Planning for the the 2020 Decadal Survey: Activities Related to Large Mission Concepts

Joint Session of the Program Analysis Groups at the International Astronomical Union Meeting

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The Initial Mission Short List

- Notional missions are drawn from the Astrophysics Division 30-Year Roadmap (Enduring Quests, Daring Visions) and the 2010 Decadal Survey
  - Far IR Surveyor
  - Habitable-Exoplanet Imaging Mission
  - UV/Optical/IR Surveyor
  - X-ray Surveyor

Charge to the PAGs (1)

Each PAG, under the leadership of its Executive Committee, shall broadly solicit the astronomy and astrophysics community for input to the report in an open and inclusive manner.

- To accomplish this, each PAG is empowered to envision and use its own process.

Timeline of Activities to Date

- January 3-4, 2015: Brainstorming session at ExoPAG 11
- February 2015: ExoPAG SIG #1 Meeting
- March 10, 2015: COPAG Virtual Town Hall
- March 19, 2015: Joint PAG Executive Committee meeting
- April 11-14, 2015: Am. Phys. Soc. (Baltimore) – PhysPAG
- April 24, 2015: COPAG Call for Community White Papers
- June 2, 2015: ExoPAG Virtual Meeting
- June 3-5, 2015: Far-IR Workshop (Caltech) – COPAG
- June 13-14, 2015: ExoPAG #12 (Chicago) – ExoPAG

Timeline of Activities to Date

- June 13-14, 2015: ExoPAG #12 (Chicago) – ExoPAG
- June 25-26, 2015: UV/Vis SIG #2Meeting (Greenbelt) – COPAG
- July 1, 2015: Panel discussion during the HEAD meeting (Chicago) – PhysPAG
- July 3, 2015: Joint PAG Chair telecon
- July 13, 2015: Joint PAG Chair telecon with Paul Hertz
- July 14, 2015: ExoPAG Virtual Meeting
- August 7, 2015: Joint PAG Splinter Session at IAU, 1-4 PM

Charge to the PAGs (2)

Each PAG will consider what set of mission concepts should be studied to advance astrophysics as a whole; there is no desire for mission concepts to be identified as “belonging” to a specific Program or PAG.

- Each PAG shall keep the number of large mission concepts in the set as small as possible.
- Each PAG is specifically charged to consider modifications and subtractions from the small set, and not just additions.

Primary Joint PAG Findings

- The PAGs concur that all four large mission concepts identified by the Astrophysics Division Director as candidates for mission concept maturation prior to the 2020 Decadal Survey should be studied in detail.
  - These include the Far-IR Surveyor, the Habitable-Exoplanet Imaging Mission, the UV/Optical/IR Surveyor, and the X-ray Surveyor.
- Other flagship mission concepts were considered, but none achieved sufficiently broad community support to be elevated to the level of these four primary candidate mission concepts.

Joint Finding Assumptions

- These findings assume:
  1) Major development of future large flagship missions follows the implementation phases of JWST and WFIRST.
  2) NASA will partner with the European Space Agency on its L3 Gravitational Wave Surveyor, participate in preparatory studies, and conduct the necessary technology development leading to the L3 mission, including preparations that will be needed for the 2020 decadal review.
  3) Inflation Probe is a probe-class mission to be developed according to the technology and mission planning recommendations in the 2010 Decadal Survey report.

Additional Joint PAG Findings

- There is strong community support for the second phase of this activity - maturation of the four proposed mission concept studies by Science and Technology Definition Teams (STDTs).
  - There is strong consensus that the STDTs contain broad and interdisciplinary representation of the science community, and the most qualified technical experts.
  - The community expects cross-STDT cooperation and exchange of information whenever possible.
  - The community expects a free and open process to be used to competitively select the STDTs.

Additional Joint PAG Findings

- There is community support for a line of Probe-class missions within the Astrophysics mission portfolio.
  - The PAGs are willing to collect input on probe missions from the community as a following strategic planning charge if asked to do so by the Astrophysics Director.

Charge to the PAGs (3)

Each PAG shall produce a report, where it shall comment on all large mission concepts in its small set of large missions, including those in the initial small set and those added or subtracted.

- The PAGs may choose to work together and submit coordinated or joint reports.

PAG Report Plans
(Reports Due Oct 8)

- Each PAG report will contain a joint-PAG executive summary with the joint findings noted above.
- Individual PAG reports will expand on those findings as they relate to their respective constituencies.
- The reports will outline the process(es) used to solicit input, and the procedures/criteria used to analyze that input.
- The reports will contain descriptions of the community input received.
- The reports may contain thoughts and analysis on additional input that NASA may wish to consider (e.g., probes, science synergies, etc.)

Areas of Non-Consensus

- The PAGs did not reach consensus on combining the Habitable Explorer Mission and the UVOIR Surveyor into a single concept.
  - However, the PAGs find community support for both concepts being studied in detail by the STDTs

- The PAGs did not reach consensus on the specifics of how future probe-class mission concepts should be developed prior to the 2020 Decadal Survey.
  - However, the PAGs are willing to collect community input if charged with doing so.

Timeline of Near-Term Activities

- August 7, 2015: Joint PAG Splinter Session at IAU, 1-5 PM
- August 18, 2015: ExoPAG Virtual Meeting
- August 20, 2015: COPAG Virtual Town Hall
- September 2015: Writing, circulating, finalizing reports
- October 8, 2015: Report due date (2 weeks prior to Oct. 22 Astrophysics Subcommittee meeting)

Reference Material

- http://cor.gsfc.nasa.gov/copag/rfi/
- https://exep.jpl.nasa.gov/exopag/decadal/
- http://pcos.gsfc.nasa.gov/physpag/