

SC14: International Space Standards

By Fred Slane



In the early 1990s, leadership in international space standards extended into the International Organization for Standardization (ISO) with the creation of a committee for space systems and operations. The Jet Propulsion Lab's Macgregor Reid—together with U.S. space industry giants such as Boeing and Hughes, Ariane Espace (France), Thales-Alenia (Italy), British Aerospace (UK; now part of Astrium), DLR (Germany), Roscosmos (Russian Federation), and others—chartered the Subcommittee for Space Systems and Operations (SC14) under the Technical Committee for Air and Space Systems (TC20) in ISO (referred to as ISO TC20/SC14 here).

Organization of the Work Program into Working Groups

The work program was originally organized into five working groups (WGs), with distributed chairs for the groups (WG1—Engineering, Japan; WG2—Interfaces, Integration and Test, U.S.; WG3—Ground Support and Operations, Germany; WG4—Space Environments, Russia; and WG5—Program Management, U.K.). All participating countries shared leadership at the subcommittee level and administration of the work program.

In the early 2000s, materials and processes became enough of a burden to the Engineering Working Group to be split off into WG6—Materials and Processes, France. A few years later, orbital debris work was separated from the Ground Support and Operations Working Group and WG7—Orbital Debris, U.K., was created. Soon Human Spaceflight (added to SC14 work under Russian leadership in 2007) will probably force the creation of a WG8.

A singular message here is that even with U.S. leadership in the fore, the evolution of voluntary consensus standards in the international environment is highly affected by different thinking, different culture, and different objectives from other countries. We ignore this message at our peril.

SC14 Strategic Vision

In 2008, work began on a strategic vision for SC14 at a side meeting with U.S. and U.K. members on Florida's Space Coast. Based on the published national objectives of all participating countries in SC14 (e.g., the U.S. National Standards Strategy), an implementation plan was created over about 5 years and finally was presented to all in Brazil.

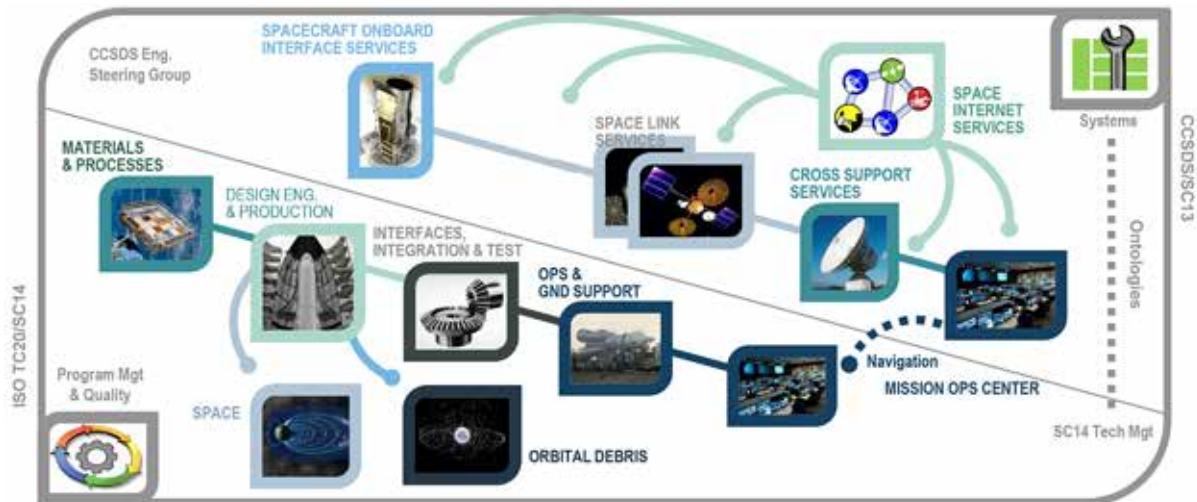
Correspondence with Others

With a certain degree of understanding of strategy and organization inside SC14, it became clear that connection and harmonization with standards development organization (SDO) activity outside SC14 was desirable and achievable. The concept of “correspondence” becomes valuable here. Certain activities in SC14 “correspond” to activities in the Consultative Committee for Space Data Systems (CCSDS). Or similar degrees of activity may correspond between the two SDOs (e.g., ground

operations and mission control may correspond to some degree). Sorting this out will require time, cultural awareness, technical savvy, and perseverance. Awareness of the ultimate objective of a cohesive, complete set of standards for the space industry is a very large concept for some actors.

Working with CCSDS, SC14 is considering interaction between the two groups as graphically depicted in Figure 1.

Figure 1. Depiction of Interaction between CCSDS and SC14



OTHER RESOURCES

The non-profit Space Infrastructure Foundation provides a Standards and Architecture class that expands on much of the material in this article. The class is held at various space industry conferences, or it can be arranged at any location.

About the Author

Fred Slane is a founder and executive director of the Space Infrastructure Foundation, a 501(c)(3) non-profit organization. Working almost entirely in space systems for over 30 years, he retired from the U.S. Air Force in 2001 after a 20-year career and completed another 8 years in the Air Force Reserve. Serving with the AIAA Standards Executive Council and ISO's Technical Committee 20 Subcommittee 14 since 1999, Mr. Slane is the current chair of the TC20/SC14 U.S. Technical Advisory Group and is based in Colorado Springs, CO.