COMMERCIAL LUNAR DATA COLLECTION AND LICENSING TO REDUCE EXPLORATION COSTS.

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Introduction: Space agencies traditionally have offered one-time funding events to attract ad hoc teams of academics and aerospace contractors to develop special-purpose hardware to acquire planetary data sets. Following most missions, the team is disbanded and the hardware designs might never be used again. The worldwide interest in sustained lunar activities offers an opportunity to change this paradigm by sustaining stable teams repeatedly using familiar and lunar-tested hardware designs. This will lead to cost savings for the governments seeking lunar data.

There now is an opportunity for commercial operators to create precursor lunar robotic activities that feature frequent missions using the previous mission's hardware as the template. Rather than provide lunar missions on a cost-plus basis to various governments, a new business model is possible:

1) Selling payload accomodations to specific instruments that goverments, universities and corporations want delivered to the lunar surface;

2) Conducting activities on the lunar surface for multiple customers on the same mission; and

3) Collecting science and engineering data for sale or licensing to government and private sectors.

As a company completes each mission, its library of essential lunar data will grow. Access to the library can be on a subscription basis, similar to the methods used by software companies that sell their programs on a subscription basis.

Commercial operators also will be able to earn revenue by carrying out exclusive marketing and media activities that NASA and most other space agencies are legally unable to service. This will reduce the amount of funding commercial operators will need to collect for the science and engineering data sought by governments and researchers.

In July 2008, Astrobotic Technology was awarded a NASA contract to study the most effective regolith moving approaches for site preparation prior to emplacement of the agency's first lunar outpost. It plans to eventually conduct these site prep activities for NASA, other space agencies and commercial entities on a fixed-cost basis.

Astrobotic's approach to this new space mission paradigm is based on the field robotics experience of Dr. Red Whittaker of Carnegie Mellon University, who won the 2007 Urban Challenge sponsored by the Defense Advanced Research Projects Agency by modifying a Chevy Tahoe to autonomously maneuver in simulated city traffic. Dr. Whittaker also has deployed autonomous exploration robots to Antarctica, the Atacama desert and other extreme locales. He has completed more than 80 government contracts for NASA, the Energy Dept. and other agencies; one of the most recent is creation of the "Scarab" robot for NASA, designed to traverse the steep slopes of lunar polar craters in the search for water ice.

Astrobotic's team has built and tested several prototype lunar robots, the first of which will be launched in May 2010 to compete for the Google Lunar X Prize and to document the Apollo 11 site via high-defintion video.

Drive mechanisms and wheel designs have completed several kilometers of terrestrial testing in lunar stimulant, using a counterweighted arm to mimic one-sixth gravity.