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IAF SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 3 (2C)

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LUNAR RESOURCE EXPLORATION SERVICE

Abstract

The exploration of the lunar environment and of its resources with measurements taken from the surface constitutes a critical first step toward future lunar resource utilization. ispace Europe is currently developing a number of solutions in robotics and data analytics that the company would combine and offer as a commercial exploration service. These solutions cover a wide spectrum of exploration activities starting with exploration planning, exploration and data acquisition, data processing, and data interpretation and reserve evaluation.

- Exploration planning: in-house experts aided by in-house software tools, who would analyze lunar data and plan exploration missions: digital terrain model generation, landing site selection, local horizon calculations, illumination conditions, earth visibility conditions etc
- Transportation: provided by ispace inc.'s affordable and high-frequency transportation service to the lunar surface. Mobility: two classes of rover products, the Micro Rover line and the Exploration Rover line, are currently in development. These build on the ispace Sorato lunar rover that was developed and flight-tested during the Google Lunar XPRIZE competition.
- Energy, Sensors, Excavation: ispace Europe has a wide network of strategic international partners with state-of-the-art solutions.
- Mapping: ispace Europe is currently developing an in-house solution for performing Simultaneous Localization and Mapping (SLAM) onboard the Exploration Rover. This SLAM solution would provide critical data about localization of resources and the environment in which they are located.
- Evaluation: ispace Europe is currently developing in-house data processing tools and is initiating the work on the evaluation of lunar resources and reserves with the development of an international Lunar Ore Reserves Standard (LORS).

The company would demonstrate these solutions with two missions planned in 2023 and 2024 respectively. The first one would also perform a regolith collection and transfer of ownership contract for NASA.