



Far-IR Surveyor (FIRS) Decadal Mission Study

Study Office

Face-to-Face Meeting #1

May 12-13, 2016

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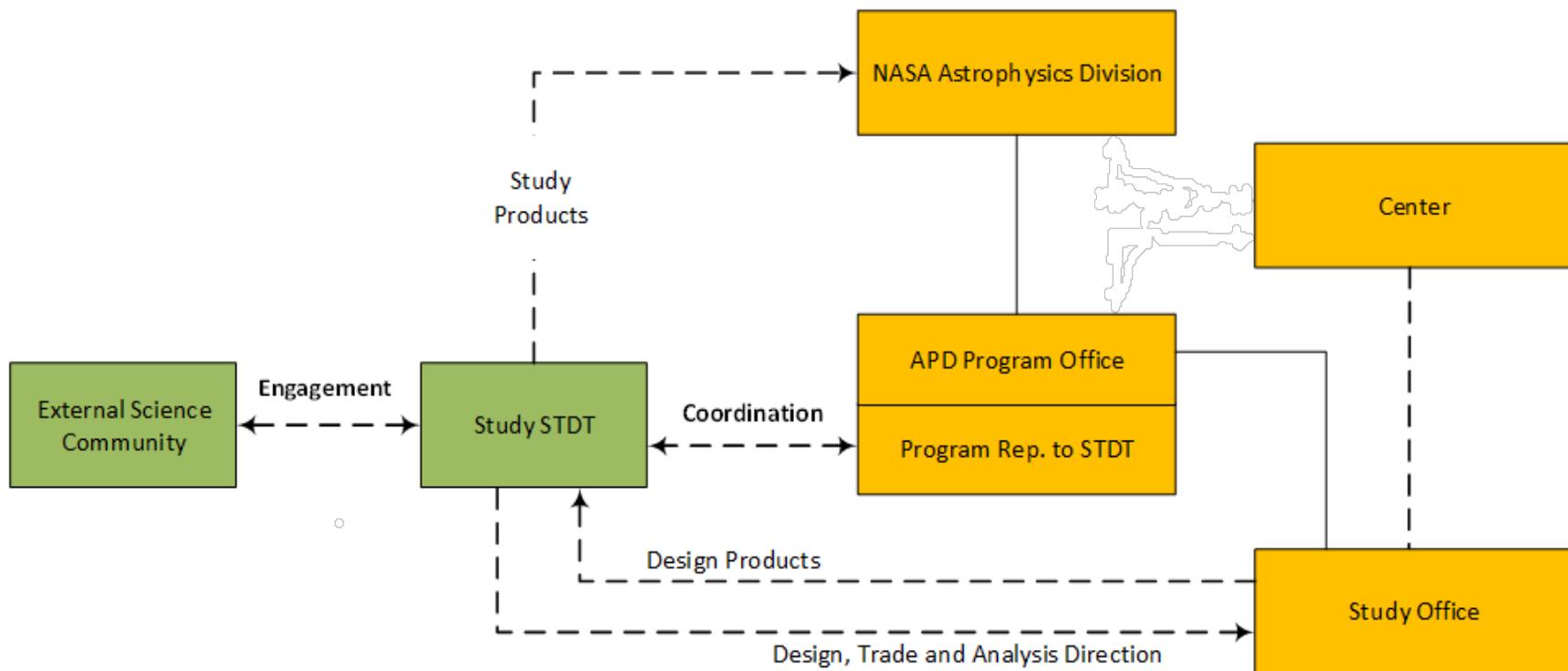


FIRS Study Office

- FIRS Study Office resides at NASA Goddard Space Flight Center within the Flight Projects Directorate
 - Code 401: Advanced Concepts and Formulation Office
 - Study progress reporting:
 - To Code 400 management: weekly/monthly
 - To HQ and Program Office: TBD
- The Study Office implements the Astrophysics Division (APD) Program requirements and the FIRS STDT technical directions
 - The final APD program requirements are expected to be available at the end of May, 2016
 - Comments on the preliminary APD program requirements have been submitted on 4/29/16 (M1 Deliverable)
- The study is funded and supported by the NASA HQ Astrophysics Division (APD), and the Study Office is responsible for managing the resources



Study Governance, Communication





Study Duration and APD Requirements

- The Study Duration is from now to early 2019
 - The study will end in ~March 2019 when the final study report is submitted to Decadal Committee
- APD requires the study team to deliver various products to APD during the study in accordance with the predetermined schedule
 - The study team is expected to meet the deliverable due dates

Deliverables to APD	Due Date	Status
Study Requirements Comments	4/29/16	Completed
Technology Gap Assessment	6/30/16	
Detailed Study Plan	8/26/16	
Concept Maturity Level 2 Audit	2/15/17	
Update Tech Gap Assess/Technology Maturation Plan	6/15/17	
Interim Report	12/1/17	
Update Tech Gap Assess/Technology Maturation Plan	6/15/17	
Complete CML 4 audit and freeze	8/15/18	
Final Report	1/15/19	
Submit to Decadal	3/15/19	



What are included in the Final Report?

- “Compelling Science”
 - Science objectives, goals and requirements that can be converted to mission requirements for developing a mission concept
- FIRS Design Reference Mission (DRM) with minimum Concept Maturity Level (CML) 4
 - A FIRS mission design that demonstrates feasibility for mission implementation beginning in mid-2020’s
 - Mission feasibility includes launch capability
- Technology Readiness
 - Key enabling technologies will be available for mission implementation
 - Identify technology needs and provide technology advancement plan that demonstrates TRL 5 by mid-2020’s
- End-to-end mission cost



FIRS DRM Development Plan

- Science requirements flow-down to mission and instrument/measurement requirements
 - Iteration between science and mission/measurement requirements
- The Study Office plans to employ GSFC Integrated Design Center (IDC) for developing FIRS DRM
 - Mission Design Lab (MDL), Instrument Design Lab (IDL), Optical Design Lab and/or Architecture Design Lab (ADL)
- Preliminary mission and instrument design during FY17 (October 2016 through September 2017)
 - Minimum of 1 MDL and multiple IDLs: number IDLs depend on number of instruments; for example, if we have three instruments, we will have at least 3 IDL sessions
 - Each session at design lab is typically one to two weeks
 - The interim report (due Dec. 2017) will include the preliminary mission design
- Final DRM in FY18
 - At least 1 MDL session



Instrument and Mission Design Labs

- Instrument and mission design labs will create flight mission design based on the science and mission requirements
 - Design labs are concurrent engineering environments
- Far-IR Surveyor study team needs to define minimum of the following prior to design lab work:
 - Science objective, goals, requirements
 - Measurement requirements
 - Mission architecture
 - Mission Orbit
 - Mission Type (i.e. refurbishing/servicing)
 - Mission duration
 - Mission Trade Space (Aperture size, Technology choice)
- The quality of the design lab product depends on how well the study team defines the items in the second bullet
 - The design lab product will include the master equipment list (MEL): this MEL is used for mission costing. If MEL has a lot of undefined items, the final cost will have high uncertainty.

