Status of Europa Jupiter System Mission

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What is EJSM?

• The Europa Jupiter System Mission (EJSM) concept is the result of a decade of investment and commitment in a Europa-focused mission
• Most recently, NASA and ESA engaged in a deliberative, multistep downselection process to carefully select the next potential “flagship” mission for each agency
  – The process used multiple internal studies performed in a competitive atmosphere with independent review to inform decision makers on science value, implementation risk/issues, cost and cost risk, and technology needs
• The end result is a flexible international mission concept consisting of two spacecraft that can jointly or independently explore the Jupiter system
  – Jupiter Europa Orbiter (JEO) contributed by NASA and a Jupiter Ganymede Orbiter (JGO) contributed by ESA
EJSM Science Objectives

Investigate the emergence of habitable worlds around gas giants

Explore Europa to investigate its habitability

Explore the Jupiter system as an archetype for gas giants.

Characterize Ganymede as a planetary object including its potential habitability

Europa

Ganymede

Synergistic Science

Callisto

Jupiter System

NASA Jupiter Europa Orbiter

ESA Jupiter Ganymede Orbiter
Ongoing Decadal Survey Deliberations

• The ongoing Decadal Survey began its activities after the NASA/ESA decision in 2009 to prioritize EJSM as the next potential flagship mission
• This Decadal Survey is currently deliberating on science and mission priorities for 2014-2024; report will be available in early CY11
• As part of their deliberations the Decadal Survey requested and received briefings on EJSM (independent STMC review results and mission overview)
  – Early feedback from the Giant Planets panel was used by the EJSM JJSDT to revise some of the Jupiter system science objectives
• NASA is awaiting results of the NRC Planetary Science Decadal Survey before setting a budget priority and pace for a future Outer Planets mission
  – While awaiting the outcome of the Planetary Science Decadal Survey NASA has continued to fund efforts to reduce the cost risk for EJSM
Recent EJSM Activities – Cost Risk

• NASA work has focused on continued formulation efforts, risk mitigation, and systems engineering that are focused on reducing the cost risk of EJSM
  – New appointments
    • Joan Salute was appointed the new Program Executive at HQ
    • Tom Gavin was appointed the pre-project manager at JPL
  – Continued external assessments
    • An “internal” Mission Concept Review was held in June 2010
    • The panel rated JEO “Green” in 5 of 8 areas, “Green/Yellow” in 2, and “Yellow” in the single remaining area
  – Planetary Protection trade studies
    • The pre-project is studying a Viking-style planetary protection approach to minimize complexity
  – Cost risk reduction strategies
    • The pre-project is considering a variety of additional ways to address complexity and cost risk
Recent EJSM Activities – AO

- NASA has also spent considerable effort working with the community to prepare for the instrument Announcement of Opportunity
  - Instrument acquisition strategy
    - Meetings were held with SMD senior management in July and November to finalize the two step instrument procurement strategy
  - Instrument/AO workshops with the community
    - The 4th and final instrument workshop was held in July 2010 followed by an OPAG meeting in September; the primary topic was the instrument procurement strategy and AO
  - Joint Jupiter Science Definition Team
    - The JJSĐT submitted its final report to NASA in November and it has been publicly released
  - Preparation of AO and program library
Instrument Acquisition Strategy

- Significant uncertainty still exists in the areas of instrument development and instrument cost estimates.
- The familiar two-step acquisition process can reduce this uncertainty and benefit both NASA and proposers.
  - For proposers, it provides an opportunity to increase their understanding of implementation issues and cost risk under NASA funding and technical guidance.
  - For NASA, it provides a more informed selection of final flight instruments and their associated cost risk before committing to fly the instruments (and consequently committing to fund any subsequent cost overruns).
- The Step 1 AO will call for proposals for PI-led science investigations utilizing a single instrument. The proposals will be expected to describe instrument concepts with a strong focus on providing a detailed plan describing the instrument concept development during Step 2.
  - NASA will *overselect* (by instrument category) concepts for further development during Step 2.
- During Step 2 overselected teams will continue to develop their instrument concepts with technical guidance from the Project and scientists.
Instrument Acquisition Schedule

- All dates are notional and fixed relative to AO release date
- Release of draft AO is optional