

Gateway: Humanity's Next Utilization Platform

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Abstract

The National Aeronautics and Space Administration's (NASA) Gateway Program is an international collaboration to establish humanity's first space station in lunar orbit. Gateway is a critical element of the Artemis missions that will create a sustained human presence on and around the Moon and chart a path for human missions to Mars. As a platform for science, Gateway builds on decades of success on the International Space Station by extending utilization capabilities from low-Earth orbit to deep space to leverage opportunities specific to the deep space lunar environment. NASA leads the Gateway Program and serves as the integrator of spaceflight capabilities and contributions of U.S. commercial and international partners, including the European Space Agency (ESA), Japanese Aerospace Exploration Agency (JAXA) and the Canadian Space Agency (CSA), to develop Gateway and leverage unique opportunities presented by its location in deep space. This paper provides: Gateway spacecraft overview, internal and external accommodations, resources for utilization, and vantage point for Earth, Sun, and Moon observations. Three utilization payloads have already been selected to fly on Gateway as part of the initial modules, the Habitation and Logistics Outpost (HALO) and Power and Propulsion Element (PPE): European Radiation Sensors Array (ERSA), Heliophysics Environmental and Radiation Measurement Experiment Suite (HERMES), and Internal Dosimeter Array (IDA). This paper will provide a short summary of each payload, the value behind conducting each payload, and share an overview of future utilization goals of Gateway.