

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

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GATEWAY PROGRAM DEVELOPMENT PROGRESS

**Abstract**

This paper provides an overview and status of Gateway, humanity's first space station to orbit the Moon providing vital support for a sustained, long-term human return to the lunar surface and a steppingstone to Mars as part of the Artemis missions. As a lunar outpost, Gateway is a destination for deep space crew expeditions and science investigations. It is also a port for deep space transportation, including landers transiting to the lunar surface or spacecraft embarking to deep space destinations beyond the Earth-Moon system. The National Aeronautics and Space Administration (NASA) leads the Program and is the integrator of the spaceflight capabilities and contributions of U.S. commercial partners and international partners to develop Gateway.

This paper will provide an overview of Gateway's major components in various stages of development. The entire Gateway spacecraft is at preliminary design level of maturity, with some components at or near critical design review. Gateway's major components are the Power and Propulsion Element; the Habitation and Logistics Outpost; Deep Space Logistics; the International Habitation module; Gateway External Robotics System; European System Providing Refueling, Infrastructure and Telecommunications; and an Airlock. This paper will also provide an update on the status of the integration activities necessary to fly and operate this complex, integrated spacecraft for a minimum 15 year design life, including systems engineering integrated analysis cycles, the autonomous Vehicle System Manager software, verification and validation labs, and common vehicle equipment.

Expanding on the successful partnership that has provided over 20 years of continuous crew operations in low-Earth orbit on the International Space Station, Gateway is an evolution of this extraordinary partnership leveraging the capabilities of each contributor to expand humankind's sustained exploration deeper into the cosmos. Highlighting the international program with participation from multiple space

agencies, this paper will also provide a status of Gateway multilateral governance structure and international agreements.