Paper ID: 25681
oral

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

Author: Mr. R. Marshall Smith
National Aeronautics and Space Administration (NASA), United States

A TECHNICAL INTEGRATION APPROACH FOR NASA'S DEEP SPACE HUMAN EXPLORATION PROGRAMS

Abstract

NASA is developing the capability for humans to conduct deep space exploration. The Exploration Systems Development (ESD) programs: the Space Launch System, Orion crew spacecraft, and Ground Systems Development and Operations are the first of the major systems required to support missions that push human exploration further than ever before, including near earth asteroids and eventually Mars. The Space Launch System program is developing an evolvable super-heavy launch vehicle, capable of putting the necessary payloads and crew into space and on deep space trajectories. The Orion program is developing a capsule capable of sustaining and returning a crew of 4 for at least 21 days in deep space and will be paired with deep space habitats and other components to support long duration missions. The Ground Systems Development and Operations program will provide systems required to assemble, integrate, and launch the SLS and Orion systems as well as future exploration components. Each of these programs are large complex technical and programmatic endeavors by themselves, however they must work as a system to effectively meet NASA's goals for deep space exploration. This usually requires a dedicated engineering group to integrate the system components to ensure that the delivered system will meet requirements. The traditional model for accomplishing this activity is to have an organization that operates as a level above the system components to perform Systems Engineering and Integration (SEI) activities while the components are designed, developed and tested. ESD has assigned the SEI activity to the Cross-program Systems Integration (CSI) office at NASA Headquarters. Traditionally an SEI activity can run anywhere from 8