

19th 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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## LUNANET: CATALYST FOR THE SPACE BASED ECONOMY?

**Abstract**

The idea of a lunar communications and PNT constellation, or affectionately known as LunaNet by NASA, has existed for several years. Yet, recently it has become a much more serious conversation, and rightfully so. A lunar communications and PNT constellation matters: it will support countless individual and combined space agency missions centered on human exploration and scientific discovery. But it's much more important than most people realize: LunaNet is the key to the existence of a thriving lunar economy. Just as we have seen on Earth, comprehensive communications coverage and precise positioning, navigation, and timing across the surface will transform the moon into a modern world – and quickly. With it, the entire surface will become connected, navigable, and most of all, much safer! Such an environment will have few limitations and in turn, attract widespread government and private sector financing. This will inevitably and in short order, spawn businesses comprising nearly every industry known to humanity. Here are just a few of the countless possibilities: • tourism and entertainment • transportation (to/from Earth, throughout the lunar surface, and from the Moon towards other planets/destinations) • resource extraction and storage for sustainable living, to include propellant, construction materials, and other goods • manufacturing and printing • medical and wellness • training (to include preparing people to live outside of Earth's orbit) People won't just visit the moon, they'll live full and meaningful lives there! All made possible by LunaNet. But before LunaNet becomes a fully-functioning and transformational system, specific tenants must be present. Standards, capabilities, partners, and objectives must all be closely examined and clearly defined; it is imperative that the right investments be initially made. Ultimately, these pillars will serve as the foundation to the lunar economy. In this presentation, I will explore the immediate and macro benefits of a lunar communications and PNT constellation (the emergence of a lunar economy), the necessary tenants for a successful system, and make a business case for the first entity or entities to finance LunaNet by modeling the potential value of service revenues generated by it. Ultimately, LunaNet could end up enabling much more than a thriving existence on the moon – it may very well end up serving as the catalyst for humanity's future in space and a thriving space-based economy!