

HUMAN SPACEFLIGHT SYMPOSIUM (B3)
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JOINT INTERNATIONAL EXPLORATION CONCEPTS

Abstract

Discussion of new concepts for exploration beyond low Earth orbit is accelerating with participation of more space agencies and companies around the world, which are and developing consensus on early destinations. The benefits of international collaboration in space exploration are well documented with the international Space Station being a particularly good example of what can be accomplished through cooperation. The success of future space exploration projects would be similarly enhanced through the opportunities for cost sharing and technology selection. RSC Energia Boeing believe that numerous possibilities for cooperation exist in the early exploration of lunar space, the surface of the moon and eventual missions to Mars and that the technologies required are already well advanced. This paper will describe a concept for an early exploration architecture that focuses on lunar space with joint utilization of elements and shared hardware.

The architecture starts with a small outpost in a large high lunar orbit that establishes basic capabilities in lunar space and serves as the base transportation node for all missions. Over time, the functionality of this vehicle is increased through the addition of new elements and systems to meet the specific goals of the participating partners. The outpost will provide opportunities for systems testing, human performance evaluation, deep space science and observation, and support for missions to the lunar surface and beyond. A cislunar outpost offers excellent conditions for all of these goals. A well designed outpost will evolve over time to meet a changing set of mission objectives as exploration goals extend outward. This paper will describe the overall architecture concept and the key contributions made by each company. We will also discuss the individual elements envisioned in the architecture and new concepts for transportation of crew and cargo.