

HUMAN SPACEFLIGHT SYMPOSIUM (B3)  
Utilization & Exploitation of Human Spaceflight Systems (3)

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INTERNATIONAL DEEP SPACE INTEROPERABILITY STANDARDS

**Abstract**

The next steps in human space exploration beyond low Earth orbit will involve the cooperative effort of multiple space agencies and industry partners. Close international cooperation will be a critical enabler for future success and a key factor will be system functional interoperability. Interoperability is the interconnection of disparate systems for a common goal, which can reduce sparing, increase integration, and provide more reliability with lower cost. Interoperability will become increasingly important as transportation costs rise dramatically with distance beyond low Earth orbit. Building a fully interoperable vehicle with several partners will require a well-developed technology comparison and selection process among the partners to define and choose interoperable systems.

Building on last year's introduction of interoperability, this paper presents possibilities and processes to define, adjudicate and control interfaces in a way that uses transparent and clear comparison criteria. While interoperability must be accepted as a common goal among the partners, the process to achieve consensus will be critical for success. First, the importance of developing clearly defined and agreed upon comparison criteria to fairly compare competing interfaces and systems will be examined. Next, a proposed selection process and multi-national advisory structure that can account for relevant technical, economic and political criteria will be presented. This global exploration interoperability advisory structure should promote the communication and integration necessary for interoperability and create a body of commonality/interoperability standards. Defining an advisory structure for interoperability with clear comparison and selection criteria is an important step towards realizing the advantages of interoperability for upcoming cooperative exploration vehicles.