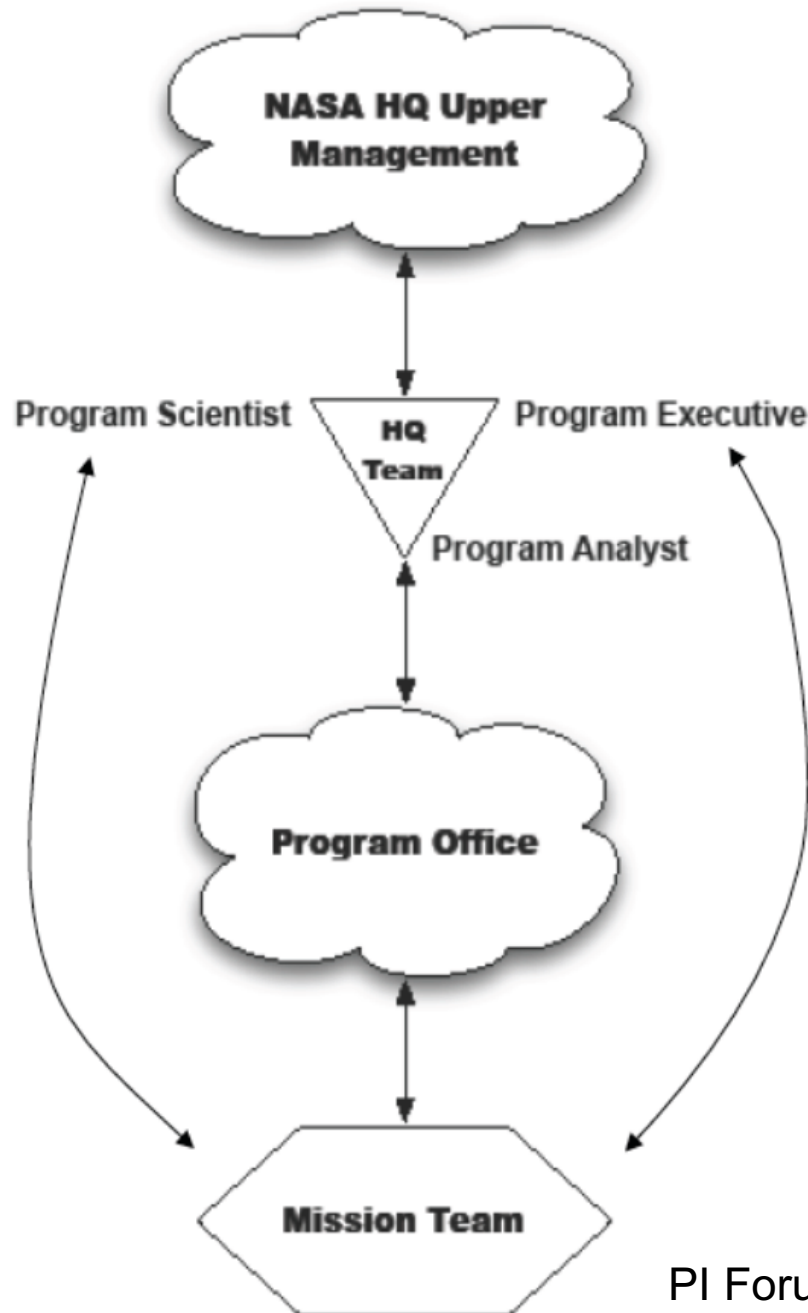
- E.g. Astrophysics has three Science Programs: Physics of the Cosmos, Cosmic Origins, and Exoplanet Exploration; plus the Explorers Program.
- The **Explorers Program Scientist** formulates the AO, oversees proposal evaluation and down-selection processes, and oversees PI debriefings.
- The Explorer PS is most visible to Explorer PI teams during pre-Phase A and Phase A activities, but is still there in later phases.

Some Program Scientists are responsible for an individual mission:

- Their role begins with down-selection, Phase B and beyond.
- A mission Program Scientist rarely works full time on only one mission – typically, the PS handles multiple missions along with responsibilities in the Research Program.



The Mission Program Scientist



The governance model and responsibilities are defined and well documented.

SMD Division Directors rely on the Program Executive (PE) at Headquarters to track implementation of flight program responsibilities. The PEs work closely with the Program Scientist (PS) for science issues and the Program Analyst (PA) for budget issues.

The PS, PA and PE maintain regular communication. All participate fully in decisions and meetings relevant to mission planning, including those at the Centers.



The Mission Program Scientist

- The Mission Program Scientist is SMD's interface with the Project Scientist, and with the PI for an AO-selected mission.
- The Mission Program Scientist monitors science management and program execution and ensures the science of the mission remains viable and true to strategic objectives during development of the mission.
- The Mission Program Scientist is the **steward of the Level-1 science requirements**. The Program Scientist is a partner with the PE on decisions relevant to mission formulation, design, development, and oversight.



The Explorer Program Scientist

INITIATES PROJECTS (PRE-PHASE A, PHASE A)

Solicits scientific investigations for selection – supported by the Explorer Program Executive, the Program Manager, and the Science Office for Mission Assessments (SOMA).

The Program Scientist:

- Writes and issues investigation AOs
- Manages the proposal peer-review process, and reviews of subsequent Concept Studies
- Develops the investigation-selection package
- Presents selection package to the Selecting Official and to the selection board: for Explorers, these are the SMD AA, and the SMD Science Management Council
- Prepares the selection press release, and acceptance/non-selection letters
- Debriefs proposing teams.



The Mission Program Scientist

FORMULATES PROJECT ARCHITECTURE (PHASE B)

- **Establishes science requirements**, with advice from the mission Science Working Group, if there is one, and works with the PE to document them.
- Develops and establishes scientific policies with advice from a Science Working Group, where appropriate.
- Works with the PI/Project Scientist and Science Working Group to oversee development of the science operations architecture and Project Data Management Plan, and of a prioritized science descope plan.
- Works with the PE to review progress and results of Phase B studies and in developing and evaluating **trades and options, such as descopes, that may influence the scientific capability of the mission.**
- Administers changes in the program's scientific content.



The Mission Program Scientist

MONITORS IMPLEMENTATION (PHASE C, D)

- Works with PE to update plans and program commitment documentation; monitor/reviews finalization of agreements; assess program/project progress against science requirements, schedule, and budget.
- Oversees and monitors development of the plan for science implementation and science operations; oversees and evaluates plans for calibration/validation activities, and for recording instrument “housekeeping” data.
- **Monitors evolution of the project to ensure that scientific capabilities are maintained.**
- Keeps NASA advisory bodies informed of progress, and of any capability trade studies being contemplated.
- Supports preparation of launch documentation.
- Participates in the final mission reviews prior to launch, to ensure that science requirements will be satisfied and that the project is ready to enter the operations phase.
- As launch approaches, briefs upper management on the project’s scientific capabilities and briefs press and advocacy groups, playing a key role in education, public outreach, and public affairs.



The Mission Program Scientist

SUPPORTS SCIENCE MISSION OPERATIONS (PHASE E)

- Works with PE and assesses project performance against science requirements, schedule, and budget.
- Monitors science operations for instruments and data.
- Ensures proper data delivery and archiving, according to the approved Project Data Management Plan.
- Oversees development and issuance of solicitations for Guest Observer programs, data analysis programs, and other related science investigations.
- Reports results and recommends GO selections to the Selecting Official, unless a specific mission has a different designated selection process.
- Oversees development and issuance of solicitations through NASA Research Announcements (NRAs) for coordinated multi-instrument and multi-satellite observing programs, data analysis programs, other related science investigations, and interagency and international collaborations.
- Plays a key role in outreach and public affairs during science operations, including support for public affairs events such as NASA Science Updates.
- Participates in lessons-learned forums.