Cosmic Vision Outer Planet Mission (OPM)
TSSM: Titan/Saturn System Mission
EJSM: Europa/Jupiter System Mission

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OPAG meeting
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EJSM: Europa/Jupiter System Mission

- Merging of Laplace proposal & 2007 NASA's Europa Explorer and Jupiter System Observer Flagship study
- NASA/ESA/JAXA International collaboration
  - Europa Orbiter (assumed to be provided by NASA)
  - Jupiter Planetary Orbiter (assumed to be provided by ESA)
  - Jupiter Magnetospheric Orbiter (assumed to be provided by JAXA)
- Some interest (for providing a Europa lander) expressed by Roscosmos

TSSM: Titan/Saturn System Mission

- Merging of TandEM proposal & 2007 NASA's Titan Explorer Flagship study
- NASA/ESA International collaboration
  - Titan Orbiter (assumed to be provided by NASA)
  - Titan *in situ* elements (assumed to be provided by ESA)
    - Montgolfiere
    - Probes/Landers (1-3)

On the Class-L Mission selection process

- Missions in competition within ESA science programme
  - OPM: EJSM or TSSM
  - XEUS (X-ray observatory)
  - LISA (ESA/NASA Gravitational Wave Observatory)
- EJSM/TSSM down-selection in Oct/Nov' 2008. Process to be jointly defined by NASA, ESA, in collaboration with JAXA
- Down-selection to two L-Class Missions end of '09: OPM/XEUS/ LISA ?
- L-Mission selection in 2011
  - One mission (out of the remaining 2) selected for implementation for launch in 2018

TSSM Configuration

- Option 1:
  - Titan Orbiter
  - Titan *in situ* elements
    - Montgolfiere (MMRTG, NASA-Provided, to be confirmed)
    - Up to 3 descent probes/ landers (ASRG NASA-Provided) or batteries (descent/initial surface phase) + RHU's-based low-power electrical energy (long-lived surface phase)

EJSM mission: open points

- Baseline: independent launch for each of the 3 elements
- Combined JPO/JMO launch may be studied
- JAXA JMO planned no earlier than 2020
- JPO payload mass allocation: 50 kg ?
- ESA Mission analysis starting

TSSM *in situ* elements study approach (1)

- Bottom-up approach
  - Define a payload complement as initial starting point and design system that can carry it and provide all resources to address measurements
  - Proposed payload complements;
    - Probes/landers:
      - » Mass: 5, 10, 15, 30 kg
      - » Other resources (energy, power, data rates): TBD
      - » Are all probes the same ?
    - Montgolfiere
      - » Mass: 5, 10, 20 kg
      - » Other resources (energy, power, data rates): TBD
  - CDF study (mid-May to mid-July '08)

TSSM *in situ* elements study approach (2)

- Top-down approach
  - Once delivery mass and telecommunication scenarios defined by JPL, system design will allow to perform system design and derive available payload resources
  - Preliminary delivery options provided by JPL
  - ESA Mission analysis starting

ESA Study approach & planning

- Baseline assessment study calendar was extended to end of 2009.
- Initial schedule adapted (compressed) to prepare for OPM down-selection process in fall 2008.
- Key engineering activity is CDF (Concurrent Design Facility) activity
- EJSM& TSSM CDF study planned from mid-May to Mid-July
- Industrial study will follow starting late '08/early '09

ESA preparation for CDF activities

- EJSM and TSSM Science/Engineering WG formed.
  - To provide technical input for CDF activities
- Documents to be prepared by end of April
  - Science Requirement Documents (JSDT)
  - Payload Definition Documents (JSDT/Study Team)
  - Mission requirement Document (Study Team)
  - Mission Environment Documents (Jupiter radiation, Titan atmosphere, planetary protection, etc..)

ESA Cosmic Vision web page

- http://sci.esa.int/science-e/www/area/index.cfm?fareaid=100

(dynamic) Screen Snapshot