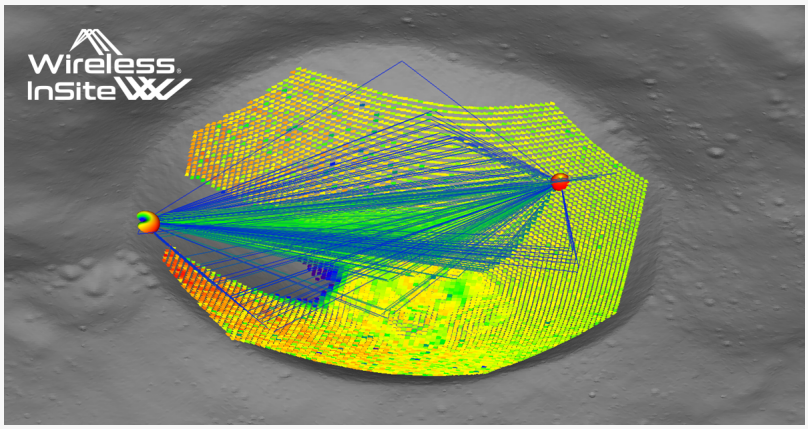
Remcom to Provide NASA with Lunar Wireless Channel Simulation for LunaNet

Remcom contract will provide NASA with mission-critical capabilities for wireless channel simulation and coverage analysis for lunar environments.



Wireless InSite simulation of coverage and multipath in a lunar crater.

STATE COLLEGE, PA, USA, August 22, 2024 /EINPresswire.com/ -- Remcom has been awarded a Small Business Innovative Research (SBIR) Phase II contract to provide NASA with mission-critical capabilities for wireless channel simulation and coverage analysis for lunar environments. The project will enhance Remcom's Wireless InSite® 3D Wireless Prediction Software with key features to predict the performance of 4G/5G and WiFi systems in the complex landscape of the Moon, ensuring robust communications for future Artemis missions.

> Remcom is proud to be a part of NASA's return to the Moon, providing innovative solutions to ensure reliable wireless communications for these immensely important and challenging lunar missions."
>
> *Greg Skidmore, Program Manager*

NASA's Space Communications and Navigation (SCaN) program is working to leverage terrestrial 4G/5G technologies from the Third Generation Partnership Project (3GPP) in order to advance lunar surface communications in support of the LunaNet architecture. The environment on the Moon presents many challenges, including temperature extremes, unusual scattering conditions, the curved surfaces of craters, and regolith dust. Wireless InSite will be enhanced to provide valuable insight into network performance, aiding in the positioning of communication systems for NASA's lunar operations.

The effort will extend Wireless InSite's significant 3D ray-tracing and 4G/5G channel modeling capabilities, incorporating novel and accelerated algorithms and ray-tracing techniques specifically developed to handle the distinctive features of the Moon. The overall goal will be to predict the effects of the Moon's material composition, scattering

characteristics, and the unique structure of its rugged terrain on antenna radiation and signal propagation. In addition, new post-processing will capture the impact of multipath fading, delay spread, and Doppler on communications.

These updates will allow the software to simulate coverage scenarios for several key use cases, including surface-to-surface connectivity between lunar habitats, rovers, landers, and handheld devices; connectivity between orbital assets and the surface to ensure continuity of coverage to remote regions; and interference analysis between systems and sensitive radio astronomy equipment. The software will also include a base set of lunar material definitions and an interactive interface for defining custom materials based on current research on the properties of regolith and bedrock.

Greg Skidmore, Remcom's program manager for the effort, said, "Remcom is proud to be a part of NASA's return to the Moon. Building on our proven ray-tracing capabilities, our team is developing new and innovative solutions and collaborating with NASA and leaders in academia to ensure reliable wireless communications for these immensely important and challenging lunar missions."

About Remcom: For 30 years, Remcom has provided electromagnetic simulation and wireless propagation software for commercial users and U.S. government sponsors. Our innovative software tools, combined with exceptional support, have enabled the world's most advanced engineering teams to deliver their devices to market by simplifying EM analysis for a wide variety of applications. Remcom is committed to its customers' unique needs, offering flexible licensing options for installations of all sizes as well as custom-engineered solutions.

Stefanie Lucas
Remcom
+1 814-861-1299
email us here
Visit us on social media:
Facebook
X
LinkedIn
YouTube
