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Entrepreneurship and Innovation: The Practitioners' Perspectives (1)

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A COMMERCIAL AND TECHNICAL ASSESSMENT OF A LUNAR COMMUNICATIONS
CONSTELLATION

Abstract

Currently planned lunar activities face two distinctive challenges that reduce their overall scientific and economic potential. Low quality of communications (coverage, data rate, availability) prevent continuous remote operations and reduce the amount of data that can be recovered from the surface. Lack of global communications coverage prevents access to the scientifically interesting far side and will constrain operations on the craters of the lunar poles. Both of these issues will have to be solved in order to unlock the full economic and scientific value of the Moon. One way to provide quality communications on the lunar surface and low lunar orbit would be to deploy a communications constellation that leverages recent developments in LEO satellite technology. Plus Ultra Space Outposts is developing a system based on small satellite platforms using Ka-band and optical communications. The system can be deployed in time to support the initial Artemis missions and other exploration missions. This paper will present an assessment of the feasibility and development requirements of the proposed system, as well as the long-term benefits, through the following elements:

- Description of the system architecture and deployment strategies;
- Description of offered services and the potential commercial value for lunar lander operators;
- Review of alternative applications and added services that could be included in the system, such as lunar positioning and navigation.