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INTEROPERABILITY AND STANDARDS ARE KEYS TO SPACE MISSIONS SUCCESS

Abstract

Space missions and space communications networks benefit tremendously from building interoperability into the design of their flight and ground operational systems. The ability to provide and receive cross support enables mission success by reducing risk and cost as well as increasing data throughput, thus enhancing the science and exploration objectives.

In order to achieve the desired interoperability, global coordination and accepted standards are required for space data systems and processes as well as carefully-coordinated spectrum allocation to prevent interference. The Interagency Operations Advisory Group (IOAG) is a forum for identifying common needs across multiple agencies for coordinating policy, high-level procedures, technical interfaces, and all matters related to space communications and interoperability. IOAG teams identify and advocate common solutions to maximize the benefits to the missions. The Consultative Committee for Space Data Systems (CCSDS) is a multi-national forum for the development of communications and data systems standards for spaceflight. Leading experts from many nations collaborate to develop well-engineered space standards that have so far been successfully adopted by hundreds of space missions.

As more nations, corporations, and other entities enter the field of space exploration, they can gain significant savings on the development time and cost of their systems by participating in IOAG and CCSDS, using their reliable products, and building on their existing global experiences totaling many decades. The space-faring adventures of the future around the Earth, Moon, Mars, asteroids and other Solar System targets are proving to be ambitious and complex. Some will include human space flight and human safety will be of the utmost importance in the next significant phase of space operation, namely the human presence at space stations and the surfaces of the Moon and Mars.

This is a phase where international interoperability and system standards become critical keys to mission success. This paper highlights these important processes and standards and addresses the newest developments relevant to space missions.