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

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COMMERCIAL PARTNERSHIP TO ADVANCE INTERNATIONAL EXPLORATION OF THE MOON

Abstract

Since the beginning of the space age, access to the Moon has been limited to a select few. Only three governments have landed robotic spacecraft on the lunar surface – the United States, the former Soviet Union, and China. The physics and economics behind missions to the Moon have restricted this activity to large national governments that cost more than 200 million U.S. dollars per mission. The associated cost and complexity has also severely constrained the cadence with which these missions occur.

This paradigm is changing thanks to a commercial model that delivers lunar payloads as a service. Lunar delivery service is being enabled by reductions in launch costs, advances in microelectronics and robotics, and an innovative public-private partnership between NASA and industry. A significant portion of the demand for such a delivery service comes from national space agencies, both emerging and established. This paper will outline how commercially led lunar missions are increasing access to the Moon through a new kind of international space cooperation.

After providing an overview of this new cooperative model, the paper will outline a specific case study on how an emerging national space agency is currently taking advantage of the commercial lunar delivery model to advance its strategic space goals. By purchasing service on an upcoming commercial lunar delivery mission, the space agency is sending its first-ever lunar payload, stimulating activity in its lunar science community, and gaining valuable space operations experience that can develop national capabilities and competencies.

Lastly, this paper will identify ways in which established legacy national space agencies are now considering the utilization of commercial lunar delivery for science, exploration, and technology RD. Legacy agencies have successfully executed large, sophisticated lunar missions in the past, but there remains a demand for additional complimentary access to the Moon. For instance, legacy agencies seek to demonstrate nascent technologies in a planetary environment, carry out small lunar science instrument investigations, and fly payloads from cancelled past lunar missions.

With a commercial lunar delivery service at the center, international space agencies are afforded a new method of getting payloads to the Moon without cost-prohibitive investments that may not align with national priorities. By expanding access and increasing science and exploration capacity, commercial lunar delivery is an exciting new capability for enabling global science and exploration goals.