

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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SPACE STATION 2.0: A PUBLIC-PRIVATE MODEL FOR INTERNATIONAL SPACE EXPLORATION

Abstract

The international communities 150 billion (USD) investment in the International Space Station (ISS) has produced a fractured style acquisition program for acquiring modular Space Station components, the next Space Station could be administered as a common resource, furnished habitat space may pay a mooring fee to cover access to common resources.

Space Station 2.0 could be built in lunar orbit or Earth-Moon Lagrange point to stimulate the development of heavy lift launch services needed for deep space exploration and eventual manned Mars missions. This paper investigates the public policy benefits of a hybrid commercial-government space station along with the scientific and other beneficial applications it might provide.

Under the proposed model, international space agencies would incentivize the commercial development of multi-purpose modules suitable for destinations beyond low Earth orbit. Similar to the Commercial Orbital Transportation System (COTS) procurement used by NASA to develop LEO transportation services, companies would be encouraged to design space station components with both government and commercial operations in mind. Modules that are certified for flight would be purchased competitively, based on cost and performance, as in the case of NASA's existing Commercial Resupply Service.

Space Station 2.0 will be based on a scalable and upgradable architecture allowing the station infrastructure to ebb and flow with research and commercial needs over time. Building the next great space station at a destination of scientific and tourism interest (e.g. the moon) allows for a significant range of scientific, commercial and exploration activities. Some intriguing possibilities include routine human sorties to the, human physiology studies, partial gravity investigations, lunar resource mapping and general-purpose exploration.

This paper presents and evaluates the case for a commercial space station in cis-lunar space. In the aftermath of the cold war and in the shadow of a global economic downturn the most compelling reason for building a modern space station from a government perspective, is higher level of scientific return at a lower cost than with existing approaches.