

ispace Plans to Collaborate on Lunar Resources Extraction Rover with Haptic Robotic Arm and Mixed Reality (XR) Functions

Memorandum of Understanding signed with Canadian company Stardust and Australia's University of Technology Sydney and EXPLOR Space Technologies

Colorado Springs – Today, ispace, inc. (ispace), ispace Europe SA (ispace Europe), Stardust Technologies Inc. (Stardust), University of Technology Sydney (UTS), and EXPLOR Space Technologies (EXPLOR) collectively signed a Memorandum of Understanding (MoU) to collaborate on a mining rover with a multipurpose robotics arm utilizing virtual reality, haptic feedback in the framework of in situ resource utilization (ISRU) activities on the Moon.

Under the proposed collaboration, the parties involved plan to engage in the form of one or more of the following:

1. Cooperate on the development of a multipurpose robotics arm along with the software component to control the arm utilizing virtual reality; haptic feedback for STEM (Science, technology, engineering, and mathematics) educational purposes; space resources; and space healthcare.
2. Stardust & UTS/EXPLOR to equip a robotic arm and 3D camera to a rover developed by ispace and transport it to the Moon on ispace's lunar lander as rover payload customers on one of ispace's upcoming missions.
3. Acquisition and exchange of lunar data and analytics obtained for scientific and commercial space resources utilization purposes.
4. Joint applications to Canadian Space Agency and Australian Space Agency for potential grants for future lunar missions, such as to develop technology, carry out studies, and cover launch and other mission costs.

A desired objective of this collaboration is to ultimately explore the South Pole of the Moon with the intention of analyzing and collecting lunar resources. In concept, a robotic arm with haptic technology would be installed on a lunar rover and equipped with a 360-degree camera, enabling people on Earth to experience the mission in virtual reality. The proposed rover would be developed by ispace as a future generation model.

The signing of the MoU took place on the sidelines of the 36th Space Symposium in Colorado Springs, Colorado. In addition to the signing parties, attendance at the signing ceremony included representation from the Embassy of Australia in the United States as an honorary observer in full support of this collaboration.

Comments

- **Takeshi Hakamada, Founder & CEO, ispace:** "We're pleased to sign this MoU with Stardust, UTS and EXPLOR for this exciting initiative. I believe this kind of collaboration is necessary to accelerate interest in lunar resources utilization among a broad spectrum of stakeholders."
- **Jason Michaud, Founder & CEO, Stardust Technologies:** "In order for humanity to succeed in space it is vital that we establish partnerships such as this one which will ultimately benefit and empower countless of generations to come. Therefore, we are honored to sign this MoU with ispace, UTS, and EXPLOR towards empowering the future of humankind in space."

- **Dr. Joshua Chou, Senior Lecturer, UTS & CEO, EXPLOR:** "We are very excited and proud of this MoU which again demonstrates the innovation from EXPLOR and the collaborative environment at UTS to support such a great demonstration of international collaboration to accelerate human space exploration."
- **Charlie Angus MP Member of the Canadian House of Commons:** "Stardust Technologies is a world class research team. I am proud to work with them on promoting and exporting their cutting-edge innovations. This crew is reaching for the stars. And they will get there."
- **The Hon. Stuart Ayres MP Minister for Jobs, Investment, Tourism and Western Sydney, Australia - NSW Government:** "NSW is home to the best and brightest in space technology and advanced manufacturing and we're thrilled to see our homegrown technology reaching for the moon. The Mission will showcase several space technologies and expertise from NSW Businesses and Researchers ranging from communication, data transfer, remote operation and robotics."

A timeline for the implementation of the activities in the MoU is not yet disclosed. Further information will be released in the future.

ispace, inc. (<https://ispace-inc.com/>)

ispace is a lunar exploration company with over 150 staff and offices in Japan, Europe and the United States. The company has raised – cumulative total funding of approximately \$195.5 million (USD)ⁱ. The funding is being used to build small commercial lunar landers, aiming to provide a high-frequency, low-cost delivery service to the Moon. Aspiring to be a gateway for private sector companies to bring their business to the Moon, ispace has also launched a lunar data business concept to support companies with lunar market entry. The company's first lunar mission is planned for 2022ⁱⁱ with a second mission planned for 2023ⁱⁱⁱ. On its first mission, ispace's lander will deliver payloads for the Mohammed bin Rashid Space Centre (MBRSC), The Japan Aerospace Exploration Agency (JAXA), and three companies that received awards as part of the Canadian Space Agency's (CSA) Lunar Exploration Accelerator Program (LEAP) program. The lander for the first mission is currently undergoing final assembly at an ArianeGroup facility in Germany and will launch from the United States on a SpaceX Falcon 9 rocket. ispace is also part of a team led by Draper, which was selected by NASA to compete in its Commercial Lunar Payload Services (CLPS) Program. Both ispace, inc., and ispace EU were awarded contracts to collect and transfer ownership of lunar regolith to NASA, and ispace EU was selected by the European Space Agency (ESA) to be part of the Science Team for PROSPECT, a program which seeks to extract water on the Moon.

Stardust Technologies Inc. (<https://stardust-technologies.com>)

Stardust Technologies Inc. (Stardust) is a Canadian aerospace and technology social enterprise head quartered in Cochrane, Ontario with offices in Ottawa, Ontario. Stardust was founded in in 2014 with the goal to empower the future through innovative technologies, science, and space exploration, ultimately making space more accessible to humanity. Stardust specializes in AI, XR, Robotics, and STEM education. Stardust as most recently worked in collaboration with the Canadian Space Agency and the National Research Council of Canada on the EDEN project creating a solution utilizing virtual reality, neural systems, haptics feedback in Lunar, Martian, and Micro gravity environments to help astronauts cope with their mental health during their time on the International Space Station, space habitats, and space exploration. Stardust is a strong advocate for collaboration having established multiple international innovative projects with our partners at Beaverhouse First Nations, York University and Habitat Marte, to benefit humanity and forge a path towards a safe framework for space exploration.

University of Technology Sydney (<https://www.uts.edu.au/>)

The University of Technology Sydney (UTS) is Australia's number one young university, and it is taking great strides towards our vision of becoming a world-leading university of technology. Research at the Faculty of Engineering and IT is renowned for quality and industry-focus. As part of the lively and rigorous research culture at UTS, its priority is

to ensure that the work has a transformative impact in society and industry. Specifically, the School of Biomedical Engineering is an Australian leader in practice-based learning, research, and industry engagement. The School of Biomedical Engineering, which was formed in 2017 was recently awarded an ERA 5 ranking (2014 and 2018) and is the one of only three Biomedical Engineering centers in Australia whose research is recognized to be well above work standard. Our researchers are pioneering innovative, real-world solutions. They're recognized leaders in their fields, responsible for delivering better, cost-effective outcomes to national and international challenges. Today, UTS is the highest performing university in Australia under 50 years old according to both the The Top 200 under 50 2018, and the QS Top 50 Under 50 — which also ranks UTS in the top 10 in the world. It is also in the top 200 of both the QS World University Rankings and the The World University Rankings in 2019.

EXPLOR Space Technologies (<https://www.explorespace.com.au>)

EXPLOR Space Technologies (EXPLOR) is an Australian aerospace company specializing in space biology and space health technology manufacturing and services with focus on the human element of space exploration. EXPLOR is headquartered in Sydney, Australia with offices in Japan and United States. EXPLOR was founded in 2018 by Dr. Joshua Chou and Anthony Kirillos with the goal of developing technologies to advance human survival in space and the translation of these technologies for healthcare on Earth. EXPLOR's achievements include manufacturing the first simulated microgravity random positioning machine (RPM) dedicated for biological and pharmaceutical research, autonomous exploration robotics, space performance suit coupled with health and biosensors and space habitats. EXPLOR is developing a human-centric space ecosystem by providing the community with the tools to disrupt space technologies.

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ⁱ Actual figure is JPY 21.3 billion; JPY to USD conversion provided for reference purposes, using the applicable FX rates as of the time of each funding.

ⁱⁱ Current plan as of August 2021.

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