

## SPACE SYSTEMS SYMPOSIUM (D1)

Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards. (5)

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## STANDARDS DEVELOPING ORGANIZATIONS: THE LANDSCAPE FOR SPACE

**Abstract**

Space programs appear more and more technically challenging, financially constrained and involving numerous actors. In this context, the use of standards, taking into account best practices, lessons already learned and the state of the art of the disciplines, is to be considered as a management and engineering method helping to overcome these difficulties. It allows achieving more cost effective space projects, facilitates clear and unambiguous communication, minimizes risk and guaranties interoperability. The term "standard" includes a wide variety of technical works that prescribe rules, guidelines, specifications, test methods, design or installation procedures, etc... Standards Developing Organizations (SDO) primary activities are developing, coordinating, publishing, maintaining technical standards that are intended to address the needs of groups of users. SDOs can be classified by their industrial sector, their legal status ("de jure" or "de facto"), and the extent of their influence on the national, regional, and global levels. For Space sector, agencies and industries generally participate to SDOs working groups and they build and manage their own company normative reference (repository). Those repositories are generally based on published standards and company internal documents. Amongst the numerous SDOs producing usefull standards for space activity, some of them are Space specific but some others are not. Standards are often overlapping, and sometimes diverging. In order to avoid waste of efforts and inconsistency, it is important for companies to choose were to invest their expert resources (for which activity, in which working group of witch SDO) and which standards to adopt in the company repository. In a first step, this paper will describe the landscape of those SDOs that are producing standards to be used by space programs. We can find at international level "de jure" SDO as for example ISO or ITU and "de facto" SDO as for example CCSDS. Some agencies as NASA, or DOD with the MIL-STD, produce some "de facto" standards used at regional and international level. The ECSS is an initiative established in Europe to develop and use a coherent, single set of standards applicable to the customer-supplier relationship. The National Standards Bodies (NSBs) are SDOs acting at national level (eg: ANSI, JISC, DIN ...). Then the paper will present and explain the links and cooperation agreements between the major actors. Finally some driver will be given for companies involved in space programs to identify "of interest" SDOs working groups and the way to manage their company repository.