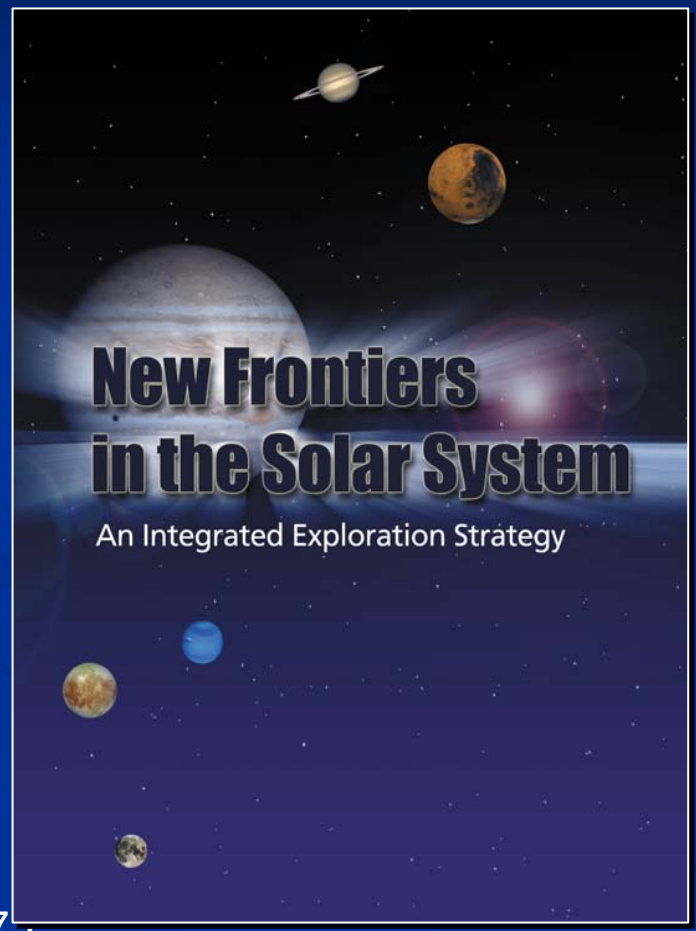
Planetary Science Decadal Survey 2009-2011

Steve Squyres
Chairman, 2009-2011 Planetary Science Decadal Survey

Planetary Science Subcommittee
Washington, D.C., 10 July, 2009

What is a Decadal Survey?

- **Origin:**
  - Astronomy community in the ‘60s.
- **Purpose:**
  - Identify the most important scientific questions for the next decade.
  - Prioritize the missions that can address these questions.
- **Organization:**
  - Steering Committee
  - Topical Panels
  - Extensive community input
- **1st Planetary Survey: 2001/2002**
- **Other Surveys:**
  - Solar and Space Physics (2002)
  - Earth Observation from Space (2007)
  - Life and Microgravity Sciences (in progress)

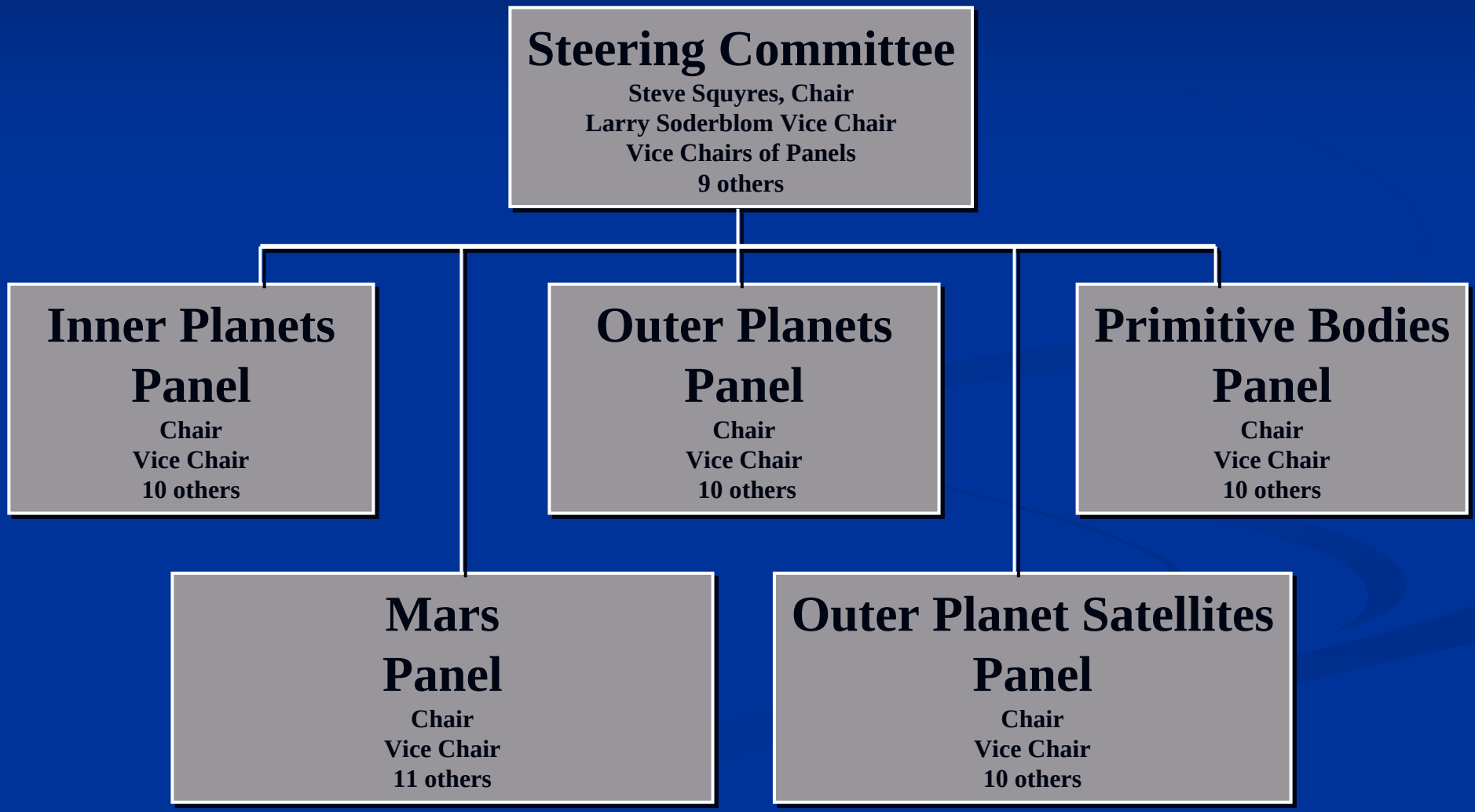


What will the Report Address?

- **Major Tasks:**
  - Overview of planetary science and current state of knowledge
  - Inventory of the key scientific questions
  - Assessment of NSF-funded infrastructure
  - Recommendations on program balance:
    - Mix of mission targets
    - Mix of mission sizes
    - Research activities
  - Prioritized recommendations for New Frontiers and flagship missions for the next decade
  - Recommendations for NASA-funded research activities
  - Recommendations for technology development

- **Scope**
  - Ground- and space-based planetary science
  - Astrobiology

2009-2011 Decadal Survey Committee Organization



Steering Group

- Steven W. Squyres, Cornell University
- Laurence A. Soderblom, U.S. Geological Survey
- Wendy M. Calvin, University of Nevada, Reno
- Dale Cruikshank, NASA Ames Research Center
- Pascale Ehrenfreund, George Washington University and Leiden Institute of Chemistry
- G. Scott Hubbard, Stanford University
- Wesley T. Huntress, Jr., Carnegie Institution of Washington
- Margaret G. Kivelson, University of California, Los Angeles
- B. Gentry Lee, Jet Propulsion Laboratory
- Jane Luu, Massachusetts Institute of Technology, Lincoln Laboratory
- Stephen Mackwell, Lunar and Planetary Institute
- Ralph L. McNutt, Jr., Johns Hopkins University, Applied Physics Laboratory
- Harry Y. McSween, Jr., University of Tennessee, Knoxville
- Amy Simon-Miller, NASA Goddard Space Flight Center
- David J. Stevenson, California Institute of Technology
- A. Thomas Young, Lockheed Martin Corporation (Retired)

Overall Schedule 2008-2011

2008

4th Quarter	Informal request received, NRC approves initiation, Formal request received, Proposal to NASA.

2009

1st Quarter	Funding received, Chair identified, Chair and vice chair appointed
2nd Quarter	Steering Group appointed, Panels Appointed
3rd Quarter	Meetings of the Steering Group and Panels begin
4th Quarter	Panels' period of peak activity

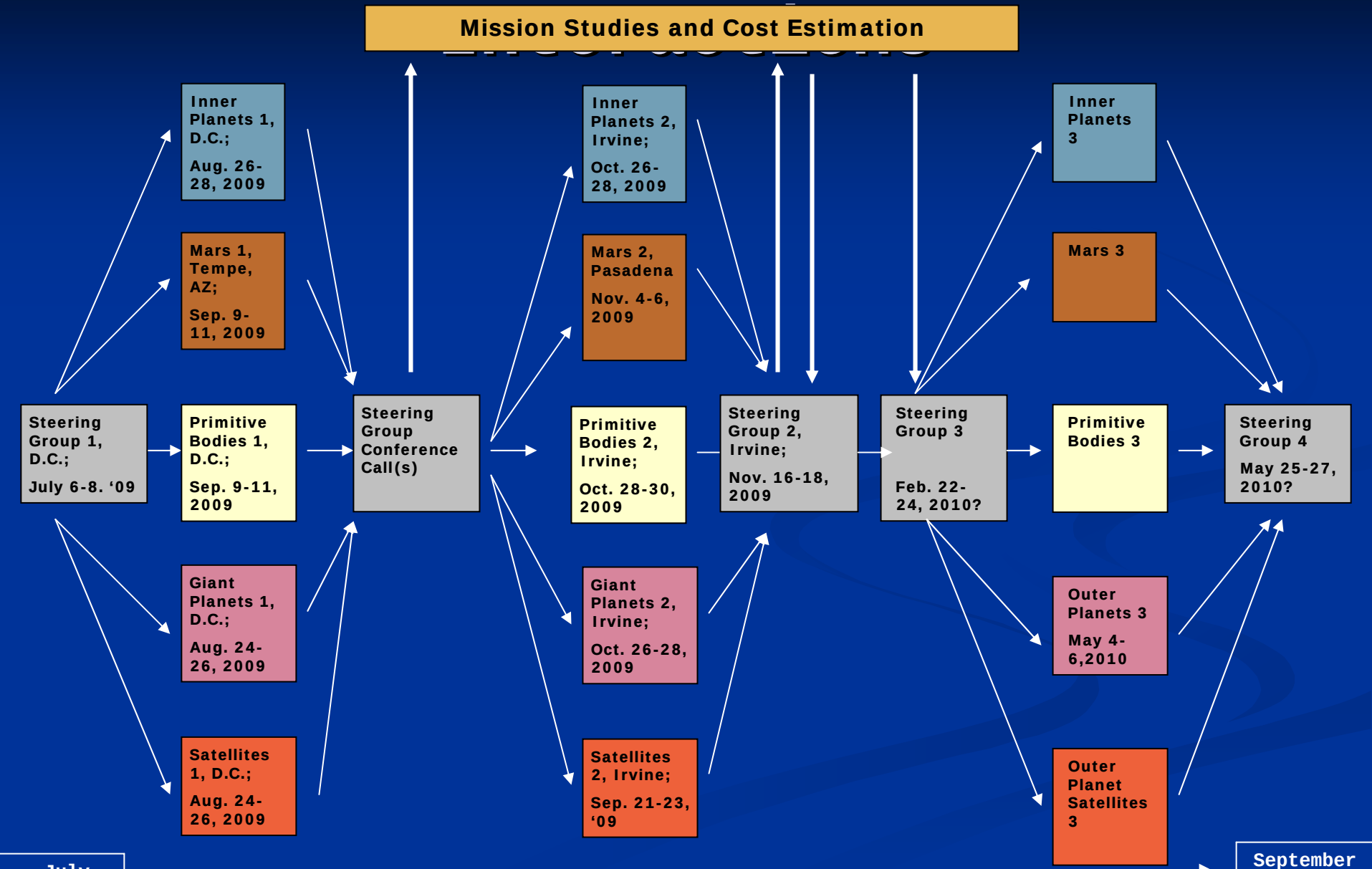
2010

1st- 2nd Quarter	Final Panel meetings, Panel reports finalized
2nd-3rd Quarter	Prioritization and drafting of survey report
4th Quarter	Draft survey report to reviewers, Report revised

2011

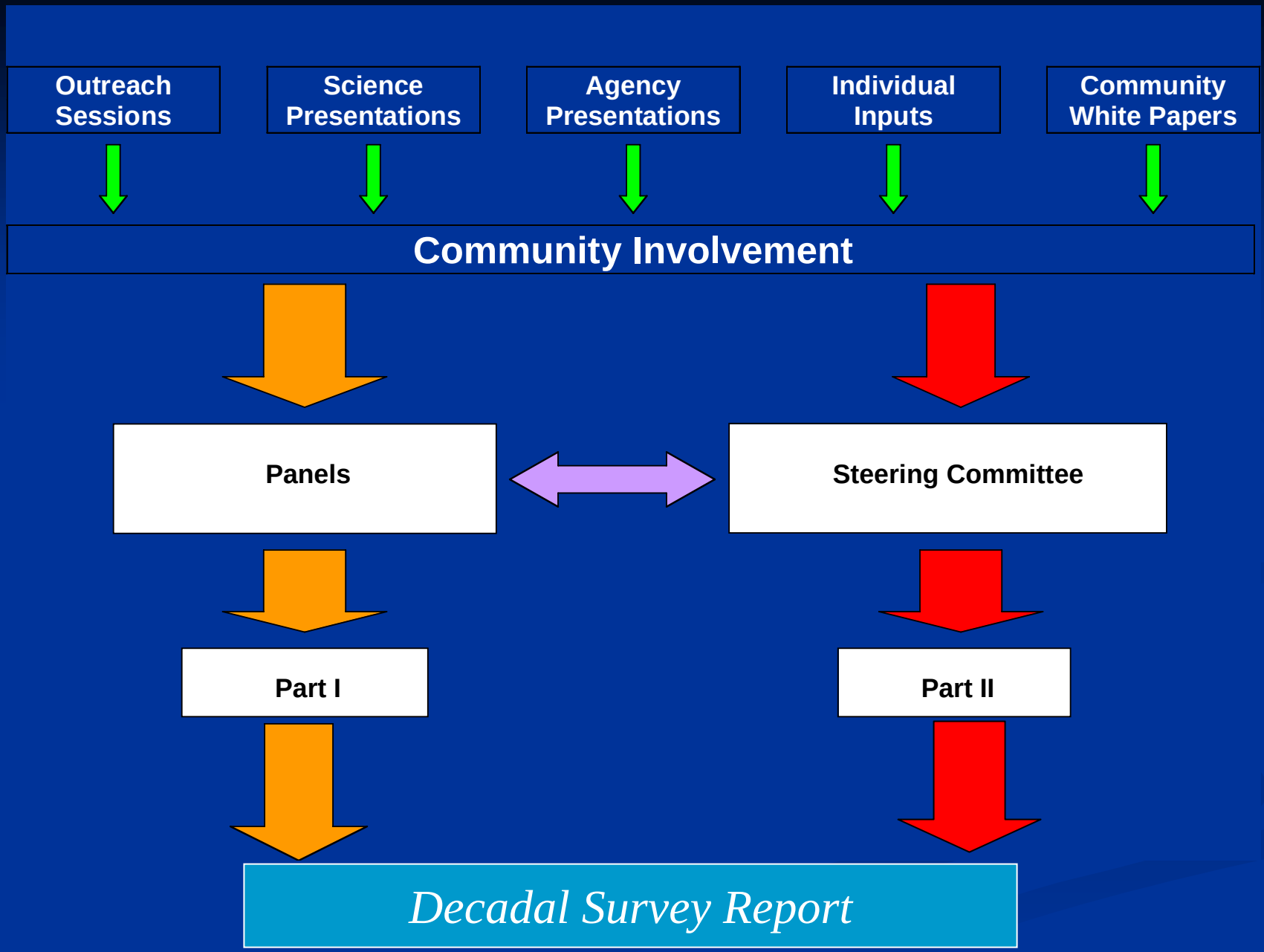
1st Quarter	Report approved, NASA briefed and report released (prepublication-format)
3rd Quarter	Printed report released

Steering Group/Panel



Meeting Schedule

Steering Group	Inner Planets	Mars	Primitive Bodies	Giant Planets	Satellites
6-8 July Washington D.C.					
16-18 November Irvine California	26-28 August Washington D.C.	9-11 September Tempe Arizona	9-11 September Washington D.C.	24-26 August Washington D.C.	24-26 August Washington D.C.
22-24 February? Arizona or California	26-28 October Irvine California	4-6 November Pasadena California	28-30 October Irvine California	26-28 October Irvine California	21-23 September Irvine California
25-27 May? Washington D.C.	TBD	TBD	TBD	4-6 May Boston? Massachusetts	TBD


Outreach Sessions
Science Presentations
Agency Presentations
Individual Inputs
Community White Papers
Community Involvement
Panels
Steering Committee
Part I
Part II
Decadal Survey Report

Community Interactions

Broad community input is a defining feature of a decadal survey

- Town hall and open meetings were held as early as possible in the process of establishing the survey committee (e.g., DPS, AGU and VEXAG, MEPAG, OPAG, RAS, LPSC and CAPTEM).
- Future outreach sessions are planned for the upcoming OPAG, NLSI, MEPAG, EPSC, DPS, AGU and LPSC meetings.
- White papers submission mechanism will go live on decadal survey web site (http://www7.nationalacademies.org/ssb/SSEdecadal2011.html) in the next few days
- Steering committee and panel meetings will be webcast live and archived in full.
- Coordinate with other groups that have overlapping interests.
- Graduate students are being recruited as rapporteurs for steering group and panel meetings

Examples of Future Outreach Events

- OPAG, 14 July, Columbia, Maryland, Presentation
- NLSI/LEAG, 22-23 July, Moffett Field, California, Presentation
- MEPAG, 30 July, Providence, Rhode Island, Presentation
- EPSC, 14 September, Potsdam, Germany, Presentation
- DPS, 4-9 October, Fajardo, Puerto Rico, Plenary Session and Workshops
- AGU, 14-18 December, San Francisco, California, Session (Proposed)
- LPSC, 1-5 March, The Woodlands, Texas, TBD

Evaluation of Candidate Missions 2009-2011

- Compared to previous decadal surveys, this one will place much greater emphasis on evaluation of the technical maturity and probable costs of candidate missions.
- The Panels and the Steering Committee include members who are expert in engineering, project management, and cost estimation.
- Resources are available to do moderate-fidelity (and conservative!) cost estimates for a limited number of high-priority candidate missions.
- The objective is to produce a realistic (i.e., not heavily over-subscribed) set of candidate missions for NASA to carry out in the coming decade.

Assuring Fiscal and Technical Realism

A lack of technical and fiscal realism has been a major weakness of past decadal surveys (in planetary science and other disciplines). The decadal survey has adopted a twin-track approach to crafting more robust mission priorities.

Technical support in the form of mission studies will be conducted by the following groups:

- JPL Team X and Rapid Mission Architecture team.
- APL ACE lab
- GSFC Integrated Design Center(Mission Design Lab and Instrument Design Lab)

The NRC will procure independent cost estimates from an appropriately qualified organization.

Four qualified companies have responded to an RFI; the winning contractor will be selected shortly.

White Paper Submission

- White papers may be submitted before September 15, 2009, via the decadal survey web site.
- White papers may not be more than 7 pages in length.
- A cover page should include the primary author's name and a list of co-authors.
- Use a 12-pt font with 1-inch margins.
- Only Word (.doc) and Acrobat (.pdf) formats will be accepted.
- Multiple authorship that accurately reflects a consensus among many individuals is strongly encouraged.
- Everyone in the planetary science community is encouraged to author white papers; the only exception is the decadal survey panel chairs and steering committee members.

Summary

- The decadal survey process is aimed at articulating a program for the coming decade that represents as fully as possible the true consensus view of the US planetary science community.
- The distinguishing features of the decadal survey process are inclusiveness and transparency.
- In contrast to past decadal surveys, this one will place a strong emphasis on cost realism.
- The process is moving forward briskly. White paper inputs from the community are needed by September 15.