

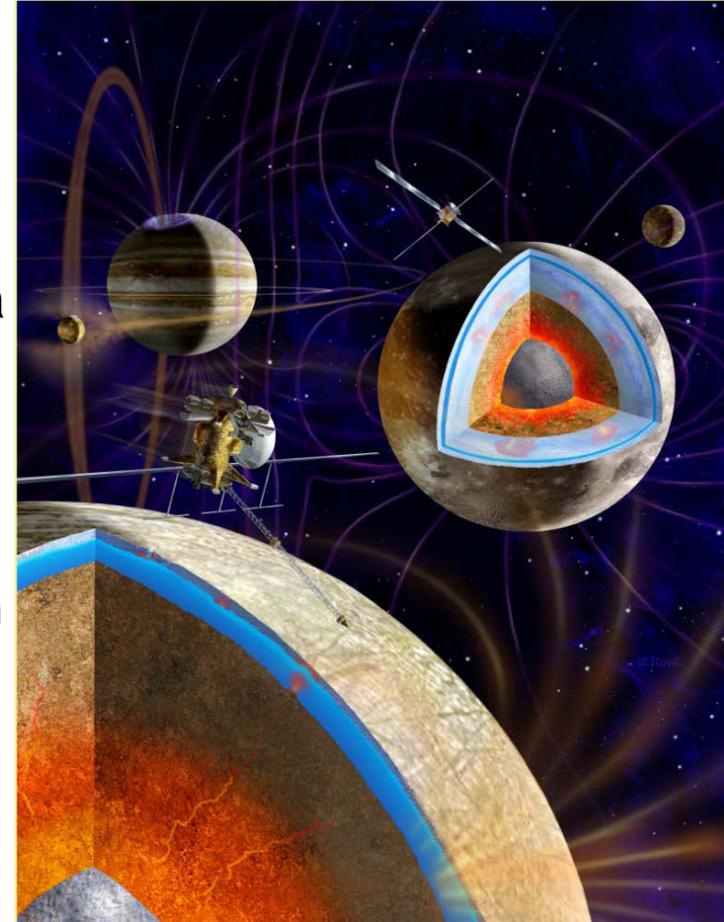
SCIENCE

# Status of Europa Jupiter System Mission

Curt Niebur  
EJSM Program Scientist, NASA Headquarters  
PSS Meeting  
January 26, 2011

# 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

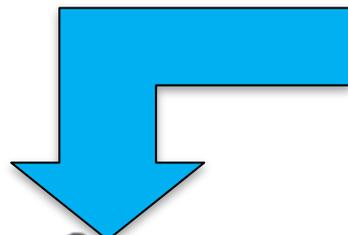
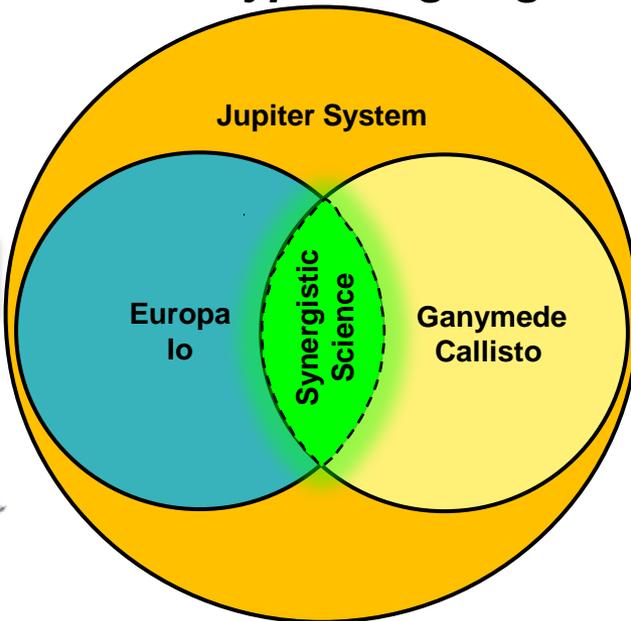


## Investigate the emergence of habitable worlds around gas giants

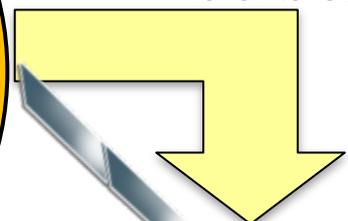
*Explore the Jupiter system as an archetype for gas giants.*

*Explore Europa to investigate its habitability*

*Characterize Ganymede as a planetary object including its potential habitability*



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 JJSST 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



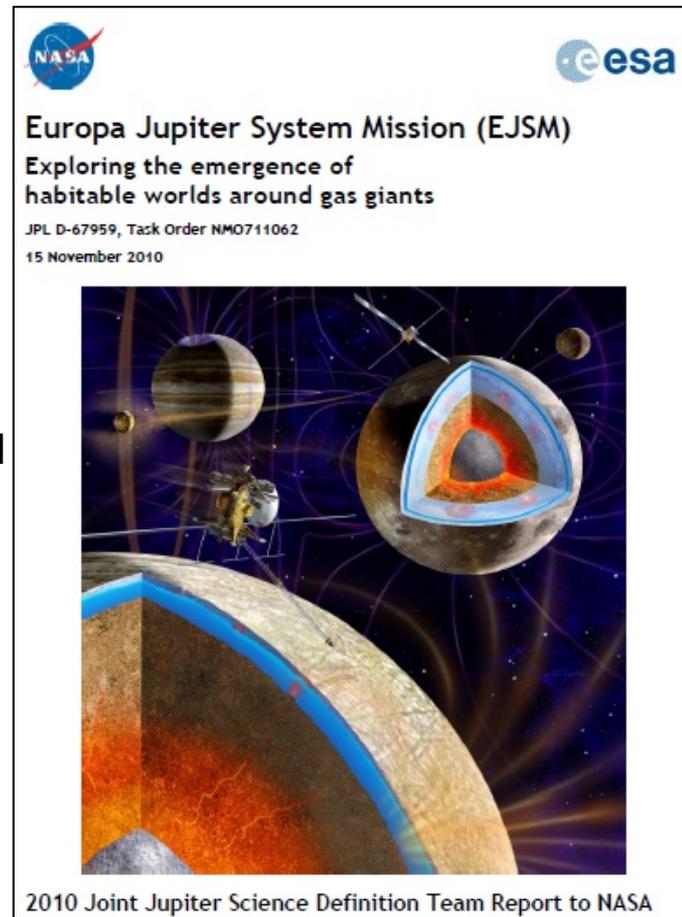
- NASA work has focused on continued formulation efforts, risk mitigation, and systems engineering that are focused on reducing the cost risk of EJSM
  - New appointments
    - Joan Salute was appointed the new Program Executive at HQ
    - Tom Gavin was appointed the pre-project manager at JPL
  - Continued 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 4<sup>th</sup> 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 JJSDT submitted its final report to NASA in November and it has been publicly released
  - Preparation of AO and program library



2010 Joint Jupiter Science Definition Team Report to NASA

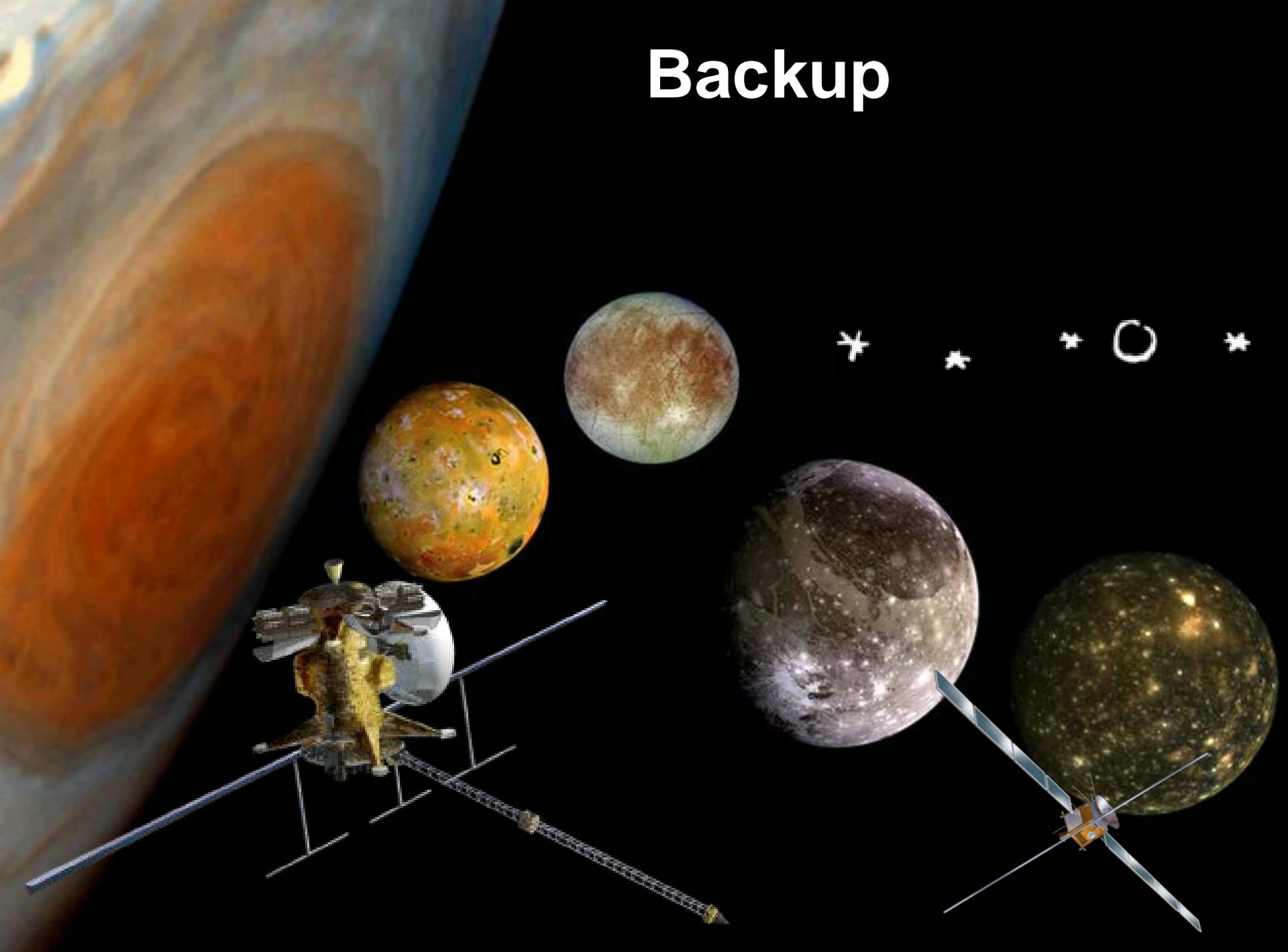


# Instrument Acquisition Strategy



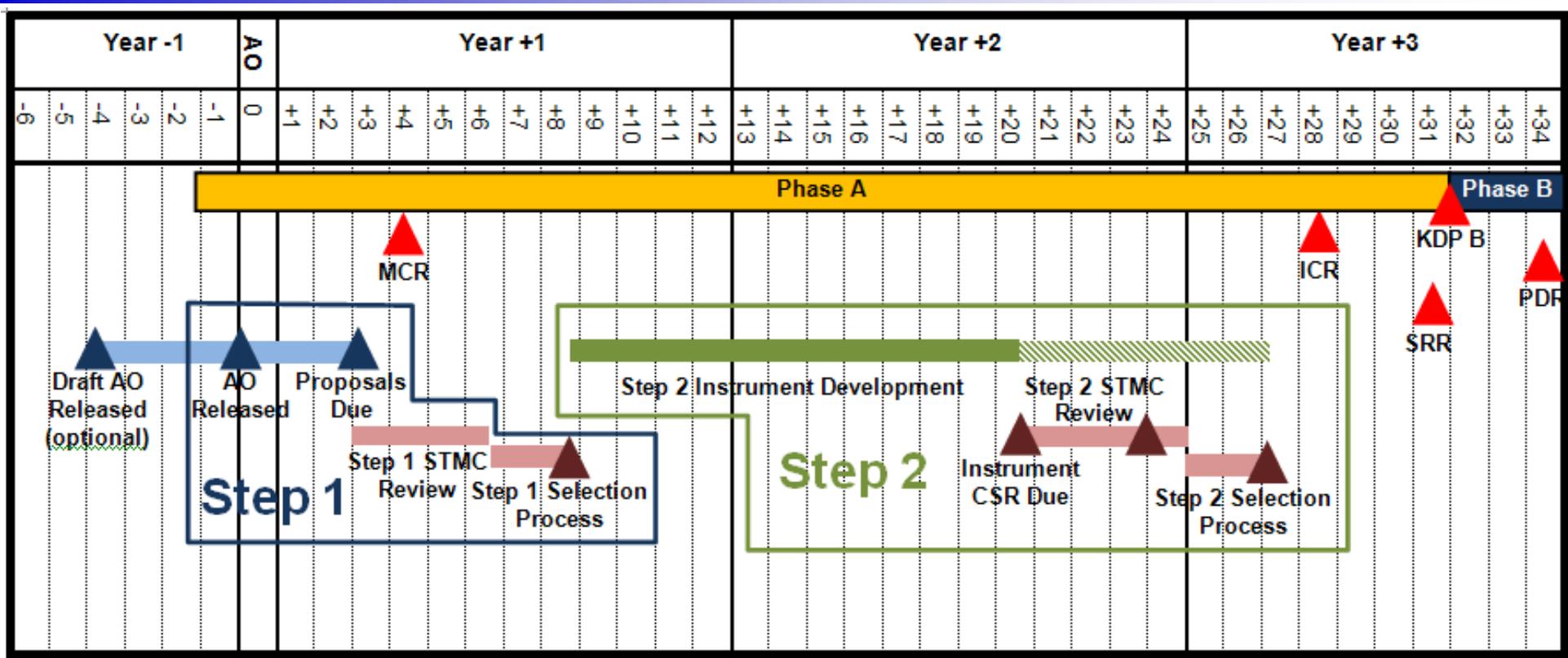
- Significant uncertainty still exists in the areas of instrument development and instrument cost estimates
- The familiar two step acquisition process can reduce this uncertainty and benefit both NASA and proposers
  - For proposers, it provides an opportunity to increase their understanding of implementation 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

# Backup





# Instrument Acquisition Schedule



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