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16th 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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INTERFACE STANDARDIZATION FOR THE MOON VILLAGE

Abstract

The Moon Village aims at being an open platform where various players from the global community can interact in a "village" like manner on the Lunar surface and the Cislunar region. Through the cooperation between nations, agencies and private entities, a self-sustained economic activity on the Moon would serve not only the Earth but would also serve itself and a future gateway to the Solar System.

Many recent studies have concluded that the definition of interfaces and their standardization should already be under discussion to enable a safe access of commercial actors to the Moon. This is reflected in the recent Moon Village Association workshop concluding remarks and also in the recent paper from JPL/Caltech "An affordable Lunar architecture emphasizing commercial and international partnering opportunities". Moreover, with the recent blooming of a new space age, where various small start-ups have plans to land on the Moon, standardization has become a key issue in the future Moon Village concept. Going back to the definition of what the Moon Village should be, standards and interfaces must be open and not bar any player from participating. They must be inclusive and drive interoperability and commercial viability.

This study aims at defining a methodology to approach the task of standardization of interfaces on the Moon and Cislunar region. It takes the major system elements required for a Moon settlement and identifies the interfaces that would need to be standardized. It then takes into the equation the experiences of how previous standardization processes on Earth have enabled technologies and systems to thrive in a commercial context, such as the GSM standard and the Internet itself. An open standard approach as defined by the OpenStand movement (https://open-stand.org/about-us/) will be analysed and its application to the Moon Village concept evaluated.

In addition, a survey was sent to the industry involved in possible Moon missions, with the objective of understanding what the major difficulties in the development of these missions are. This survey works as a first step in involving industrial and commercial players in the process of standardization.