

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IP)

Author: Mr. Kyle Acierno
Japan, k-acierno@ispace-inc.com

MOVING FORWARD AFTER THE GOOGLE LUNAR XPRIZE, ISPACE'S PLAN FOR THE
COMMERCIAL EXPLORATION AND EXPLOITATION OF THE MOON

Abstract

ispace is a lunar exploration company which manages Team Hakuto, a front-running team in the now closed Google Lunar XPRIZE. ispace developed and flight qualified the SORATO rover, which won the 500K mobility milestone award. Team Hakuto signed a partnership in 2017 with Team Indus, which had a validated launch and Grand Prize. Unfortunately no lander team was able to close funding for a launch contract and the contest was declared finished in January, 2018.

ispace's vision expands beyond the GLXP. The company intends to build-upon two fundamental transport focused technologies, a rover and a lander, in order to enable the commercial exploration of the lunar surface and prepare for the establishment of in-situ resource utilization.

The rover will be modelled after SORATO. The rover will be scaled according to the size of the payload and necessary power. The body is built in carbon fibre and has 3D printed ULTEM wheels. The 4 HD cameras place around the rover will capture images in 360 degrees, used for localization, hazard detection and mapping.

The lander is designed to carry from 30 to 50 kg of payload to the lunar surface. Payloads in its interior is protected within the spacecraft structure during flight. Once the lander is on the lunar surface, it opens and payloads can be deployed.

ispace has a three-step plan to explore for, map, measure, manage, process and eventually sell water ice and other resources on the lunar surface. First, ispace will demonstrate its rover technology during its maiden lunar mission in 2020. Next ispace will develop its landing abilities, crater exploration, as well as other ISRU techniques and process which will give the company access to the lunar sub-surface. In this phase ispace plans to partner with space agencies, scientists, and the mining community for sensor and technology development to better detect valuable deposits. In addition, ispace will offer transportation opportunities so the international community can develop and test its own technology to explore the lunar surface. Finally, depending on the location, distribution, quality and quantity of the lunar ice and other resources, ispace will develop extraction and processing methods with interested industrial partners. An ultimate goal is to convert the ice to fuel and deliver it to private companies such as the United Launch Alliance, who has offered to purchase fuel on the lunar surface for 500/kg.