

15th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)

Novel Concepts and Technologies to Enable Future Building Blocks in Space Exploration and Development (3)

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ISPACE'S 2017 LUNAR MISSION AND FUTURE ISRU ROADMAP

Abstract

This presentation will introduce ispace, a lunar exploration company headquartered in Tokyo, Japan, and with offices in USA and Luxembourg. ispace manages Team Hakuto, a front-running team participating in the Google Lunar XPRIZE (GLXP) competition. The presentation will begin by introducing the technology that ispace is developing. Next, the presentation will outline Team Hakuto's 2017 mission plans and rover capabilities. The presentation will conclude by explaining the future technology ispace will employ to prospect for and utilize resources on the lunar surface, enabling deeper and longer exploration missions.

ispace owns and operates Team Hakuto, the only Japanese Team competing for the 30M GLXP competition. During this first mission to Mare Imbrium, the 4kg rover will attempt to survive one lunar day. The rover will travel at least 500m to achieve the required objectives of the GLXP. The mission will provide a low cost opportunity to demonstrate our technology. This mission is the first of many missions planned by ispace technologies.

ispace has a three-step plan to locate, map and finally utilize resources on the lunar surface. ispace will have its first attempt to demonstrate its rover technology during the GLXP mission. Once proven successful, ispace will develop a tethered dual rover crater exploration vehicle, as well as rover with a drilling mechanism, which will give the company access to the permanently shadowed craters and the resources that lay beneath it. In this phase ispace plans to partner with space agencies and the scientific community for sensor and technology development to better detect and understand water ice deposits. Finally, depending on the location, distribution, quality and quantity of the lunar ice, ispace will develop extraction, processing, and utilization techniques with industrial partners. An ultimate goal is to convert the ice to fuel and deliver it to private companies.

One of the most difficult aspects of commercial exploration is how to develop a commercial market. This presentation will conclude by explaining how ispace has sold nearly 10 million USD worth of advertising for its first mission and outline plans to attract commercial development in the future.