

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

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MOVING HUMAN PRESENCE INTO THE SOLAR SYSTEM: FROM ISS TO THE MOON AND  
ONTO MARS

**Abstract**

Today NASA is turning a vision of exploration into the actual hardware and infrastructure that will open deep space to the human experience. With Mars as the ultimate goal, NASA will conduct a gradual build-up of capabilities during human lunar missions and create a multi-use, evolvable deep space exploration system. Each mission will deliver capabilities that will support subsequent missions, enabling an efficient method of building up the systems and expertise needed to establish a presence deep space as we have already done in low-Earth orbit. This paper will examine NASA's path to moving human presence into the solar system by 1) maximizing utilization of the International Space Station to test hardware, conduct scientific research, and develop standards for sustaining humans living and working in deep space, 2) expanding partnerships through continued utilization of commercial and international cargo vehicles and the use of the commercial crew program that will bring about the return of human spaceflight from Florida's Space Coast, 3) continuing to engage U.S. industry to advance key deep space capabilities, including habitation, high-power solar electric propulsion, in-space manufacturing, in-situ resource utilization, and 4) building the critical deep space infrastructure beginning with the launch of the Space Launch System rocket and Orion Spacecraft on EM-1, and starting construction of the Lunar Orbital Platform-Gateway. Opening deep space will require the coordinated effort of many nations. NASA looks forward to beginning this journey with the strong and mutual support of the international space community.