Executive Summary

Date Prepared: 2007-08-29

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Presentation Title

CSA Concepts and Plans for Sustained Lunar Exploration and Surface Operations

Key Ideas

This presentation will present some potential Canadian's roles in space exploration. It will describe some key promising technologies and will present a possible roadmap of Canada's activities in space exploration.

Supporting Information

Canada has been and is still active in space exploration. Canada has been involved in space robotics for more than 25 years through the Space Shuttle and International Space Station (ISS) manipulators. Canada is now also involved in space exploration through NASA's Phoenix Scout mission, the Mars Science Laboratory and ESA's ExoMars mission. Technologies that are critical for space exploration like surface robotic mobility systems, active 3D vision, drilling, guidance for landing, autonomy and in space rendezvous and docking are being actively developed in Canada. In addition, the Canadian Analogue Network is supporting the demonstration of these technologies in an environment similar to Mars and Moon.

Based on the national consultations, CSA has been developing a roadmap for its potential contribution to space exploration missions. This roadmap details the infrastructure contribution and discusses the science opportunities. The Earth and the ISS are used as analogues for Moon and Mars exploration while the Moon itself is a test bed for future human exploration of Mars. Our Moon focus will be robotic precursor missions and critical infrastructure contributions that will pave the way for a Canadian astronaut on the Moon. For Mars exploration, the near to medium term focus is science using robotics. A key principle is that these contributions should start early, be scalable and be transferable from one mission to the other.