National Aeronautics and Space Administration
Cosmic Origins Program Office

Roadmap to the Future

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COPAG Workshop

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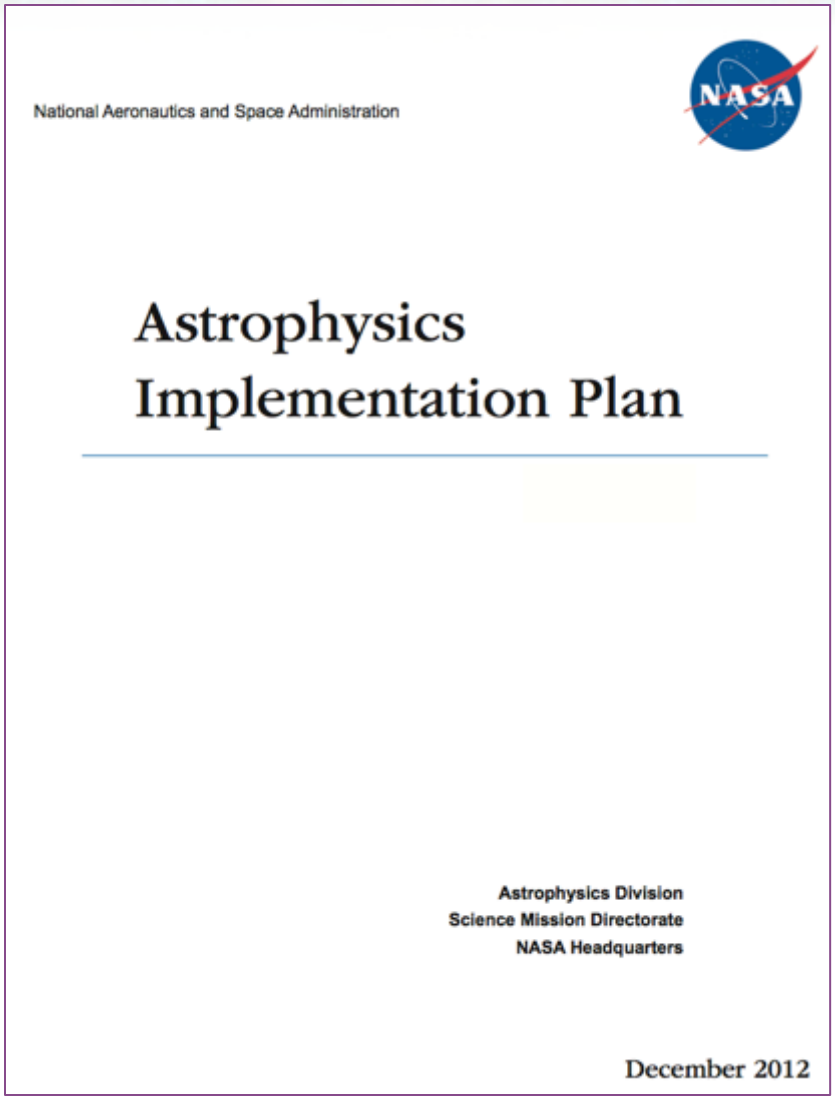
Implementation Plan



- *"Astrophysics Implementation Plan* has been prepared by the Astrophysics Division of NASA's Science Mission Directorate… to respond to the decadal survey recommendations within the current budgetary constraints."

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Mission Concepts

Strategic Mission Concepts	Derived from Recommendation	Status of Studies	Candidate Plan(s) for Future Mission
WFIRST: Large Strategic Mission (DRM1)	Large 1st : WFIRST	Completed in 2012	Large mission for mid- decade
WFIRST: Probe-size Strategic Mission (DRM2)	Large 1st : WFIRST	Completed in 2012	Probe for mid-decade
Use of 2.4m telescope assets to advance science of WFIRST	Large 1st : WFIRST (Medium 1: New Worlds Technology)	Started in 2012	Large mission for mid- decade
Gravitational Wave missions to advance science of LISA	Large 3rd : LISA Technology	Completed in 2012	Large mission for next decade; international partnership
X-ray missions to advance the science of IXO	Large 4th : IXO Technology	Completed in 2012; under consideration for study in 2014	Probe for mid-decade; Large mission for next; international partnership
Exoplanet probes to advance the science of a planet characterization and imaging mission	Medium 1st : New Worlds Technology	Planned for 2013; SDT opportunity just announced	Probe for mid-decade; large mission for next decade
Cosmic Microwave Background Polarization Probe	Medium 2nd : Inflation Probe Technology	Study under consideration for study in 2015	Probe or large mission for next decade
Science + technology drivers for a UV/Visible mission	Small: (Definition of) a future UV- optical space capability	Started in 2012	Probe or large mission for next decade

Forward

- Guided by other Decadal Survey prioritized recommendations, identify mission concepts that can be developed within a probe-class budget while addressing the science objectives of Decadal Survey prioritized recommendations.
- For the mission concepts thereby identified, develop a technology development plan so that the schedule and cost of maturing the technologies to TRL-6 [by] the three Astrophysics Division focused program offices.
- Map the technology funding requirements from the above exercise to the available funding in this decade.

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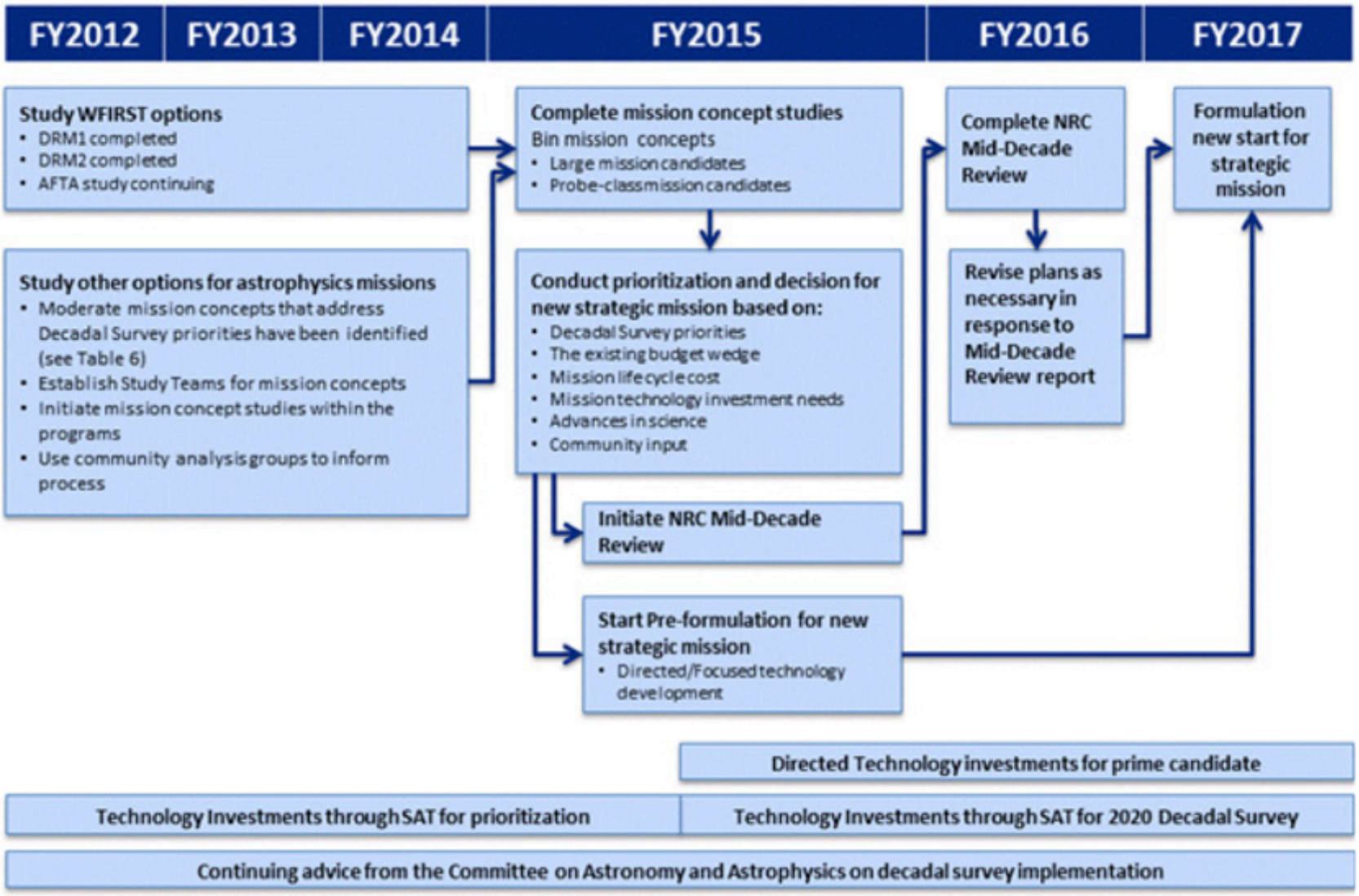
Mission in 2017



UV Mission

- Identify the detailed science drivers for a future ultraviolet/visible space telescope that could considered in the 2020 decadal survey
- Then, identify the technology drivers necessary & invest
- RFI process (cf. Paul Scowen's summary) to determine science requirements
- Current plans are for second RFI to be released in FY 2013 to solicit mission concepts and mission enabling technologies. Second workshop will be held to identify notional mission concepts & technology requirements
- Mission trade studies envisioned to inform technology investment decisions during latter half of decade

Questions

- Is a mission/instrument RFI necessary?
- Would it generate anything new?

Long-Term?

- Approaching time to leave previous decadal and work towards next decadal

- What technologies are needed to be ready?
- Which mission concepts must be prepared?

Linked Probes?

- One path: design around limited experiments, but make generally available

  COR

  Probe

  Suite of

  Experiments

Linked Probes?

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- Idea: set of reference investigations
  - Tool to calculate performance
  - Evaluate each investigation parametrically
  - Build probes from good matches
  - Develop each probe as separate study

Deliverables?

- SAG #1: Science objectives for a 4m–8m UV/Optical mission
- SAG #2: Technologies for a 4m-class monolithic telescope UV/Optical mission w/internal coronograph.
- SAG #3: Technologies for an 8m-class segmented telescope UV/Optical mission w/external occulter.
- SAG #4: Technologies for a future far-IR mission
- SAG #5: Science objectives & technology requirements for a series of Cosmic Origins Probes.

Whither SPICA?

- Participation envisioned by decadal survey unlikely
- How to fulfill science promise in its absence?