

20th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND
DEVELOPMENT (D3)

Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and
Development (1)

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OASIS 2045: CASE STUDY OF THE FIRST HUMAN LUNAR SETTLEMENT - PROGRESS REPORT
FOR 2022

Abstract

During 2019-2022, the Moon Village Association (MVA) Architectural Concepts and Considerations Working Group ('Architecture WG') has conducted a case study of a potential human lunar settlement – to be established by the year 2045. Just during the course of the three-years of the case study, the prospects for lunar missions sponsored by governments, relevant plans for new capabilities, and the context of commercial space markets have all changed dramatically. This paper presents a progress report from the study, including three major topic areas, framed in terms of several high-level commercially-oriented 'use cases'. These three topic areas include first and foremost, transportation to and from the Moon, for logistics, equipment and personnel. The second topic area involves mining and in situ resource utilization (ISRU), including both production of key products such as water, air, propellants, etc. as well a fabrication and construction using local materials (for example, of roads, pressurized volumes, etc.). Finally, the paper examines the requirements and potential for major science activities on the Moon, including observatories on the far-side of the Moon, as well as laboratories in conjunction with lunar settlement operations.