

HUMAN EXPLORATION OF THE SOLAR SYSTEM SYMPOSIUM (A5)  
Human Exploration of the Moon and Cislunar Space (1)

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INTERNATIONAL MISSIONS TO LUNAR VICINITY AND SURFACE - NEAR-TERM MISSION  
SCENARIO OF THE GLOBAL SPACE EXPLORATION ROADMAP

**Abstract**

The International Space Exploration Coordination Group (ISECG) was established in response to “The Global Exploration Strategy: The Framework for Coordination” developed by fourteen space agencies and released in May 2007. This GES Framework Document recognizes that preparing for human space exploration is a stepwise process, starting with basic knowledge and culminating in a sustained human presence in space.

ISECG has published in August 2013 the 2nd iteration of the Global Exploration Roadmap (GER) and space agencies’ focus since then on expanding the definition of the near-term mission scenario (see IAC-13.B3.1,8x16946 and IAC-14,B3,1,10,x22313). Near-term missions in the time-frame up to 2030 target the lunar vicinity and lunar surface. The work of space agencies participating in ISECG focuses in particular on

- Technical and programmatic definition of extended duration crew missions in lunar vicinity, enabled by an evolvable deep space habitat deployed at the Earth Moon Lagrange Point 2, starting early next decade. These missions are considered as a common strategic step towards enabling human lunar surface missions and preparing human missions to Mars.
- Defining innovative mission concepts leveraging on the presence of humans and a human-tended infrastructure in lunar vicinity and robotic infrastructure elements. These missions are driven by the goals to advance lunar exploration goals, to prepare for later human lunar surface exploration missions and to demonstrate technologies critical for the implementation of a Mars sample return mission.

- Articulating the unique value of humans for advancing exploration goals and identifying opportunities that are enabled by humans and the human-robotic partnership in space for advancing science.
- Coordinating agencies' and private sector driven efforts for increasing the knowledge about lunar volatiles and the use of planetary volatiles as in-situ resource for exploration.
- Assessing space agencies' technology development plans and roadmaps for identifying near-term technology gaps for implementation the near-term mission scenario as well as technology gaps related to the implementation of human Mars missions.

This paper will summarise the status of the definition of international Design Reference Missions targeting lunar vicinity and lunar surface. It will in particular highlight the value of these missions for advancing the implementation of the Global Exploration Roadmap and identify opportunities for international cooperation. The publication of the 3rd iteration of the GER is not planned before 2016, but this paper will provide early insights into envisaged updates of the GER-2.