

Astrophysics Projects Division



Physics of the Cosmos Program



Cosmic Origins Program

Lay of the Land

Implementing the NWNH Decadal Priorities

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UV/Vis RFI Response Workshop

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Program Planning Objectives

- Lay all the groundwork necessary to maximize the implementation of NWNH science priorities in this decade
- Develop viable and compelling missions for the next Decadal Survey
 - By targeting the most appropriate PCOS/COR technologies,
- Support precursor PCOS/COR science, so that the Program's mission development matches the state of scientific knowledge, and anticipates likely progress during the decade
- Engage the science community and instrument experts in developing the most capable missions
 - Conduct mission concept studies at sufficient depth to ensure that
 - Science output is understood
 - Technology needs are understood and addressed
 - Concepts and technology development can be costed with reasonable fidelity

Budget Strategy (1/4)

- The goal is to start a new strategic Astrophysics mission as soon as funding becomes available while continuing to advance the science during the interim.
- Use the scientific priorities of the Astro2010 Decadal Survey to guide strategy and inform choices.
- There is inadequate available budget to implement the Astro2010 Decadal Survey recommendations as written
 - No new missions other than Explorers can enter formulation before FY17 (when JWST approaches launch).
- In the absence of new missions, progress against decadal priorities is maintained through the core research program, through continued operation of existing missions and their GO programs, through the suborbital programs, and through frequent Explorer opportunities.
- Large strategic missions in the future are enabled when the launch of JWST frees up funding for a new mission development

Budget Strategy (2/4)

- In order to prepare for a new mission starting in FY17, a near term program of mission concept studies and technology development has been undertaken, with the goal of informing a mid-decade decision on which mission(s) will begin formulation starting in FY17
 - The Decadal Survey identifies WFIRST as the highest priority for a large mission.
 - Moderate missions (“probes”) must be considered for start in FY17, in addition to a large mission (e.g., WFIRST), to be prepared for a mid-decade decision.
 - Mission concepts studied must derive from the science objectives of the prioritized missions and recommendations in the Decadal Survey.

Budget Strategy (3/4)

- Mission concept studies generate candidates for future strategic missions
 - An FY17 new start and an efficient development requires mature technology (TRL6 by PDR)
 - Mission concept studies identify technology requirements, and this guides technology investment decisions
- Mission concepts studied must derive from the science objectives of the prioritized missions and recommendations in the Decadal Survey.
 - WFIRST DRM1 and DRM2 (done)
 - Gravity wave concepts to advance the LISA science (done)
 - X-ray concept studies to advance the IXO science (done)
 - UV/Vis science objectives to drive concept studies (probes?) and technology that advances the science of a future UV telescope (underway)
 - Exoplanet probe concept studies to advance science of a planet imaging mission (planned for FY13-14)

Budget Strategy (4/4)

2012

- Study WFIRST options.
- Solicit ideas from the community for studies of moderate missions that address DS priorities.
- Establish community study teams for mission concepts.
- Initiate mission concept studies within the programs.
- Use community analysis groups to inform process.

2013

- Use competed and directed technology programs to develop enabling technology and mission concepts.

2014

- Continue from 2013.

2015

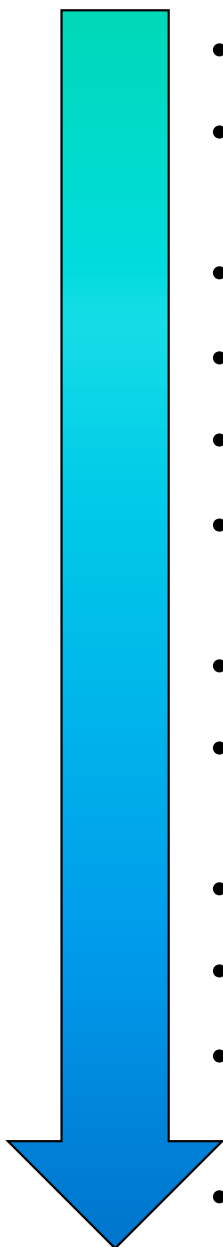
- Using community input, conduct prioritization and decision process for new formulation start.
- Start pre-formulation for new strategic mission.
- Start NRC mid-decade review.

2016

- Complete mid-decade review. Revise plans as necessary in response to report.

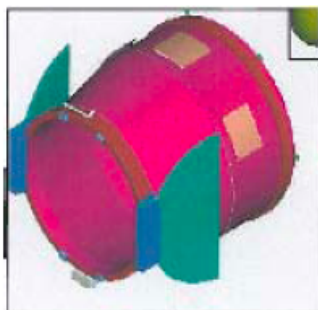
2017

- New formulation start for strategic mission.

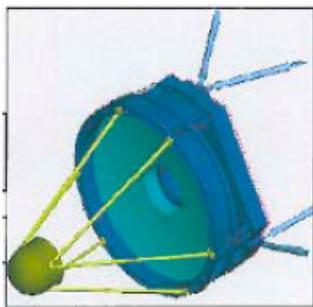


The NRO Telescopes

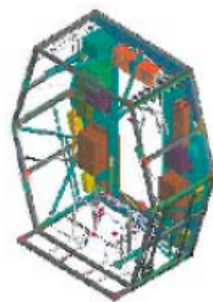
- Two 2.4-m telescopes have been transferred to NASA from NRO
- Preliminary studies indicate that this hardware may enable many of the NWNH priorities
- NASA has initiated activities to further study the potential use of this hardware for satisfying SMD science objectives with synergy with other Agency long term goals for:
 - Human Exploration
 - Optical communication
 - Robotic servicing beyond LEO



Outer Barrel Assembly



Fore Optics Assembly



Payload Radiator Subsystem

UV/Vis Mission Concept Study Plan

- RFIs in FY12 and FY13
 - FY12: RFI #1 for science definition, followed by a workshop for RFI #1 response discussion and determine degree of traceability to 2010 Decadal
 - FY13: RFI #2 for mission study concepts and mission enabling technologies, followed by a workshop for RFI #2 response discussion and mission concept suitability evaluation
- Develop Straw-man Mission concepts (FY13-14) for distinct mission cost categories
 - IDC runs for mission concept development and end-to-end mission design
 - Create Technology Development Plan that identifies ‘targeted technologies’ for UV/VIS Mission(s)
- Invest in the “targeted” technologies to:
 - Get to TRL6 if selected as the new start in FY-17And/Or
 - Prepare for the 2020 decadal review process