

SPACE EXPLORATION SYMPOSIUM (A3)
Space Exploration Overview (1)

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COSPAR PANEL ON EXPLORATION (PEX): ROADMAP FOR ROBOTIC AND HUMAN
EXPLORATION OF MOON, MARS, AND NEAR-EARTH ASTEROIDS

Abstract

The objective of the Committee on Space Research (COSPAR) Panel on Exploration (PEX) is to provide the best, independent, input to support the development of worldwide space exploration programs and to safeguard the scientific assets of solar system objects. This input for the COSPAR PEX report 2010 was drawn from expertise provided by COSPAR's various Associates within the international community and via the contacts they maintain in various scientific entities. It provides a summary of science roadmaps and recommendations for planetary exploration produced by many national and international working groups such as the IAA Cosmic study (Next Steps in Exploring Deep Space), NRC, ILEWG, LEAG and MEPAG to create and exploit synergies between similar programs. The excellent science documents/roadmaps prepared by the afore-mentioned working groups allow us to summarize compelling scientific imperatives that can be used to provide vision for space exploration and context for architectural studies for robotic and human exploration of the Earth-Moon-Mars space. We have addressed elements of both applied and fundamental science. While science and technology represent the

core and, often, the drivers for space exploration activities, several other disciplines and their stakeholders should be more robustly interlinked and involved than they have been to date. Successful long-term planning and development of major space architectures for exploration can only be implemented when all stakeholders—governments, space agencies, commercial space sector, space entrepreneurs, and the public—strive for common goals at both national and international levels. A shared vision is thus crucial to provide direction that enables new countries and stakeholders to join and engage in an overall effort supported by the public. The PEX report 2010 also offers a program of stepping stones to foster a future international exploration program, while engaging newly emerging space-faring nations in a meaningful way. It addresses an outlook on how to protect the lunar and martian environments for scientific research and discusses corresponding legal frameworks. COSPAR's input is intended to represent the consensus view of the international scientific community and should ultimately serve as a guideline to support future space exploration activities and cooperative efforts that lead to outstanding scientific discoveries, strategic partnerships, technology progress, and inspiration for the public stakeholder.