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HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Governmental Human Spaceflight Programs (Overview) (1)

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THE INTERNATIONAL SPACE STATION: THE FIRST STEP ON THE JOURNEY TO MARS

Abstract

The International Space Station (ISS) is a multi-purpose platform in low Earth orbit (LEO) realized by an international partnership of agencies; NASA, the Russian Space Agency, the Japanese Aerospace Exploration Agency (JAXA), the European Space Agency (ESA), and the Canadian Space Agency (CSA). Since 2010, the ISS has been focused on a wide range of utilization activities that benefit from its unique environment and location. Utilization activities include human and general life sciences research, fundamental microgravity physical sciences research, Earth and space observation, technology demonstrations, as well as numerous educational activities and initiatives. General and applied research activities in each of these areas contribute to overall scientific knowledge and generate significant benefits for humanity.

While the ISS supports many types of activities, those conducted in preparation of sustainable human space exploration are essential enablers of NASA's Journey to Mars. NASA and its international partners will soon take the next steps to use the ISS as a platform to demonstrate and evolve the technologies necessary for exploration missions. New and more reliable environmental control and life support systems, crew health and monitoring, and many others will be delivered to the ISS in the next couple of years. These critical systems will be demonstrated on the ISS to achieve desired levels of performance in key areas such as higher reliability, higher efficiency and lower mass.

The decision to continue ISS in-orbit operations until at least 2024 provides NASA and its partner agencies with the opportunity to accomplish necessary demonstration of critical systems and perform other activities necessary for the transition of human spaceflight capabilities into the proving ground of cislunar space on the Journey to Mars. This paper will describe ongoing and planned activities and demonstrates the essential role of ISS and its partnership in enabling the Journey to Mars. It will also describe how the ISS is paving the way for a robust future for human activity in LEO, past ISS program conclusion, expanding our economy into LEO.