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Joint NASA-ESA Outer Planet Mission study overview

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In 2008, ESA and NASA performed joint studies of two highly capable scientific missions to the outer planets: the Europa Jupiter System Mission (EJSM) and the Titan
Saturn System Mission (TSSM). Joint Science Definition Teams (JSDTs) were formed with U.S. and European membership to guide study activities that were conducted collaboratively by engineering teams working on both sides of the Atlantic.

EJSM comprises the Jupiter Europa Orbiter (JEO) that would be provided by NASA and the Jupiter Ganymede Orbiter (JGO) that would be provided by ESA. Both spacecraft would be launched independently in 2020, and arrive 6 years later for a 3-4 year mission within the Jupiter System. Both orbiters would explore Jupiter's system on trajectories that include flybys of Io (JEO only), Europa (JEO only), Ganymede and Callisto. The operation of JEO would culminate in orbit around Europa while that of JGO would culminate in orbit around Ganymede. Synergistic and coordinated observations would be planned.

The Titan Saturn System Mission (TSSM) comprises a Titan Orbiter provided by NASA that would carry two Titan in situ elements provided by ESA: the montgolfière and the lake lander. The mission would launch in 2020 and arrive 9 years later for a 4-year duration in the Saturn system. Following delivery of the ESA in situ elements to Titan, the Titan Orbiter would explore the Saturn system via a 2-year tour that includes Enceladus and Titan flybys. The montgolfière would last at least 6-12 months at Titan and the lake lander 8-10 hours. Following the Saturn system tour, the Titan Orbiter would culminate in a $\sim$2-year orbit around Titan. Synergistic and coordinated observations would be planned between the orbiter and in situ elements.

The ESA contribution to this joint endeavor will be implemented as the first Cosmic Vision Large-class (L1) mission; the NASA contribution will be implemented as the Outer Planet Flagship Mission. The contribution to each mission is being reviewed and evaluated by each agency between November 2008 and January 2009, and a joint decision as to which destination has been selected is expected to be announced in February 2009.

The ESA Cosmic Vision selection process includes two additional competitive steps (that include two competing astronomy missions) before its contribution to the selected Outer Planet Mission is confirmed in 2012. NASA expects to proceed with the initial implementation of the mission in FY2009, while full implementation will start in FY2013, in line with ESA Cosmic Vision schedule. Should ESA select an astronomy mission instead, NASA would proceed in 2013 with the implementation of a NASA-only mission concept. This presentation will provide an overview of the selected Outer Planet Mission and outline the next steps towards its implementation.