

Return to the Moon (02)  
Concepts for Robotic and Human Missions to the Moon (3)

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BREAKING THE LUNAR DEADLOCK: MANAGING THE UNCERTAINTY AND ACHIEVING A  
NEAR-TERM MISSION

**Abstract**

2012 will witness the 40th anniversary of the last human lunar mission – a surprising and bittersweet milestone to many. The reasons for this modest pace are well understood – subsequent 20th Century exploration prioritized robotic Mars exploration, reusable human space transportation and permanent space infrastructure. Yet while the 21st century is widely anticipated to eventually feature deeper, more sustainable human-robotic deep-space and planetary exploration, our first decade has been a difficult one as nations globally wrestle with the scale of the next big step, and a political context very different from that which drove successes in the past.

Encouragingly, the Moon persists as a key element within architecture recommendations. International and commercial lunar interests today rival those of any other planetary body. The challenge is clearly not lack of ideas. Recent years have seen every major agency undertake at least one architectural assessment that included the Moon in some way, and valuable progress has been made recently by ISECG and LEAG efforts to harmonize roadmaps between international lunar science, resource and human exploration stakeholders.

Nor is the issue one of partnership. In Canada, for example, the past 5 years alone have seen over 20 different concept and technology development activities undertaken by industry and academia for CSA, exploring future national contributions to the global lunar effort – from early science and prospecting, through human sortie to long-term lunar outposts.

Rather a challenge has been one of budget and momentum, where establishing and maintaining unity between diverse stakeholder groups (international, science, human spaceflight, commercial, government) has consistently thwarted large, long-term multi-mission initiatives. Exploration thus remains deadlocked, and economic and political circumstances show few signs of improving soon. The looming multi-year gap, meanwhile, poses major challenges for space communities worldwide, and the lost momentum - technically and socioeconomically – risks being damaging on a decadal scale.

Can we break the deadlock in time? This paper describes international - in this case, Canadian - experiences in managing recent architectural uncertainties while preparing reliable lunar contributions. The paper then considers the case for a single mission that could address the current impasse in a useful

timescale, maintaining lunar momentum and targeting key LEAG and GER recommendations without the approval burden of a larger multi-mission program. A concept summary is presented that considers budget constraints assumed to prevail for the next 2-4 years, and opportunities for international and commercial participation are highlighted.