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EXPLORATION PLATFORM IN THE EARTH-MOON LIBRATION SYSTEM BASED ON ISS

Abstract

International Space Station (ISS) industry partners have been working for the past two years on concepts using ISS development methods and residual assets to support a broad range of exploration missions. These concepts have matured along with planning details for NASA's Space Launch System (SLS) and Multi-Purpose Crew Vehicle (MPCV) to allow serious consideration for a platform based in the Earth-Moon Libration (EML) system. This platform would provide a flexible basis for future exploration missions and would significantly reduce costs because it will enable re-use of expensive spacecraft and reduce the total number of launches needed to accomplish these missions. ISS provides a robust set of methods which can be used to test systems and capabilities needed for missions to the Moon, Mars, asteroids and other potential destinations.

We will show how ISS can be used to reduce risk and improve operational flexibility for missions beyond low earth orbit through the development of a new Exploration Platform based in the EML system. The benefits of using the EML system as a gateway will be presented along with several mission design concepts. International cooperation is a critical enabler and ISS has already demonstrated successful management of a large multi-national technical endeavor. We will show how technology developed for ISS can be evolved and adapted to the new exploration challenge. New technology, such as electric propulsion and advanced life support systems can be tested and proven at ISS as part of an incremental development program. Finally, we will describe how the EML Platform could be built and deployed and how International access for crew and cargo could be provided.