

# Rhea Space Activity Expands Lunar Intelligence (LUNINT) Business with Two Lunar Payloads

*Payloads will demonstrate LUNINT capabilities using celestial navigation, lunar terrain tracking & taking highest resolution images of the Moon from lunar orbit*

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/EINPresswire.com/ -- Rhea Space Activity recently received a \$750,000 grant to test its novel autonomous navigation technology, the Jervis Autonomy Module, in cislunar space. The grant is part of NASA's TechFlights solicitation and will be used to fly two JAM units on a commercial lunar mission. The JAM units will be tested during Draper Laboratory-led Commercial Lunar Payload Services initiative, which will fly NASA's CP-12 science payloads to the far side of the Moon. RSA's JAM units will fly on two separate communications satellites in lunar orbit that are designed to communicate with the [APEX 1.0 lunar lander](#) that is designed and operated by ispace technologies U.S., Inc.



From left to right: Jumpei Nozaki, CFO, ispace inc.; Josh Baumann, GNC engineer, RSA; Samuel Lee, CFO, RSA; Ron Garan, CEO, ispace-U.S.; and Takeshi Hakamada, ispace inc. founder & CEO, meet at the ispace-U.S. headquarters grand opening on September 28, 2023.

The proprietary JAM hardware and software device provides autonomous guidance and navigation, allowing a spacecraft to determine its orbit and location in space using images of celestial objects rather than by contacting other satellites or ground stations on Earth. Especially in deep space (anything further away than Geostationary Orbit), navigating without access to GPS typically relies on NASA's overbooked and highly expensive Deep Space Network. However, JAM can determine the spacecraft's location by taking just a few pictures of the Moon, planets, comets, asteroids, or other satellites, thereby enabling the spacecraft to physically 'see' where it is, providing accurate and autonomous navigation.

"JAM allows deep space and lunar missions to autonomously maintain a desired trajectory by celestial navigation, which is 100% independent of the NASA Deep Space Network," said Shawn Usman, astrophysicist and CEO of RSA. "The Deep Space Network is a huge financial barrier-to-entry for deep space missions. JAM democratizes access to deep space by significantly reducing mission costs and increasing reliability. At RSA we're excited for this upcoming lunar exploration effort and its broader applications for LUNINT. These satellites represent the first of many customers who will be using our product to navigate in the cislunar environment."

RSA's JAM reduces mission costs by eliminating expenses associated with gathering radiometric data and supporting personnel from the NASA Deep Space Network. A recently published ["Audit of NASA's Deep Space Network"](#) by the NASA Office of the Inspector General stated:

DSN antennas are currently operating at capacity and are oversubscribed—meaning more time is requested by missions than the network's current capacity can provide—with demand exceeding supply at times by as much as 40%.

NASA's Flight Opportunities program rapidly demonstrates technologies for space exploration, discovery, and the expansion of space commerce through testing with industry. The program matures capabilities needed for government and commercial applications while strategically investing in the growth of the U.S. commercial spaceflight industry. Through TechFlights, Flight Opportunities works with NASA's Small Spacecraft Technology program to offer access to flight tests on commercial platforms hosting payloads in orbit.

"This technology allows spacecraft to operate autonomously and undetected, even in environments without GPS, helping our defense network to operate seamlessly on orbit," said Samuel Lee, CFO of RSA. "Additionally, RSA is iterating its JAM hardware and software product to also provide discrete navigation and communication capabilities on Earth, supporting ground, air, and sea operations."

For this TechFlights effort, RSA is contracted with ispace-U.S., the designer and operator of the lander, and will integrate JAM on the lunar communications satellites to be flown on the Draper-led CLPS initiative.

"The contract between RSA and ispace-U.S. marks the first commercial rideshare for our series of upcoming lunar missions," said Ron Garan, CEO of ispace-U.S. "We look forward to hosting additional commercial payloads on future missions to bolster the U.S. commercial industry's expansion to the Moon."

The Commercial Lunar Payload Services initiative, led by team Draper, aims to land in the Schrödinger Basin, a large impact crater near the Moon's southern pole. In addition to delivering two communications satellites into lunar orbit, the lander will deliver three payloads of scientific equipment to the lunar surface to measure the Moon's seismic and thermomechanical activity,

and capture details about the magnetic field, electrical activity, heat flow and surface weathering.

RSA is developing a custom camera for JAM that can also take images of the lunar surface for many other purposes. The cameras will take the highest resolution images of the lunar surface from orbit, for lunar intelligence (LUNINT) purposes. These images will be used to create lunar mapping products along with collecting high resolution imagery of other areas of interest, such as the Apollo landing site.

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