



Foundations for the post 2030 space economy: Cislunar and lunar infrastructure, Moon Village, Mars and planetary missions as markets.

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Introduction: The International Lunar Decade (ILD)[1] is a framework for international collaboration from 2020 to 2030 to achieve the ultimate goal in space – to open the space frontier. Key to opening a frontier is the capacity to “live off the land” through in situ resource utilization (ISRU). Activities in space will remain limited to exploration until ISRU becomes possible on an industrial scale. ISRU, the mining and use of resources on the Moon, asteroids, comets and other cosmic bodies will enable the opening of the space frontier for permanent occupancy and settlement. The capacity for ISRU creates the basis for a space economy where products and services are traded for resources, and increasingly sophisticated products can be produced from mined resources to help sustain life indefinitely.

Enabling ISRU will require infrastructure – energy, transportation, and communications systems, as well as navigation, storage and other support services. However, regolith or other lunar/asteroid material will remain regolith until converted to a form useful to customers that will enable the development of markets. NASA’s Mars journey, various planetary missions, and emerging operations on the lunar surface and at EML1 and EML2 will provide initial markets for ISRU.

This paper will explore a scenario explaining how a self-sustaining space economy can be achieved by 2030, what kind of infrastructure will need to be developed, the role of NASA’s Mars Journey in the creation of markets for ISRU, and the role of private-public partnership for financing the various building blocks of a self-sustaining space economy. Also discussed will be the potential for a Moon Village to serve as a formative structure for the nucleation of elements of an emerging space economy, including its potential role as a forum for actors to play a role in the development of governance mechanisms that eventually would enable commercial and industrial development of the Moon.

References:

[1] Beldavs, V. B., Dunlop, D., Foing B., and Crisafulli J. (2015) Proposal to Launch the ILD-https://ildwg.wordpress.com/proposal_to_launch_ild/. [2] Foing, B. (2015) “Moon Village Workshop summary”, <https://ildwg.wordpress.com/moon-village/>