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MASTER PLAN
For
ISO TC 20/SC 13
SPACE DATA AND INFORMATION TRANSFER SYSTEMS

1. Responsibilities/Scope

1.1 ISO/TC20/SC13 is an international forum which addresses the standardization of data/information system interfaces of space instruments, vehicles and supporting ground facilities.

1.2 ISO/TC20/SC13 coordinates with international, regional and national organizations involves with space data/information systems standardization.

1.3 ISO/TC20/SC13 is responsible for international standards for the transport, handling, manipulation, processing, interpretation, archiving, access and retrieval of data and information in support of space research, science and application missions so that interoperability among mission elements and across missions is maximized and long term availability of space-related data is achieved.

1.4 Effectiveness, efficiency and reuse are fundamental to the adoption of data/information systems by spaceflight programs. Individual standards cannot be considered in isolation but must be developed as integral elements of a complete data/information system. ISO/TC20/SC13 must necessarily take a system approach in the development of data/information system standards.

1.5 ISO/TC20/SC13 standards must be developed in concert with internationally accepted practices for spacecraft health and safety.

2.0 Assumptions and Trends

The work program of SC13 and its subpanels and committees is based on the following assumptions and trends:

2.1 International Business Environment

International cooperation in space systems development, design and operations is expanding. International standards are needed to facilitate this cooperation.

International space activities are also expanding within the military, civil and commercial sectors. This requires increased attention to efficient acquisition, transport, handling, utilization, archiving and retrieval of data as derived from or related to space. Efficient tools are required to support these activities.

Sharing of space data resources is becoming a common practice through interoperability among different organization's assets. This places additional emphasis on support commonality and increases the need for international standardization.

2.2 Resources

Resources for space data/information systems standardization has remained at about the same level for the past five years and no significant increase in available resources is anticipated. It is essential, therefore, to coordinate at an international level the utilization of the available resources.

2.3 Other Standard Organizations

There are other Standards Developing Organizations (SDOs) that are issuing internationally coordinated and used standards. These standards must be smoothly integrated into the ISO/TC20/SC13 structure without unwarranted duplication of effort. Therefore, ISO/TC20/SC13 will effect adequate liaison activites with these SDOs to assure that the interests of SC13 members are reflected in any resultant standards.

2.4 Product Standards

An effective product certification system is needed to guarantee the performance of SC13 products (data/information standards). Within SC13, this is an on-going need which has not yet been fully addressed.

2.5 Integrate Product Development

Increasingly, space vehicles are designed, developed, manufactured, tested and evaluated by multi-disciplined teams working concurrently on the various aspects of the program. This is especially important when one

considers the pervasiveness of a data/information system across all aspects of a program. As a minimum, standards are an important tool in facilitating system integration. A preferable solution would be to establish a test bed to check out large data systems, but SC13 has not as yet addressed this consideration.

2.6 Space System Standardization

International and commercialization of space programs and space system components will open new horizons for standardization efforts.

2.7 Anticipatory Standardization

Maturing technologies will affect standardization activities. SC13 members are encouraged to monitor international or national organizations working on advanced technologies, as may be pertinent to the SC13 areas of responsibilities, in order that the aerospace industry point of view can be taken into consideration as early as possible. The members will bring to the attention of SC13 new technology which warrants attention so that SC13 can establish, when appropriate, consensus positions which (a) can be communicated to responsible SDOs by SC13 members, or (b) incorporated into SC13's program of work. The SC13 will take into account that ISO provides for other types of documentation in addition to international standards: ISO Recommendations (ISO/R) and ISO Technical reports (ISO/TR). These can be particularly appropriate for initial standardization actions for new technologies. SC13 will also consider preparing International Standardization Profiles (ISOs) to designate those existing standards, from whatever sources, which constitute those standards required to implement a technology and which the Aerospace community determines are "preferred for use" in space data/information systems.

2.8 Environmental Issues

Protecting the earth's environment has become a priority issue for all regions. Standards as may be developed and practices as may evolve must be environmentally sound and energy efficient.

2.9 Commercial and Industrial versus Government Standards

In many nations, there is increased emphasis on commercial and industrial standards in lieu of government developed standards. As government developed standards are replaced with commercial and industrial standards, it is important that full consideration be given to making the replacement standards suitable for the global marketplace.

2.10 Internet and World Wide Web

Electronic databases are becoming more prevalent within international SDOs. Many of these databases are currently accessible through Internet and the World Wide Web and will be used to facilitate the coordination, search, retrieval and distribution of standards on a global basis.

The SC13 will maximize the use of such electronic facilities to augment and expedite its standards development activity.

3.0 Aims and Priority

3.1 Types of Standards

SC13 develops the following types of standards:

Telemetry	Data Syntax and Semantics
Telecommand	Data Archiving
Navigation	Control Authority
Channel Coding	Service Management
RF and Modulation	Forward and Return Link Services
Data Compression	Timing

3.2 Goals of Standards

SC13 standardization efforts shall be prioritized by taking into account:

Reduced Non-Recurring Costs (Unique Developments, Test/Training)
Reduced Recurring Costs (Operations)
Maximum Reuse of Assets (Hardware, Software, Archived Data)
Minimized Mission Risks
Interoperability and Cross Support

4.0 Requirements Concerning Work Program and Operations

4.1 Review of Tasks and Schedules

A list of SC13 current tasks is presented in Appendix A. These tasks are in addition to the routine activities of managing the standardization program of SC13. Appendix A will be modified from time to time in line with SC13 resolutions.

4.2 Analysis of Completeness of the Work Program

Master Plans – SC13 will maintain a master plan, applying the policies, objectives and priorities of TC 20 to the development and management of its work program. The plan will be consistent with the responsibilities of SC13. The plan will be reviewed at TC 20 plenary meetings.

5.0 Operation/Organization

5.1 SC 13 will work closely with the Consultative Committee for Space Data Systems (CCSDS), an international association of civil space agencies, which publishes technical Recommendations, both preliminary (Red Books) and final (Blue Books), approved by the CCSDS Member Agencies. CCSDS Recommendations forwarded to SC 13 will be submitted for approval as ISO International Standards as resources permit. SC 13 will meet semiannually to consider pending standards recommendations.

5.2 SC13 recognizes that technical documents appropriate to its area of responsibility are being developed by other SDOs. SC13 will utilize these "external" standards if they have demonstrated their suitability by wide international acceptance. SC13 will avoid developing new international standards when adequate documents exist.

In such instances, SC 13 proposes to create ISO International Standards (IS) by the cover sheet method.

5.3 SC13 will normally meet every six months in conjunction with the CCSDS Management Council meetings. These meetings are to assure that the aims and priorities stated herein are being implemented and to address other business matters related to the scope and responsibility of this strategic plan.

5.4 The SC13 Secretariat will submit a written status report to each TC20 Plenary meeting. This report will include the following as a minimum:

- Changes to membership
- Meetings held since last report
- Standards published and work items completed
- New work items approved
- Items deleted or postponed
- Draft International Standards
- Work items making slow progress
- Use of accelerated procedures
- Environmental issues
- Next meeting
- Questions requiring TC20 attention

6.0 Recommendations on the Limitation of the Work to Essential Items

SC13 recognizes the growing need for international data/information system standards. However, resources for fulfilling these needs are limited and they must be shared by national, regional and international standardization efforts. It

is important that these resources be allocated with the objective of maximizing cost effectiveness.

SC13 will limit its work to essential work items that offer the greatest benefit to the international market for space vehicle data systems, that are best developed by SC13 and that can be accomplished in a timely and cost effective manner. Work will be prioritized by evaluation against the criteria defined in paragraph 3.2. Non-essential or low priority items will be disapproved or delayed before resources are expended Also, work items will be cancelled if there has been no progress in five years except where adequate justification is presented.

Appendix A. SC13 Current Tasks

Standards

Space data and information transfer systems

ISO 11103:1991	Space data and information transfer systems -- Radio metric and orbit data
ISO 11104:1991	Space data and information transfer systems -- Time code formats
ISO 11754:2003	Space data and information transfer systems -- Telemetry channel coding
ISO 12171:2002	Space data and information transfer systems -- Telecommand -- Channel service
ISO 12172:2003	Space data and information transfer systems -- Telecommand -- Data routing service
ISO 12173:2003	Space data and information transfer systems -- Telecommand -- Command operation procedures
ISO 12174:2003	Space data and information transfer systems -- Telecommand -- Architectural specification for the data management service
ISO 12175:1994	Space data and information transfer systems -- Standard formatted data units -- Structure and construction rules
ISO 13419:2003	Space data and information transfer systems -- Packet telemetry
ISO 13420:1997	Space data and information transfer systems -- Advanced orbiting systems -- Networks and data links -- Architectural specification
ISO 13764:1996	Space data and information transfer systems -- Standard formatted data units -- Control authority procedures
ISO 14721:2003	Space data and information transfer systems -- Open archival information system -- Reference model
ISO 14961:2002	Space data and information transfer systems -- Parameter value language specification
ISO 14962:1997	Space data and information transfer systems -- ASCII encoded English
ISO 15395:1998	Space data and information transfer systems -- Standard formatted data units -- Control authority data structures
ISO 15396:1998	Space data and information transfer systems -- Cross support reference model -- Space link extension services

ISO 15887:2000	Space data and information transfer systems -- Data systems -- Lossless data compression
ISO 15888:2000	Space data and information transfer systems -- Standard formatted data units -- Referencing environment
ISO 15889:2003	Space data and information transfer systems -- Data description language -- EAST specification
ISO 15891:2000	Space data and information transfer systems -- Protocol specification for space communications -- Network protocol
ISO 15892:2000	Space data and information transfer systems -- Protocol specification for space communications -- Security protocol
ISO 15893:2000	Space data and information transfer systems -- Protocol specification for space communications -- Transport protocol
ISO 15894:2000	Space data and information transfer systems -- Protocol specification for space communications -- File protocol
ISO 17355:2003	Space data and information transfer systems -- CCSDS file delivery protocol
ISO 17433:2003	Space data and information transfer systems -- Packet telemetry services
ISO 21961:2003	Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- Abstract syntax
ISO 21962: 2003	Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- PVL syntax
ISO 22643: 2003	Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- XML/DTD Syntax

New/Updated Standards in Process

Projects

ISO/DIS 11104	Space data and information transfer systems -- Time code formats
ISO/CD 11754	Space data and information transfer systems -- Telemetry channel coding
ISO/DIS 13420	Space data and information transfer systems -- Advanced orbiting systems, networks and data links -- Architectural specification
ISO/AWI 22641	Space data and information transfer systems -- Channel coding and synchronization -- Synchronous
ISO/AWI 22642	Space data and information transfer systems -- Channel coding and synchronization -- Asynchronous
ISO/CD 22644	Space data and information transfer systems -- Orbit data messages

ISO/AWI 22645	Space data and information transfer systems -- TLM space data link protocol
ISO/AWI 22646	Space data and information transfer systems -- Space packet protocol
ISO/AWI 22647	Space data and information transfer systems -- Space link identifiers
ISO/CD 22663	Space data and information transfer systems -- Proxymity-1 space link protocols
ISO/AWI 22664	Space data and information transfer systems -- TC space data links protocol
ISO/AWI 22666	Space data and information transfer systems -- AOS space data link protocol
ISO/AWI 22667	Space data and information transfer systems -- Communication operations -- Procedure 1
ISO/AWI 22668	Space data and information transfer systems -- Space link extension (SLE) -- Service management specification
ISO/DIS 22669	Space data and information transfer systems -- Space link extension (SLE) -- Return all frames service
ISO/AWI 22670	Space data and information transfer systems -- Space link extension (SLE) -- Return channel frame service
ISO/DIS 22671	Space data and information transfer systems -- Space link extension (SLE) -- Forward command link transmission unit (CLTU)
ISO/CD 22672	Space data and information transfer systems -- Space link extension (SLE) -- Forward space packet