IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Governmental Human Spaceflight Programmes (Overview) (1)

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CANADIAN SPACE AGENCY'S LUNAR SURFACE EXPLORATION INITIATIVE – CANADIAN INFRASTRUCTURE OPTIONS ON THE MOON

Abstract

A primary goal of Canada's 2019 Space Strategy is to remain a leading spacefaring nation. Canada continues to achieve this goal through the contribution of a next generation space robotic system, Canadarm3, to NASA's Lunar Gateway and through the Lunar Exploration Accelerator Program (LEAP), a program that will develop new technologies and conduct science in the lunar vicinity and on the surface of the Moon. With the lunar surface being the current focus of international efforts, the Canadian Space Agency is developing the Lunar Surface Exploration Initiative (LSEI). The LSEI intends to evaluate a suite of potential major Canadian infrastructure contributions to human spaceflight, in particular on the lunar surface. Canadian contributions are envisioned to be implemented beginning in the 2030's and may be in the same order of magnitude as Canadarm3. Viable options for Canada's potential contribution will provide early, visible and critical infrastructure capabilities driven by Canada's government and commercial interests, and is complemented by the science enabled by these contributions. Preparatory activities are underway to reduce uncertainties and support approval and implementation of potential future space missions to the lunar surface. These activities have analysed Canadian strengths and focused in on the areas of Agriculture & Food Production, Autonomous & Intelligent Robots & Rovers, Mining & In-Situ Resource Utilization, Power Generation & Distribution, and Avionics & Communication. Drawing on these existing Canadian strengths and capabilities, the LSEI will also determine how to best support Canadian industry as new markets are developed related to a future lunar economy. Preparing Canadian industry for future lunar opportunities will consist of reviewing potential business models, analyzing government investment and partnership approaches and engaging both space and terrestrial companies through various mechanisms to enable this potential revenue stream. The Canadian Space Agency is working with international partners to ensure the LSEI aligns with current lunar architecture and plans described in the ISECG Global Exploration Roadmap and Supplement. The contributions prioritised as part this initiative should realise significant benefits to Canada including Canadian astronaut mission opportunities, growth of highly qualified personnel, global leadership, a source of commercial revenue for the private sector, the acquisition of knowledge through scientific discovery, innovation, national pride, and inspiration for youth to choose careers in science, technology, engineering and math (STEM) fields.

Results of recent activities as well as an overview of the Canadian Space Agency's LSEI and upcoming activities will be presented.