



Latest Results on ESA's Technology Reference Studies

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The concept of Technology Reference Studies has been introduced at EGU05 and EGU06. In the meanwhile eight mission studies and many additional technology studies and developments have been completed or are progressing.

Most science missions are in many respects technologically very challenging. It is extremely important to define and prepare critical technologies far in advance to ensure that they are developed in a timely manner and that associated cost, risk and feasibility of potential future mission concepts can be estimated properly. Technology Reference Studies (TRS) are set up to provide a set of realistic requirements for these technology developments far before specific science missions get proposed by the scientific community.

The aim of the TRS is to explore possible mission scenarios to complement the current mission specific program and allow the ESA's Science Directorate to strategically plan technology developments. It is not the intention to replace the science mission proposal or selection procedure, which is the responsibility of the science community and discharged through a well-established procedure and advisory structure.

The current running (planetary) TRSs are the Jupiter System Explorer (JSE) with equatorial magnetospheric spacecraft deploying a deep Jovian Entry Probe (down to 100 bar) during the Jupiter insertion manoeuvre, the Near-Earth Asteroid Sample Return (NEASR) to a C-type asteroid, 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 near equatorial orbits around Earth and the solar sail demonstration (GeoSail) concept study.

All running activities provide new results based on refined mission analysis, system

studies, environmental concerns (c.f. development of a new radiation environment model for Jupiter), payload and operational considerations and dedicated technology investigations (e.g. low intensity, low temperature solar cell testing and characterisation for Jupiter, Leon 3 FPGA implementation for payload data processing).

The presentation provides an overview on the current status of these TRSs and latest relevant results on the associated technology developments.