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NASA'S APPROACH TO LUNAR COMMUNICATION AND NAVIGATION: ARTEMIS AND
BEYOND

Abstract

NASA's Space Communications and Navigation (SCaN) program is developing a support structure of networks, partners, and technologies to provide communication and navigation services at the Moon. In this paper, we describe the progress and status of these diverse efforts and the ways in which they will be used during NASA's crewed lunar exploration program, Artemis. We provide an update on developments at NASA which are targeted to cislunar space, including the Orion Artemis II Optical Communications System (O2O) demonstration mission, planned Lunar Exploration Ground Sites (LEGS) that will offer a dedicated Direct to Earth (DTE) capability servicing the cislunar region, and a recently released RFP for commercial Lunar Communications Relay and Navigation Services as well as Direct to Earth communications capabilities. We also describe the current status and key role of the LunaNet Interoperability Specification (LNIS), a collaborative standards framework developed by NASA, international partner agencies, and commercial stakeholders. Together, these projects and activities will enable safe, robust, and reliable communications and position, navigation, and timing (PNT) services for both crewed and uncrewed missions across cislunar space. With their efforts to support Artemis, SCaN and NASA are helping to build the foundation for a long term, sustainable human presence at the Moon – one that will set the stage for similar efforts at Mars.