Using the ISS to Prepare for Exploration (01)
ISS as the Foundation for Exploration (1)

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ISS-BASED DESIGN FOR AN EXPLORATION PLATFORM AT EML2

Abstract

The International Space Station (ISS) represents years of international collaborative design and construction, as well as successful operation, by space-faring nations around the world. The investments of each member country are not only in the physical assets, but also the intellectual assets of their citizenry. Building upon those investments and strong relationships, we propose to move beyond Low-Earth Orbit (LEO) by leveraging both the physical and intellectual capital of ISS. This paper describes an approach to use existing ISS assets and know-how to design and deploy an Exploration Platform at the Earth-Moon Libration Point 2 (EML2).

Using currently available ISS hardware, we will show an approach to designing, building, and deploying an Exploration Platform at EML2. 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 the ISS, such as Columbus, Multi-purpose Logistics Module (MPLM), Node Hardware, the Automated Transfer Vehicle (ATV), Orbiter Docking system (ODS), ECLSS as well as other systems such as failure tolerant avionics, technology and exploration platform demonstrators, payloads and lab equipment can be evolved and adapted for use as building blocks toward and early beyond LEO capability. Functional and performance Key Driving Requirements are described and their allocation shown to be met by the proposed ISS-Exploration Platform.