

SPACE EXPLORATION SYMPOSIUM (A3)
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MISSION ARCHITECTURE FOR ROBOTIC AND MANNED LUNAR MISSIONS

Abstract

Apollo missions enabled scientists all across the globe to understand the theories associated with the origin and evolution of the Moon and the Earth, but this understanding was inadequate and due to the lack of key data available at the time regarding time, space, and physical characteristics of the Moon. Returning to the Moon with well-formulated robotic and human lunar missions will allow to verify theories and hypotheses associated with Moon's origin and further assessment of t exploration exploiting the possibilities on the lunar surface. This paper will provide a consolidated summary feasibility study of the mission architecture for robotic, human, and nano-satellite missions to the Moon. This feasibility study would help define the mission requirements and scenarios for conducting a lunar mission by including a comprehensive assessment of the different sub-system technologies with TRL 4 or higher for specific mission type. The results from the assessment will be used to define integrated human-robotic surface trips to explore the potential base sites, further investigate the properties of the lunar soil, establish a fundamental base for the development of lunar habitats, and establish human presence on the Moon.