



Planetary Science Division Update

*Presentation at the
Venus Exploration Assessment Group Meeting*

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February 25, 2009



Outline



- Academy Studies
- Planetary missions status and plans
- OPF/NF/Discovery status
- Research and Analysis update



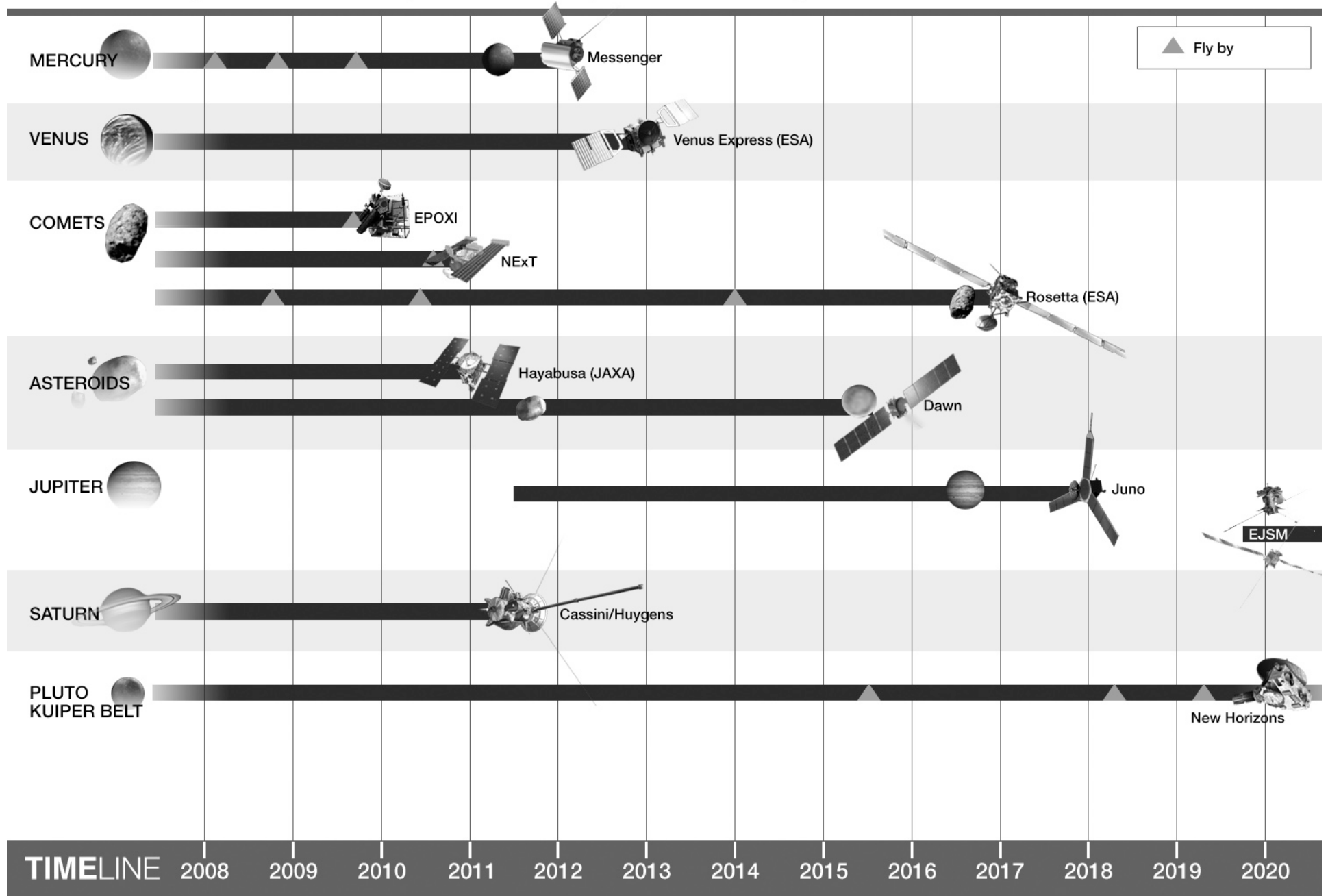
National Academy Studies



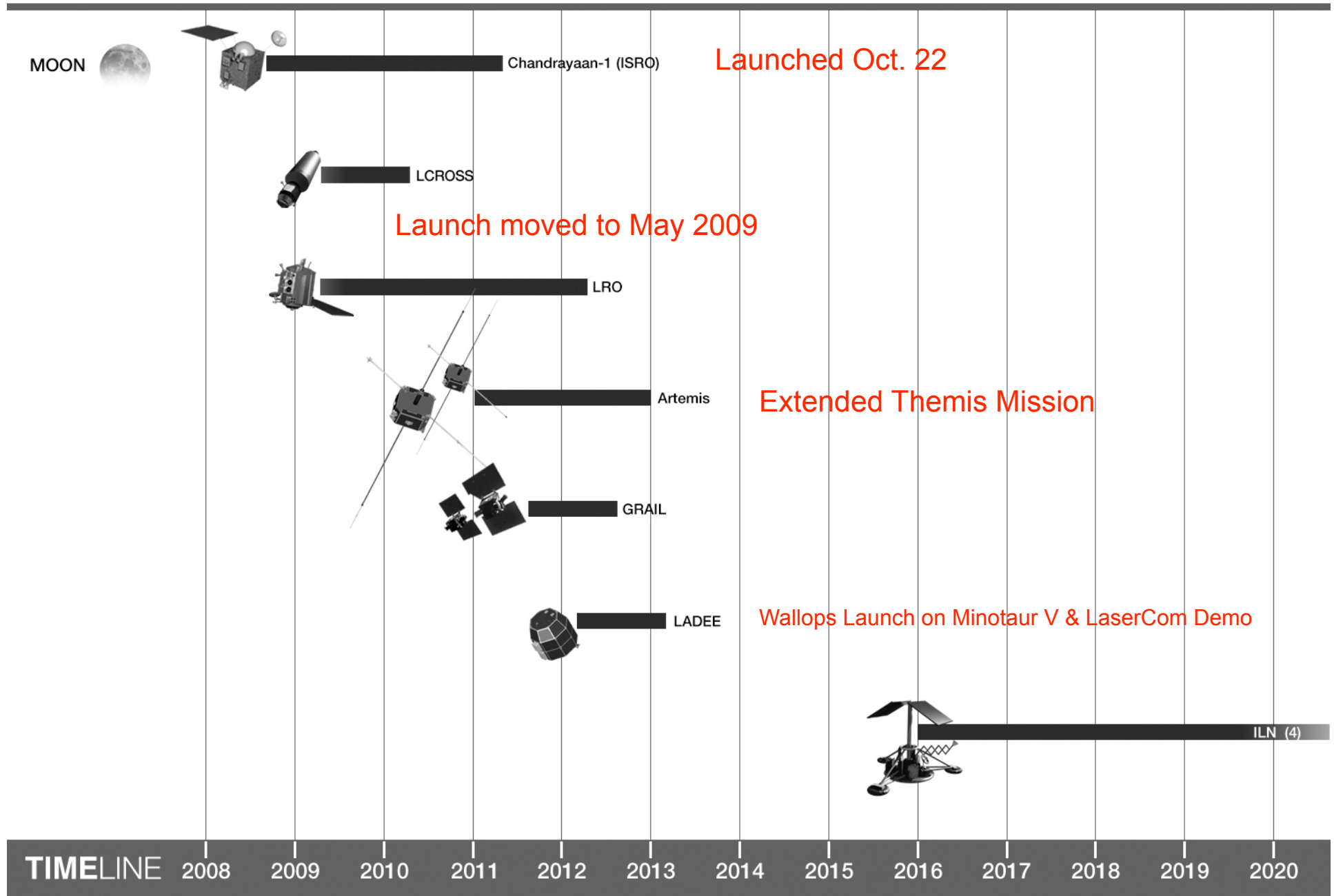
- **RPS study**: report release expected in late June; special request for interim report rescinded; prepub expected in late April/early May
- **R&A study**: mtg #1 held 1/21-23; mtg #2 will be 3/11-13 in Washington
- **NEO survey and deflection study**: Survey/Detection Panel held mtg on 1/28-30, will meet again 4/20-22 in Tucson; Mitigation Panel being formed, 1st mtg in late March/early April
- **Planetary Protection for Mars**: final stages of review; will skip prepublication delivery and deliver final in May
- **Planetary Science Decadal Survey**: appointments in progress
 - Town Hall discussions at the DPS and the Fall AGU
 - Panels being pulled together now

Underlined = previously directed by Congress

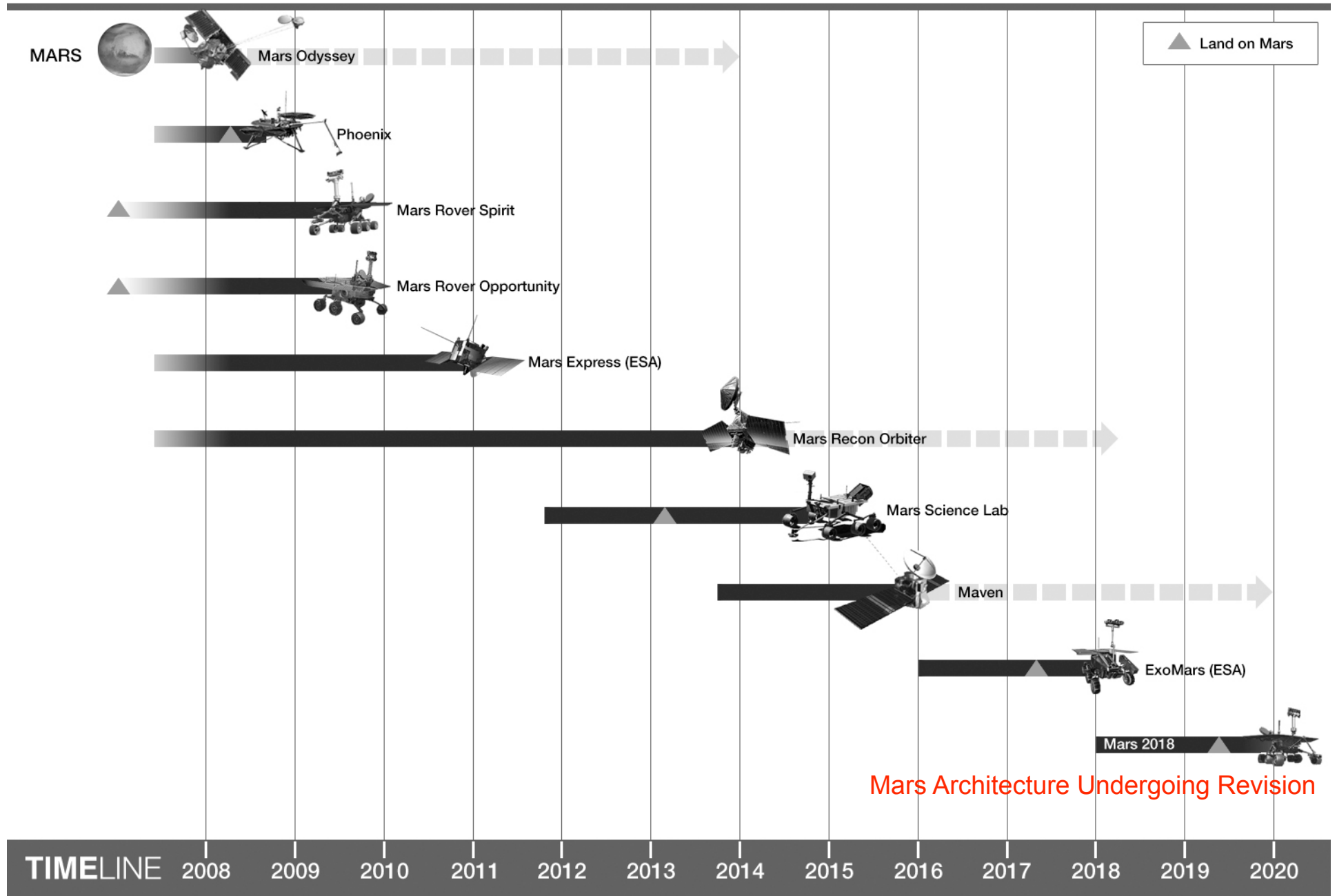
Planetary Missions (Non-Mars, Non-Lunar) timeline



Lunar Mission timeline



Mars Mission timeline





MSL Status



- MSL has slipped to the 2011 opportunity and will incur increased costs
- Launch slip will be funded by MEP but a rephasing of funding using other planetary programs will be part of the solution
 - NASA's approach is to create a stronger partnership with ESA for ExoMars (2016)
- Current issue of the launch manifest conflicts between Juno & MSL 2011 - promising solution
- More analysis continues on total cost estimates and launch conflicts
- Note: MEPAG March 3-4, 2009 at the Holiday Inn Rosslyn Westpark, Arlington, VA.



Outer Planets Flagship

New Frontiers & Discovery



Next Outer Planets Flagship



- NASA-ESA announced a prioritization of EJSM as the next OPF
 - It was noted that TSSM has compelling science and will be input into the next Planetary Decadal
- Next steps:
 - Hold a joint Science Instrument Technology workshop this year - details TBD
 - NASA will also work on risk reduction, implementation strategies, cost, and schedule



New Frontiers Program



1st NF mission New Horizons:

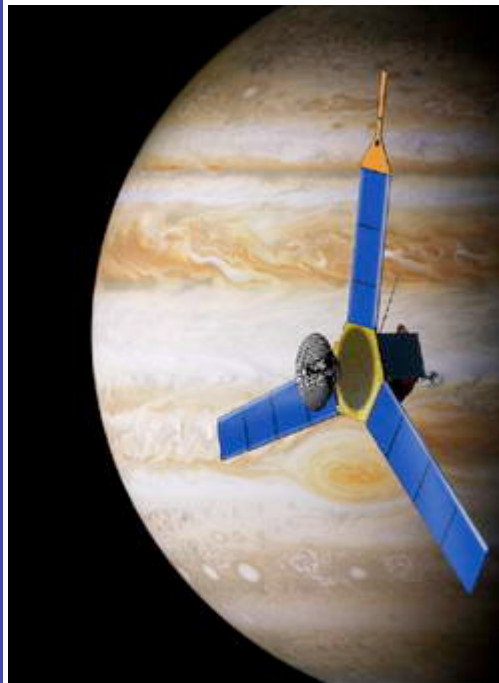
Pluto-Kuiper Belt
Mission



Launched January 2006
Arrives July 2015

2nd NF mission JUNO:

**Jupiter Polar Orbiter
Mission**



August 2011 launch

3rd NF mission AO

South Pole -
Aitken Basin Sample
Return

Comet Surface
Sample Return

Venus In Situ
Explorer

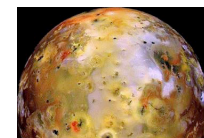
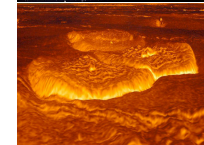
Network Science

Trojan/Centaur

Asteroid Sample Return

Io Observer

Ganymede Observer





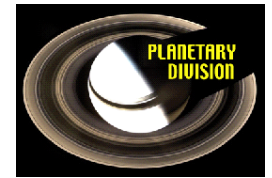
New Frontier Program Status



- Open competition for PI class missions of strategic importance to Planetary Science in the < \$1B class
- Draft AO released November 17th
 - First use of the new standard AO for PI-led missions
- December Workshop on Draft AO held with a comment period that closed on January 5th
 - Answers to questions posted
- Revision of the AO is in progress based on the comments/questions received
- Working towards a release of the final AO this FY
 - Schedule to be released first

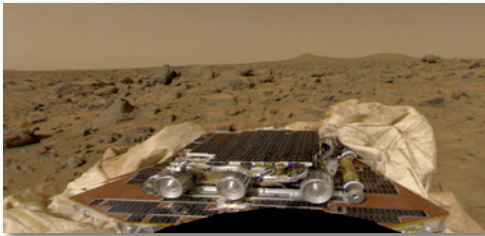


Discovery Program

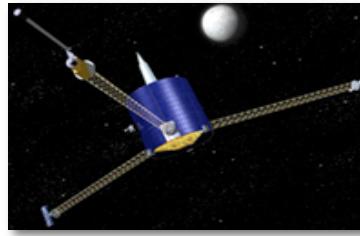


Completed

**Mars evolution:
Mars Pathfinder (1996-1997)**



**Lunar formation:
Lunar Prospector (1998-1999)**

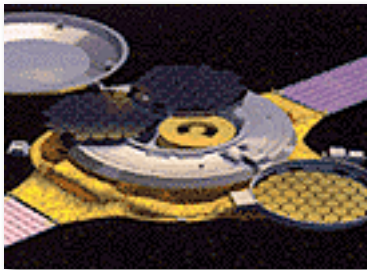


**NEO characteristics:
NEAR (1996-1999)**

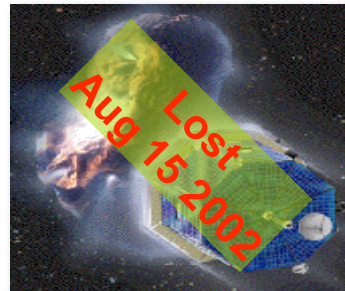


Completed / In Flight

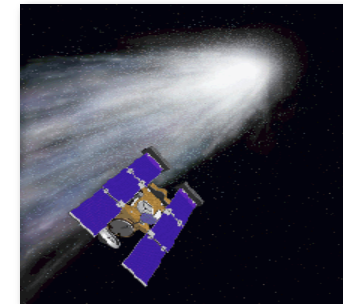
**Solar wind sampling:
Genesis (2001-2004)**



**Comet diversity:
CONTOUR**

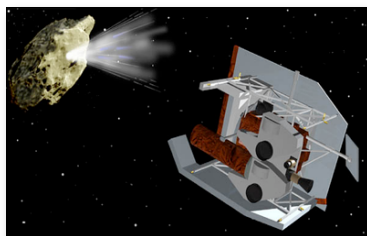


**Nature of dust/coma:
Stardust(1999-2006)**

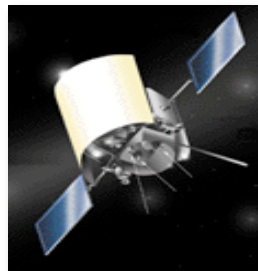


In Flight / In Development

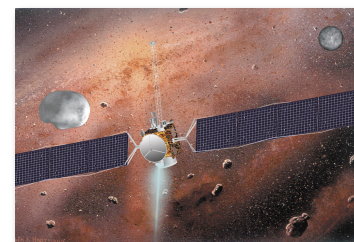
**Comet internal structure:
Deep Impact (2005-2006)**



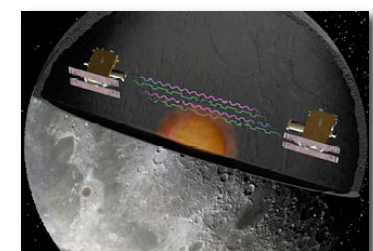
**Mercury environment:
MESSENGER (2004-2012)**



**Main-belt asteroids:
Dawn (2007-2015)**



**Lunar Internal Structure
GRAIL (2011-2012)**



No RPS were used on any of these



DSMCE Selections

Baines, Kevin	JPL	Venus	Aerial Vehicle	Polar VALOR: The Feasibility of A Nuclear-Powered Long-Duration Balloon Mission to Explore the Poles of Venus
Elphic, Richard	Los Alamos National Laboratory	Moon	Lander	Locating and Characterizing Lunar Polar Volatiles: Feasibility of a Discovery-Class Mission
Jolliff, Bradley	Washington University	Moon	Rover	Journey to the land of Eternal Darkness and Ice (JEDI): A Lunar Polar Volatile Explorer
Rivkin, Andrew	Applied Physics Lab	Asteroid	Lander	Ilion: An ASRG-Enabled Trojan Asteroid Mission Concept
Hecht, Michael	JPL	Mars	Lander	A tour through Martian history: An ASRG-powered polar ice borehole.
Stofan, Ellen	Proxemy Research	Outer Planets	Lander	Titan Mare Explorer (TiME)
McEwen, Alfred	University of Arizona	Outer Planets	Orbiter	Mission Concept: Io Volcano Observer (IVO)
Sandford, Scott	NASA/AMES	Comet	Sample Return	Concept Study for a Comet Coma Rendezvous Sample Return Mission
Sunshine, Jessica	Univeristy of Maryland	Comet	Lander	Comet Hopper

- Next Discovery AO will follow the New Frontiers release - Time of release is TBD
- GFE Stirling as part of the next Discovery AO is TBD




R&A Update



Venus Opportunities in ROSES



- ROSES 08 - Planetary Missions Data Analysis Program (PMDAP)
 - Proposals received: Mercury (22%), Lunar (18%), Comets (18%), Asteroids (14%), Venus (11%), Others
 - Proposals under review
- PMDAP also issued in ROSES 09
- Comparative Climatology still under discussion with Earth Sciences
- JAXA's Venus Climate Orbiter (VCO) Participating Scientist Program
 - Still under discussion/development



NASA's Planetary Science

Advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space

“Flyby, Orbit, Land, Rove, and Return Samples”