



The European Space Agency Signs Historical First Contract with Hungarian SME Puli Space to Purchase Lunar Exploration Data from a Commercial Lunar Mission, conducted by Intuitive Machines

Budapest, January 15, 2025 – Flying on Intuitive Machines’ second Lunar mission (“IM-2”) slated for not earlier than late February 2025, Puli Space Technologies’ NASA-awarded miniature neutron spectrometer, the Puli Lunar Water Snooper (PLWS), will collect water ice indicator data in the South Pole region of the Moon. Mounted on Intuitive Machines’ rocket-fueled drone called the Micro Nova Hopper, PLWS will collect first direct surface data ever from a Permanently Shadowed Crater as well. The European Space Agency (“ESA”) has made history by entering its first-ever exploration Data Buy agreement from a commercial deep space mission.

The Moon has obtained much attention recently. With India (Chandrayaan 3, 2023) and Japan (SLIM, 2024), there are now five countries soft-landed on the Moon, while Houston-based company Intuitive Machines made the first commercial mission landing February 2024, following the unsuccessful attempts of the Israeli Beresheet (2019) and the Japanese Hakuto-R (ispace, inc, 2023) missions. Efforts of the United States and China to return humans to the Moon, supported by substantial private investments in lunar missions, makes the Moon an interesting target for viable economic activity in space exploration.

One of the initial activities in the emerging cislunar economy is to validate possible In-Situ uses of resources. Amongst the most promising candidates is water ice, since sustainable lunar water extraction - and other resource extraction like oxygen - would catalyze the establishment of permanent outposts on the Moon and boost the creation of an affordable cislunar and deep space transportation system, making space transportation more sustainable, efficient, and ubiquitous. However, the initial work will be prospecting: we need "a good, quantitative understanding of where the resources are, how much is there, what other components are also there, how extractable the resources are, and what the commodities are worth." (See C. Neal et al, The Moon needs an international lunar resource prospecting campaign, <https://www.sciencedirect.com/science/article/pii/S0094576523005842?via%3Dihub>)

Orbital measurements conducted earlier by various instruments provided several direct scientific evidence that hydrogen (in the form of H₂O and OH molecules) can be found on the surface of the Moon, with largely varying spatial distribution. However, the spatial resolution of these data is inadequate to determine possible mining sites, so local concentration water ice mapping on the surface is necessary.

Neutron spectroscopy (used also in the abovementioned orbital measurements) is a key method to obtain information of hydrogen (and thus indirectly, of water ice) concentrations of the upper one meter layer of the lunar soil, the regolith. Hungary based Puli Space Technologies and Intuitive Machines teamed up for a first lunar surface water ice mapping attempt. Intuitive Machines’ commercial mission will use Puli Space’s [NASA-awarded miniaturized neutron spectrometer](#), the Puli Lunar Water Snooper (PLWS),

measuring only 10x10x3.4 cm and weighing barely 400 grams, mounted on Intuitive Machines' Micro Nova Hopper. The unique autonomous rocket-fueled drone will explore the region around a permanently shadowed region (PSR) in the lunar south pole region, and intends to fly into such a shadowed crater for the first time.

The European Space Agency's Lunar Science Office realized the importance of the expected data and ESA has made history by entering its first-ever exploration Data Buy agreement with Puli Space Technologies, marking a pivotal moment in the evolution of the private space economy. This groundbreaking collaboration not only validates the value of privately funded lunar missions but also sets a precedent for future partnerships between public agencies and private ventures in deep space exploration. ESA will work closely with Puli Space to analyze and standardize the measurement data, which will become public later.

"We are proud of the results we achieved so far," said Puli Space Technologies Founder Dr. Tibor Pacher. "International recognition is important for us: it advances our ability to plan and validate our further work: we are especially excited to have ESA with us on board Intuitive Machines' mission to reach the South Pole region of the Moon and take measurements in a so-called 'permanently shadowed crater,' at temperatures down to minus 200 degrees Celsius. We are also keen to work out the details of the first deep space data selling process with ESA, setting a reference for future activities."

"Intuitive Machines is proud to advance commercial lunar activity by providing the critical delivery, mobility, and data transmission services needed to make bold lunar ambitions a reality," said Trent Martin, Senior Vice President of Space Systems at Intuitive Machines. "Partnering with Puli Space Technologies to deliver their water snoopers aboard our Micro Nova Hopper exemplifies how our infrastructure enables groundbreaking exploration in some of the Moon's most challenging environments. By transmitting invaluable data collected from permanently shadowed regions back to Earth for the European Space Agency, we're expanding the possibilities of lunar discovery and creating a sustainable framework for future commercial partnerships on the Moon."

James Carpenter, Head of ESA's Lunar Science Office noted: *"It is impressive to see how far Puli Space and Intuitive Machines have come in preparing this mission and being able to generate this first of a kind data set. We are looking forward to the mission and to the opportunity see what this data can tell us about the nature of water on the Moon."*

About Puli Space Technologies

Founded in 2010 with the aim to become part of the fast-growing private lunar economy, Puli Space develops a range of lunar exploration technologies. These include the NASA award-winning Puli Lunar Water Snoopers (PLWS), a rugged, micro-sized, lightweight neutron spectrometer instrument for exploring lunar water resources in support of In-Situ Resource Utilisation (ISRU) and, building on Puli's Google Lunar XPRIZE heritage, a low cost, lightweight planetary rover platform with unique high mobility capabilities. The customizable rover will provide transportation, control and communication of various measuring devices that will play an important role in the discovery and exploitation of lunar resources. Puli also keeps an eye on Down to Earth applications, which include adapting the rover capabilities for earthbound tasks like agricultural use and applications of neutron detection/monitoring technologies.

The Puli Space Technologies Team thanks for their PLWS technology and mission development support its volunteers, as well as its national and international partners: PCB Design Ltd., Péter Szántó (FPGArt Ltd., BME MIT lecturer), Nanosensors Lab (Energy Science Research Centre), Elektromont Ltd., Kiskutya Ltd., Concorde MB Partners, Sigma Technology Hungary Ltd, Tuxera Hungary Ltd and the Radiation to Electronics (R2E) group of CERN.

Web: <https://pulispace.com/>

Facebook: <https://www.facebook.com/pulispace>

LinkedIn: <https://www.linkedin.com/company/puli-space/>

YouTube: <https://www.youtube.com/user/pulispace>

About Intuitive Machines

Intuitive Machines is a diversified space exploration, infrastructure, and services company focused on fundamentally disrupting lunar access economics. In 2024, Intuitive Machines successfully landed the Company's Nova-C class lunar lander, Odysseus, on the Moon, returning the United States to the lunar surface for the first time since 1972. The Company's products and services are offered through its four in-space business units: Lunar Access Services, Orbital Services, Lunar Data Services, and Space Products and Infrastructure. For more information, please visit intuitivemachines.com.

Further information

ESA: Snooping Science on the Moon

https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/Snooping_science_on_the_Moon

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