

Executive Summary

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Presentation Title

Proposal for a Lunar Exploration Science Campaign: A Commercial-leveraged, Science-focused, Frequent Lunar Mission Program

Key Ideas

- (1) Establishing an aggressive lunar science campaign to the lunar surface
- (2) Enabled by commercial leveraging with NASA
- (3) Leading to a near-term technology demonstration on the surface.

Additional Information

Proposal for a Lunar Exploration Science Campaign: A commercial-leveraged, science-focused, frequent lunar mission program

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The advent of the entrepreneurial space industry has brought a great deal of interest in the commercial potential of space from a growing number of economic sectors. In particular, the nascent entrepreneurial launch industry has attracted a great deal of private funding, which NASA's Commercial Orbital Transportation System (COTS) seeks to leverage to provide needed future logistics access to the International Space Station. The growing industrial interest in these opportunities has led to the creation of numerous industry groups and events, most notably the Space Commerce Roundtable (www.spacecommercetroundtable.com).

Interest in the commercial potential of the moon is high, and a number of companies have invested internal resources (sometimes in the millions of dollars) in exploring potential business models. Examples of companies which have invested such resources, made recent announcements or approached NASA with relevant lunar interests include both traditional and non-traditional aerospace companies such as Cisco, Raytheon, Space Systems Loral, Ecliptic, EDS, Rocketplane-Kistler and SpaceDev¹[1]. Several of the ideas that have been discussed, including lunar communications, infrastructure (including surface access), and entertainment, have attracted significant investment. If NASA could use this commercial interest to achieve its lunar science and exploration goals this could be an ideal public/private partnership for increasing science return and lowering net costs to NASA while achieving commercial objectives for industry.

[1] See 8/23/07 press release: http://www.spacedev.com/press_more_info.php?id=184

The newly released National Research Council study, "The Scientific Context for Exploration of the Moon," provides the NASA framework for science missions to the moon under which all collaborative efforts with industry should be structured. The "Prioritized Science Concepts" in this document form the fundamental platform from which NASA SMD will negotiate collaborative missions with industry. Furthermore, commercial partnerships should leverage upon current NRC report-inspired studies such as the effort to determine which prioritized science concepts can be addressed by small spacecraft (ranging from, for instance, distributed networks of small seismometer stations to in-situ sample analysis and eventual sample return). The objective of commercial partnerships is not to add science goals to NASA but rather to accomplish these goals more quickly, reliably and at a lower cost than NASA could do alone. From industry's point of view, the goal to develop viable business plans which will monetize collaborative lunar science efforts with SMD.

Commercialization is a key imperative from an agency perspective. Goal 5 of the NASA Strategic Plan (February 2006) states "Encourage the pursuit of appropriate partnerships with the emerging commercial space sector." Given the increased commercial interest in the moon as noted above, a great deal of opportunity exists to form such partnerships with SMD to leverage NASA resources while enabling the commercial space sector to grow. The more recently released "Global Exploration Strategy Framework" signed by NASA and 13 other space agencies around the globe (May 2007) states "Space exploration... offers significant entrepreneurial opportunities by creating a demand for new technologies and services. These advances will encourage economic expansion and the creation of new businesses."
