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NASA'S HUMAN SPACE EXPLORATION PLANS AND ARCHITECTURE

Abstract

NASA is committed to a robust, affordable, and sustainable human space flight (HSF) exploration enterprise that is focused upon leveraging the International Space Station and taking the steps necessary to enable human exploration beyond low Earth orbit (LEO). The President and Congress have jointly and in an overwhelmingly bipartisan manner recognized that what is truly needed for beyond-LEO exploration are core transportation elements and enabling technologies, making the fundamental investments that will provide the foundation for space exploration beyond LEO, including missions in cis-lunar space, to near-Earth asteroids, the Moon, Lagrange points, and, ultimately, Mars. The Human Exploration Framework Team (HEFT) team, operating between May and December 2010, was instrumental in defining an effective framework and long term strategy for guiding NASA investments in capabilities, technologies, robotic precursors, and terrestrial analogue activities. It also enables NASA to continue its efforts to collaboratively develop and refine the necessary architectures, systems and capabilities. NASA shares the belief that challenging and exciting exploration missions will be international in nature, so we are actively engaged in the international community, leading efforts to collaboratively set the vision for human exploration missions of the future.

This paper will discuss NASA's capability-driven framework (CDF); an approach for defining an integrated space exploration and operations architecture that enables sustainable exploration of multiple destinations. Summary results of the Human Exploration Framework Team (HEFT) will be discussed, as well as the ongoing and forward analysis plans of NASA's human spaceflight architecture analysis team. In addition, the approach and importance of NASA's engagement within the International Space Exploration Coordination Group (ISECG) will be discussed.