



ESA Technology Reference Studies in the Context of Cosmic Vision1525

P. Falkner (1), A.C. Atzei (1), M.L. van den Berg (1), D. Renton (1), R. Schulz (2)
and V. Sterken (1)

(1) Planetary Exploration Studies Section, Science Payload & Advanced Concepts Office,
European Space Agency, Noordwijk, The Netherlands

(2) Research and Science Support Department, European Space Agency, Noordwijk, The
Netherlands

(Peter.Falkner@esa.int / Fax: +31 71 565 4690 / Phone: +31 71 565 5363)

The concept of Technology Reference Studies has been introduced already at EGU05, where the Venus Entry Probe (VEP), the Jupiter Minisat Explorer (JME), the Deimos Sample Return (DSR) and the Interstellar Heliopause Probe (IHP) have been presented in detail. In the mean time the Cosmic Vision exercise, where the science community has responded with a total of 151 novel ideas whereof 56 focused on the exploration of the Solar System, has lead to the issue of a dedicated ESA publication (BR-247) summarizing the outcome of the exercise. The formulation of themes and mapping in to potential future missions has been taken as basis in the planning of additional new and adaptation of existing TRS's to cover areas, which have not yet been addressed by any TRS. So far this has lead to the following new studies, which will be presented in the paper in further detail:

The Jupiter System Explorer is now extended towards magnetospheric orbiter(s), Jovian Entry Probe(s) and investigation of Galilean Moons, based on solar power mission concepts with Soyuz-Fregat launcher.

The Near-Earth Asteroid sample return concept, based also on knowledge gained during the concluded Deimos Sample Return (DSR) study, with a trade between sample return concept and remote/in-situ exploration concept, to be compatible with the strict assumed cost cap.

The Cross Scale TRS, intended to simultaneously investigate magnetospheric and plasma processes in three spatial scales with a formation of up to 12 spacecraft, orbiting on deep elliptical orbits around Earth.

Furthermore a solar sail demonstration (GeoSail) concept, based on a reasonable small sail (45m x 45 m), to demonstrate deployment, attitude control and navigation concepts as required by solar sail based Interstellar Heliopause Probe or Solar Polar Orbiter and to investigate the potential influence of the extended sail for science instruments.

The paper provides an overview on the current status of the current TRS studies, which are described in further detail and in their relevance to the CosmicVision1525 process.