

Technology Roadmaps for Space Exploration (09)
Enabling Technologies for Exploration (3)

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ASSESSMENT OF TECHNOLOGY DEVELOPMENTS FOR THE ISECG GLOBAL EXPLORATION
ROADMAP

Abstract

Building on the vision for coordinated human and robotic exploration of our solar system established in "The Global Exploration Strategy: The Framework for Coordination", released in 2007, 14 space agencies participating in the International Space Exploration Coordination Group (ISECG) are developing the Global Exploration Roadmap (GER). The GER, published in its first version in 2011, represents a step in the international human space exploration road mapping activity that allows agencies to better inform their investment decisions as they prepare playing a part in this global effort. Appropriately leveraging global investments in technology development and demonstration is expected to accelerate the availability of critical capabilities needed for human exploration missions. No one agency can invest robustly in all the needed technology areas that represent key challenges for executing human missions beyond low-Earth orbit.

As part of ISECG's Exploration Roadmap Working Group (ERWG), the goal of the Technology Assessment Team (TAT) is facilitating to leverage investments in technology development efforts of individual ISECG agencies. While preparing the GER, and under the lead of the TAT, agencies have already begun sharing information on their technology development investment areas and priorities. The GER features in its current version already a high-level categorization of the technology development input of participating agencies, providing a general overview of the applicable challenges.

As the ISECG exploration scenarios mature, the TAT is preparing additional levels of analysis for the next release of the GER. The goal for this next step is improving the coherence and level of detail of the collected inputs by adding high-level performance characteristics and identifying the applicability to exploration scenarios. This is achieved through a mapping process of the individual technology development activities to the specific elements and capabilities of the ISECG design reference missions. As a result, individual agencies can identify gaps as well as overlapping areas that could spur innovative competition and yield a more robust architecture. Joint activities, on the other hand, can create partnership opportunities not only related to technology demonstration missions or platforms but also to the usage of unique ground facilities or capabilities. The overall goal is to create opportunities for cooperation while

recognizing agency autonomy in investment decisions, and for allowing each agency to find promising technologies in the global exploration effort.

This paper provides a work-in-progress overview of the ISECG technology assessment activity targeting a consolidated contribution to the next iteration of the GER in late 2012.