AiRANACULUS® Awarded Contract from NASA to Demonstrate Feasibility of an Advanced Communications System for Moon Missions

Autonomous Communications Capability Essential for Safe, Effective Space Exploration

CHELMSFORD, Mass. (PRWEB) October 29, 2020 --
AiRANACULUS®, a private, Massachusetts-based technology company providing early stage research, development, prototyping and consulting services, announced it has been awarded a NASA Small Business Innovation Research Phase I contract for development of an advanced space communications architecture to support upcoming missions to the Moon and Mars. The contract contributes to the NASA Space Communication and Navigation (SCaN) program's objectives to dramatically increase the performance, efficiency and reliability of mission communications networks.

"Space exploration represents the most demanding communications environment imaginable, requiring networking, scientific exploration, and position, navigation and timing information to be transported over a wide variety of system configurations in a time-critical fashion," said Dr. Apurva N. Mody, Founder of AiRANACULUS. "We believe that our new cognitive network architecture, designed to automatically sense conditions and manage resources as changes occur, is well-suited to these very complex problems."

Overcoming challenging network requirements could benefit the Artemis program, NASA's plan to land the first woman and the next man on the Moon in 2024 and establish a sustainable presence by the end of the decade. The effort will be managed primarily remotely from Earth, and will involve coordination of US and non-US space agencies as well as commercial partners. Future lunar exploration could also involve activity on the far side of the Moon, requiring flexible support for a variety of direct and multi-link network configurations.

AiRANACULUS has proposed development of a next-generation, cognitive communications network called CLAIRE. The CLAIRE system is designed to autonomously sense, detect, adapt and learn from its experiences and environments to optimize mission communications. CLAIRE will incorporate innovative sensing mechanisms to dynamically manage the multiplicity of current and planned transmission spectrum attributes; machine learning and algorithmic decision strategies to minimize network interference and ensure system performance; and advanced digital signal processing to shrink form factors and lower costs. The company will collaborate with personnel from Draper, IQ-Analog Corporation, Northeastern University and NorthWest Research Associates for portions of the Phase I work which will establish the technical and commercial viability of the CLAIRE solution.

"In addition to space exploration, the AiRANACULUS project will have great utility here on earth," noted retired Admiral David Simpson, former Chief of the Public Safety and Homeland Security Bureau at the Federal Communications Commission. "Military operations at sea and on land, as well as public emergency response applications will benefit from radios that can learn and adjust, overcoming obstacles to ensure priority communications get through."

For more information, please visit www.airanaculus.com.

About AiRANACULUS

AiRANACULUS (www.airanaculus.com) is a Massachusetts-based start-up that provides advanced research and development and consulting services for next-generation defense, science, infrastructure and commercial applications. Our experts apply more than 20 years of leadership in advanced RF design to address the most novel and challenging R&D problems, from concept, design and development to prototyping. The company brings unique domain expertise in intelligent wireless communications, spectrum awareness and sharing, mmWave and terahertz communications, and 5G/6G and beyond; electronic warfare and spectrum dominance, signals intelligence, surveillance and reconnaissance; and critical infrastructure, smart grid and hyperscale internet of things. We leverage advances in technologies such as artificial intelligence, machine learning, edge computing, network slicing, quantum computing, distributed ledger / blockchain and game theory to efficiently address these critical challenges. Our innovations have resulted in solutions to defeat extreme cases of interference; solutions for radar and 4G/ 5G spectrum sharing; novel techniques for detection and characterization of signals; creation of a low SWaP signal analyzer; communications for low probability of detection, interception and geolocation; and methods to create a resilient smart grid.

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