

**Lunar Lander: System Study and Technology Activities**

**Dr. Peter Kyr**

Astrium GmbH, Bremen, Germany, peter.kyr@astrium.eads.net

**Mr. Thomas Diedrich**

Astrium GmbH, Bremen, Germany, thomas.diedrich@astrium.eads.net

**Mr. Jörg Bolz**

Astrium GmbH, Bremen, Germany, joerg.bolz@astrium.eads.net

**ABSTRACT**

Following Phase A studies the European Space Agency (ESA) in 2010 initiated a mission study on Phase B1 level to investigate on a unmanned Lunar Lander precursor mission preparing and positioning Europe for the future international planetary exploration scenarios. Main goal is the demonstration of soft precision landing by means of landing legs including hazard avoidance capability. With this objective the first European Lunar Lander mission in the time frame of 2018 shall demonstrate the European ability to deliver payload safely and accurately to the Moon's surface. A Soyuz class mission is assumed providing about 60 kg of payload mass including servicing. Once successfully landed, the mission will offer the opportunity to conduct important scientific investigations in view of future human exploration. For the surface mission a lifetime of 6 months is envisaged.

Astrium GmbH awarded the prime contract for the execution of the Phase B1 activities in October 2010. The whole Phase B1 is scheduled for 18 month divided in two parts. The first part of 6 month mainly was concentrated on the definition and analysis of potential landing sites near the Lunar South Pole while assessing in parallel the impact on the system design. After the so called Polar Landing Review (PLR) finishing the first part in June 2011 a second part currently continues the work with iteration of the system design and the mission concept and will end with a preliminary System Requirements Review (Pre-SRR) in July 2012. In parallel the system related part of the study goes along with numerous bread boarding activities aiming to raise maturity and validate important key enabling technologies for planetary landing.

The presentation gives an overview about the status of the Phase B1 introducing the actual mission concept and the Lander system design. Supplementary focus is put on the bread boarding and test activities already running respectively initiated. Those in particular are planned in the critical technology areas of navigation and avionics, the landing system and the clustered engine concept.