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**ISO/TC 20 / SC 13 Status Report**

**FOREWORD:** This report was prepared for submission to the coming 44<sup>th</sup> ISO TC20 Plenary meeting to be held in Paris, France, November 8-10, 2010.

**1 Title and Scope**

**Title:** Space data and information transfer systems

**Scope:** Space data systems

**2 Chairman and secretary****Chairman:**

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**Secretary:**

Name (tenure): Mike W. Kearney  
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Phone: + 1 256 544 2029  
E-mail: [Mike.Kearney@nasa.gov](mailto:Mike.Kearney@nasa.gov)

**Change to SC Structure or Membership**

Not applicable, since last meeting.

**3 Meetings Held Since Last Report (SC and WG)****Meetings held**

<b>No.</b>	<b>Date</b>	<b>Place</b>
35	2009-04-27	Colorado Springs, CO, U.S.A.
36	2009-11-03	Noordwijk, Netherlands
37	2010-06-10	São José dos Campos, SP, BRAZIL

**Schedule of future meetings**

38	2010-11-05	London, U.K.
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**4 Participation and liaisons****4.1 P-member bodies**

<b>No.</b>	<b>Country</b>	<b>Member Body</b>
1	U.S.A. (Secretariat)	ANSI
2	BRAZIL (Chairman)	ABNT
3	CANADA	SCC
4	CHINA	SAC
5	FRANCE	AFNOR
6	GERMANY	DIN
7	INDIA	BIS
8	ISRAEL	SII
9	ITALY	UNI
10	JAPAN	JISC
11	KAZAKHSTAN	KAZMEMST



12	RUSSIAN FEDERATION	GOST R
13	UKRAINE	DSSU
14	UNITED KINGDOM	BSI

**4.2 O-member bodies**

No.	Country	Member Body
1	Argentina	IRAM
2	Korea, Republic of	KATS
3	New Zealand	SNZ
4	Poland	PKN
5	Romania	ASRO
6	Sweden	SIS

**Total (Secretariat + P + O) = 20 Member bodies**

**4.3 Liaisons (Contact)**

TC/SC	Organization	Category	Person	Contact E-mail
n/a	CCSDS	A	Mike Kearney	<a href="mailto:Mike.Kearney@nasa.gov">Mike.Kearney@nasa.gov</a>
n/a	OMG	t.b.d.	t.b.d.	t.b.d.
n/a	ESA	A	t.b.d.	t.b.d.
20/14	ISO	Internal	Larry Schultz	<a href="mailto:larry.l.schultz@nasa.gov">larry.l.schultz@nasa.gov</a>
20/14/WG3	ISO	Internal	David Finkleman	<a href="mailto:dfinkleman@agi.com">dfinkleman@agi.com</a>
		B	t.b.d.	t.b.d.
211	ISO	B	t.b.d.	t.b.d.
46/4	ISO	B	t.b.d.	t.b.d.
		B	t.b.d.	t.b.d.
46/11	ISO	B	t.b.d.	t.b.d.
JTC1/SC29	ISO	B	t.b.d.	t.b.d.





**NAMES OF LIAISON BODIES:**

- CCSDS: Consultative Committee for Space Data Systems
- ESA: European Space Agency
- OMG: Object Management Group
- ISO TC20/SC14: Subcommittee on Space Systems and Operations
- ISO TC20/SC14 WG3: Working Group on Operations and Ground Support
- JTC1/SC29: Subcommittee on Coding of Audio, Picture, Multimedia and Hypermedia Information.
- TC 211: Technical Committee on Geographic Information/Geomatics
- TC46/SC11: Subcommittee on Archives/Records Management
- TC46/SC4: Subcommittee on Technical Interoperability

**4.4 Changes since last plenary meeting of ISO/TC 20**

Some of the liaisons are in the process of formalization.

**4.5 Inactive P-member bodies**

No justified absence of China, India, Israel, Kazakhstan and Ukraine was expressed by the P-Members, in the last meetings.



## 5 Constitution

### 5.1 Working Groups (not applicable)

WG NO.: none

Convenor:

Organization/Country:

Address:

Phone:

E-mail:

Work Item assigned:

WG meetings held: 1)

Schedule of future meetings: 2)

### 5.2 Changes since last plenary meeting of ISO/TC 20

Not applicable.



## 6 Any other matters of importance to ISO/TC 20

Last 37<sup>th</sup> Plenary ISO TC20/SC13 Subcommittee meeting was held in collocation with those of CCSDS management meetings, hosted by INPE and ABNT, in São José dos Campos, SP, Brazil, on 10 June, 2010. The upcoming, 38<sup>th</sup> ISO TC20/SC13 Subcommittee meeting is scheduled to be an informal one and will also be held in collocation with the CCSDS-CMC and IOAG, sponsored by U.K. Space Agency and BSI, at BSI facilities in London, U.K., in the week of November 1-5, 2010.

In respect to ISO/TC20 **Business Plan**, in its version N3396, Version 2, Draft 8, as of June 1<sup>st</sup>, ISO TC20/SC13 Subcommittee has **two suggestions** for consideration and desired modification by ISO/TC20, as follows:

1) **In page 10 of 23:** Modify the text ...

**FROM:**

“**CCSDS** – Development of the most well-engineered space data handling standards in the world

To enhance governmental and commercial interoperability and cross-support, while also reducing risk, development time and project costs.”

**TO:**

“**CCSDS** – Development of well integrated space data and information transfer systems recommendations for standardization, with the primary objective of enabling cross-support at national and international levels, with the use of interoperable resources which solidly rely on interoperable capabilities which, in turn, do contribute for the reduction of: risk, costs, project and development times and of the associated operational procedures.”

2) **In page 15 of 23, under section 3.4, item a), the ADDITION of the bullet ...**

“To enable interoperability and collaborative, world-wide cross-support among space data systems, as it has already been substantiated by an ever increasing number of spaceflight missions.”

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ISO TC20/SC13 Subcommittee is in the process of formalizing some of its still informal, internal and external. This report provides a complete list of all the liaisons which are being related to the Subcommittee.

The liaison cooperation developed between CCSDS MOIMS Navigation Working Group of CCSDS and ISO TC20/SC14 Working Group 3 on Operations and



Ground Support has liaison support also from ISO TC20/SC13 Subcommittee. The mentioned liaison had active participation in the CCSDS domain, which produced CCSDS 502.0-B-2 Orbit Data Messages Recommendation for Standard. That Recommendation is already in ISO domain for becoming the ISO 26900 Standard on Orbit Data Messages. New work items are under consideration under this same liaison cooperation. A new work item of this liaison may involve the development of navigation messages that may be used for exchange of this type of information. ISO TC20/SC13 Subcommittee, backed by CCSDS is willing to continue exploratory work with ISO TC20/SC14 Subcommittee that may lead to new items of work of complementary nature between their natural competences, which may result in new standards for space systems, in general.

Eduardo W. Bergamini  
Chairman, ISO TC20/SC13

Michael W. Kearney  
Secretary, ISO TC20/SC13



## 7 Programme of work

The contents of this Program of Work incorporate the **complete** contents which are found in the **ISO Project Portal** (<http://isotc.iso.org/pp/search/default.action>) associated to ISO TC20/SC13 Subcommittee and also, take into consideration corresponding CCSDS ([www.ccsds.org](http://www.ccsds.org)) originated information and also, strictly, the ISO International harmonized stage codes table, which is also included in this context. As a result, from now on, this Program of Work is intended to regularly provide, with maximum possible completeness, a view of the past standards, of the current standards and of the working items of ISO TC20/SC13 Subcommittee. The contribution of Mr. Nick Tongson, in charge of the secretariat support to the ISO TC20/SC13 Subcommittee, has been important in the preparation of the contents of this original version. The Chairman of ISO TC20/SC13 Subcommittee wishes also to acknowledge the invaluable work being provided by Ms. Síntique Rodrigues in the build up and maintenance of this Program of Work, as being presented and to be maintained on a regular, monthly basis. The current, **version** of this Program Work was prepared in: **October, 2010 (original version)**.

### 7.1 Published standards: 60 (Publication Stage)

Internal No.	Designate No. and Title	IMO-link-NR	Stage	WG	Published on	Remarks
45990	ISO 10537:2010 Space data and information transfer systems -- Encapsulation service		60.60	n/a	2010-09-10	CCSDS 133.1-B-1 Cor 1 Technical Corrigendum 1 to CCSDS 133.0-B-1, Issued September 2003 . Blue Book. Issue 1 Cor. 1. September 2010.
53984	ISO 13526:2010 Space data and information transfer systems -- Tracking data message		60.60	n/a	2010-09-10	CCSDS 503.0-B-1 Cor 1 Technical Corrigendum 1 to CCSDS 503.0-B-1, Issued November 2007 . Blue Book. Issue 1 Cor. 1. September 2010.
53985	ISO 13527:2010 Space data and information transfer systems -- XML formatted data unit (XFDU) structure and construction rules		60.60	n/a	2010-09-10	CCSDS 661.0-B-1 XML Formatted Data Unit (XFDU) Structure and Construction Rules . Blue Book. Issue 1. September 2008.
53986	ISO 13537:2010 Space data and information transfer systems -- Reference architecture for space data systems		60.60	n/a	2010-09-29	CCSDS311.0-M-1 Reference Architecture for Space Data Systems. MageLnta Book. Issue 1. September 2008.
53987	ISO 13541:2010 Space data and information transfer systems -- Attitude data messages		60.60	n/a	2010-09-10	CCSDS 504.0-B-1 Attitude Data Messages. Blue Book. Issue 1. May 2008.
52985	ISO 15887:2000 Space data and information transfer systems -- Data systems -- Lossless data compression		60.60	n/a	2009-05-15	



45986	ISO 15893:2010 Space data and information transfer systems -- Space communications protocol specification (SCPS) -- Transport protocol (SCPS-TP)		60.60	n/a	2010-09-10	CCSDS 714.0-B-2 Space Communications Protocol Specification (SCPS)—Transport Protocol. Blue Book. Issue 2. October 2006.
44999	ISO 21460:2007 Space data and information transfer systems -- Proximity-1 space link protocol -- Physical layer		60.60	n/a	2007-10-10	CCSDS 211.1-B-3 Proximity-1 Space Link Protocol—Physical Layer. Blue Book. Issue 3. March 2006.
50342	ISO 22642:2005/Cor 1:2007Space data and information transfer systems -- TC (telecommand) synchronization and channel coding -- Technical Corrigendum 1		60.60	n/a	2007-10-03	
45987	ISO 22647:2010 Space data and information transfer systems -- Space link identifiers		60.60	n/a	2010-09-10	CCSDS 135.0-B-3 S Space Link Identifiers. Silver Book. Issue 3. October 2006.
45000	ISO 22663:2007 Space data and information transfer systems -- Proximity-1 space link protocol -- Data link layer		60.60	n/a	2007-10-10	CCSDS 211.0-B-4 Proximity-1 Space Link Protocol—Data Link Layer . Blue Book. Issue 4. July 2006.
43849	ISO 26868:2009 Space data and information transfer systems -- Image data compression		60.60		2009-01-29	CCSDS 122.0-B-1 Image Data Compression . Blue Book. Issue 1. November 2005.

**7.2 Registered Work items: number including number revision**

**Approval stage: 50 (Approval stage)**

Internal No.	Designate No. and Title	IMO-link-NR	Stage	WG	Targets	Remarks

**Enquiry stage: 40 (Enquiry stage )**

Internal No.	Designate No. and Title	IMO-link-NR	Stage	WG	Targets	Remarks
38562	ISO/DIS 11754 Space data and information transfer systems -- Telemetry channel coding		40.98	n/a		CCSDS 101.0-B-6:2002 Telemetry Channel Coding. Silver Book. Issue 6. October 2002.
36450	ISO/DIS 13420 Space data and information transfer systems --		40.98	n/a		CCSDS 701.0-B-3-S 2001 Advanced



	Advanced orbiting systems, networks and data links -- Architectural specification					Orbiting Systems, Networks and Data Links: Architectural Specification. Silver Book. Issue 3. June 2001.
57284	ISO/DIS 14721 Space data and information transfer systems -- Open archival information system (OAIS) -- Reference model		40.20	n/a		CCSDSS 650.0-P-1.1 Reference Model for an Open Archival Information System (OAIS)
29443	ISO/DIS 15890 Space data and information transfer systems -- Advanced orbiting systems, networks and data links -- Audio, video and still-image communications services		40.98	n/a		CCSDS 704.0-B-1-S Advanced Orbiting Systems, Networks and Data Links: Audio, Video and Still-Image Communications Services. Silver Book. Issue 1. May 1994.
56510	ISO/DIS 16363 Space data and information transfer systems - Audit and certification of trustworthy digital repositories		40.20	n/a		CCSDS 652.0-R-1 Audit and Certification of Trustworthy Digital Repositories

**Committee Stage: 30 (Committee stage)**

Internal No.	Designate No. and Title	IMO-link-NR	Stage	WG	Targets	Remarks
35681	ISO 13419:1997/CD Amd 1 Space data and information transfer systems -- Packet telemetry -- Amendment 1		30.98	n/a		
46185	ISO 15887:2000/CD Cor 2 Space data and information transfer systems -- Data systems -- Lossless data compression -- Technical Corrigendum 2		30.38	n/a		
35682	ISO 15889:2000/CD Amd 1 Space data and information transfer systems -- Data description language -- EAST specification -- Amendment 1		30.98	n/a		
50246	ISO/CD 17355 Space data and information transfer systems -- CCSDS file delivery protocol		30.98	n/a		CCSDS 727.0-B-4 CCSDS File Delivery Protocol (CFDP) . Blue Book. Issue 4. January 2007.
36379	ISO/CD 22644 Space data and information transfer systems -- Orbit data messages		30.98	n/a		
50583	ISO 22671:2007./CD Cor 1 Space data and information transfer systems -- Space link extension (SLE) -- Forward communications link transmission unit (CLTU) service		30.99	n/a		
36397	ISO/CD 22672 Space data and information transfer systems -- Space link extension (SLE) -- Forward space packet		30.98	n/a		

**Preparatory Stage: 20 (Preparatory stage)**



Internal No.	Designate No. and Title	IMO-link-NR	Stage	WG	Targets	Remarks

### 7.3 Possible new work items: number including number revisions

#### Proposal Stage: 10 (Proposal stage)

Internal No.	Designate No. and Title	Stage	WG	Remarks
57320	ISO/NP 15889 Space data and information transfer systems -- Data description language -- EAST specification	10.99	n/a	

#### Preliminary Stage: 00 (Preliminary stage)

Internal No.	Designate No. and Title	Stage	WG	Remarks

### 7.4 Work Programme Reallocation: 90 (Review stage)

Internal No.	Designate No. and Title	Stage	WG	Remarks
38141	ISO 11104:2003 Space data and information transfer systems -- Time code formats	90.93	n/a	CCSDS 301.0-B-3:2002 Time Code Formats . Blue Book. Issue 3. January 2002.
21118	ISO 12175:1994 Space data and information transfer systems -- Standard formatted data units -- Structure and construction rules	90.93	n/a	CCSDS 620.0-B-2:1992 Standard Formatted Data Units — Structure and Construction Rules . Blue Book. Issue 2. May 1992.
22845	ISO 13764:1996 Space data and information transfer systems -- Standard formatted data units -- Control authority procedures	90.93	n/a	CCSDS 630.0-B-1:1993 Standard Formatted Data Units — Control Authority Procedures . Blue Book. Issue 1. June 1993.
24683	ISO 14721:2003 Space data and information transfer systems -- Open archival information system -- Reference model	90.92	n/a	CCSDS 650.0-B-1:2002 Reference Model for an Open Archival Information System (OAIS) . Blue Book. Issue 1. January 2002.
34701	ISO 14961:2002 Space data and information transfer systems -- Parameter value language specification	90.93	n/a	CCSDS 641.0-B-2:2000 Parameter Value Language Specification (CCSD0006 and CCSD0008) . Blue Book. Issue 2. June 2000.
26096	ISO 14962:1997 Space data and information transfer systems -- ASCII encoded English	90.93	n/a	CCSDS 643.0-B-1:1992 ASCII Encoded English (CCSD0002) . Blue Book. Issue 1. November 1992.
27534	ISO 15395:1998 Space data and information transfer systems -- Standard formatted data units -- Control authority data structures	90.93	n/a	CCSDS 632.0-B-1:1994 Standard Formatted Data Units — Control Authority Data Structures . Blue Book. Issue 1. November 1994.
43828	ISO 15396:2007 Space data and information transfer systems -- Cross	90.60	n/a	CCSDS 910.4-B-2 Cross Support Reference



	support reference model -- Space link extension services			Model—Part 1: Space Link Extension Services . Blue Book. Issue 2. October 2005.
29440	ISO 15887:2000 Cor 1 2009 Space data and information transfer systems -- Data systems -- Lossless data compression	90.20	n/a	Lossless Data Compression . Blue Book. Issue 1. May 1997.
29441	ISO 15888:2000 Space data and information transfer systems -- Standard formatted data units -- Referencing environment	90.20	n/a	CCSDS 622.0-B-1 Standard Formatted Data Units — Referencing Environment . Blue Book. Issue 1. May 1997.
36451	ISO 15889:2003 Space data and information transfer systems -- Data description language -- EAST specification	90.92	n/a	CCSDS 644.0-B-2-S The Data Description Language EAST Specification (CCSD0010). Silver Book. Issue 2. November 2000.
29444	ISO 15891:2000 Space data and information transfer systems -- Protocol specification for space communications -- Network protocol	90.20	n/a	CCSDS713.0-B-1-S Space Communications Protocol Specification (SCPS)—Network Protocol (SCPS-NP). Silver Book. Issue 1. May 1999.
29445	ISO 15892:2000 Space data and information transfer systems -- Protocol specification for space communications -- Security protocol	90.20	n/a	CCSDS713.5-B-1-S Space Communications Protocol Specification (SCPS)—Security Protocol (SCPS-SP). Silver Book. Issue 1. May 1999.
29447	ISO 15894:2000 Space data and information transfer systems -- Protocol specification for space communications -- File protocol	90.20	n/a	CCSDS 717.0-B-1-S Space Communications Protocol Specification (SCPS)—File Protocol (SCPS-FP). Silver Book. Issue 1. May 1999.
43829	ISO 17355:2007 Space data and information transfer systems -- CCSDS file delivery protocol	90.20	n/a	CCSDS 727.0-B-3 S CCSDS File Delivery Protocol (CFDP). Silver Book. Issue 3. June 2005.
39577	ISO 20652:2006 Space data and information transfer systems -- Producer-archive interface -- Methodology abstract standard	90.93	n/a	CCSDS 651.0-M-1 Producer-Archive Interface Methodology Abstract Standard . Magenta Book. Issue 1. May 2004.
40247	ISO 21459:2006 Space data and information transfer systems -- Proximity-1 space link protocol -- Coding and synchronization sublayer	90.93	n/a	CCSDS 211.2-B-1 Proximity-1 Space Link Protocol—Coding and Synchronization Sublayer . Blue Book. Issue 1. April 2003.
36036	ISO 21961:2003 Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- Abstract syntax	90.93	n/a	CCSDS 647.1-B-1:2001 Data Entity Dictionary Specification Language (DEDSL)—Abstract Syntax (CCSD0011) . Blue Book. Issue 1. June 2001.
36037	ISO 21962:2003 Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- PVL syntax	90.93	n/a	CCSDS 647.2-B-1:2001 Data Entity Dictionary Specification Language (DEDSL)—PVL Syntax (CCSD0012) . Blue Book. Issue 1. June 2001.
36375	ISO 22641:2005 Space data and information transfer systems -- TM (telemetry) synchronization and channel coding	90.93	n/a	CCSDS131.0-B-1:2003 TM Synchronization and Channel Coding . Blue Book. Issue 1. September 2003.



36376	ISO 22642:2005 Space data and information transfer systems -- TC (telecommand) synchronization and channel coding	90.93	n/a	CCSDS 231.0-B-1:2003 Synchronization and Channel Coding. Silver Book. Issue 1. September 2003.
36377	ISO 22643:2003 Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- XML/DTD Syntax	90.93	n/a	CCSDS 647.3-B-1 Data Entity Dictionary Specification Language (DEDSL)—XML/DTD Syntax (CCSD0013) . Blue Book. Issue 1. January 2002.
42722	ISO 22644:2006 Space data and information transfer systems -- Orbit data messages	90.92	n/a	CCSDS 502.0-B-1-S Orbit Data Messages. Silver Book. Issue 1. September 2004.
36380	ISO 22645:2005 Space data and information transfer systems -- TM (telemetry) space data link protocol	90.93	n/a	CCSDS 132.0-B-1:2003 TM Space Data Link Protocol . Blue Book. Issue 1. September 2003.
36381	ISO 22646:2005 Space data and information transfer systems -- Space packet protocol	90.93	n/a	CCSDS 133.0-B-1:2003 Space Packet Protocol. Blue Book. Issue 1. September 2003.
36389	ISO 22664:2005 Space data and information transfer systems -- TC (telecommand) space data link protocol	90.93	n/a	CCSDS 232.0-B-1:2003 S TC Space Data Link Protocol. Silver Book. Issue 1. September 2003.
44866	ISO 22666:2007 Space data and information transfer systems -- AOS (advanced orbiting systems) space data link protocol	90.20	n/a	CCSDS 732.0-B-2 AOS Space Data Link Protocol . Blue Book. Issue 2. July 2006.
36392	ISO 22667:2005 Space data and information transfer systems -- Communication operations Procedure-1	90.93	n/a	CCSDS 232.1-B-1:2003 S Communications Operation Procedure-1. Silver Book. Issue 1. September 2003.
43442	ISO 22669:2007 Space data and information transfer systems -- Space link extension (SLE) -- Return-all-frames service	90.93	n/a	CCSDS 911.1-B-2-S Space Link Extension – Return All Frames Service Specification. Silver Book. Issue 2. November 2004.
36395	ISO 22670:2006 Space data and information transfer systems -- Space link extension (SLE) -- Return-channel-frames service	90.93	n/a	CCSDS 911.2-B-1:2004 Space Link Extension – Return Channel Frames Service Specification. Silver Book. Issue 1. November 2004.
43443	ISO 22671:2007 Space data and information transfer systems -- Space link extension (SLE) -- Forward communications link transmission unit (CLTU) service	90.93	n/a	CCSDS 912.1-B-2-S Space Link Extension – Forward CLTU Service Specification. Silver Book. Issue 2. November 2004.
42721	ISO 22672:2006 Space data and information transfer systems -- Space link extension (SLE) -- Forward space packet service	90.93	n/a	CCSDS 912.3-B-1-S Space Link Extension – Forward Space Packet Service Specification. Silver Book. Issue 1. November 2004.
43394	ISO 26143:2007 Space data and information transfer systems -- Space link extension (SLE) -- Return operational control fields service	90.93	n/a	CCSDS 911.5-B-1-S Space Link Extension – Return Operational Control Fields Service Specification. Silver Book. Issue 1. November 2004.





## 7.5 Standards withdrawn: 95 (Withdrawal stage)

Internal No.	Designate No. and Title	Remarks
19092	ISO 11103:1991 Space data and information transfer systems -- Radio metric and orbit data	CCSDS 501.0-B-1:1987 Radio Metric and Orbit Data. Silver Book. Issue 1. January 1987.
19093	ISO 11104:1991 Space data and information transfer systems -- Time code formats	CCSDS 301.0-B-2:1990 – Time Code Formats . Blue Book. Issue 3. January 2002.
19675	ISO 11754:1994 Space data and information transfer systems -- Telemetry channel coding	CCSDS 101.0-B-3:1992 Telemetry Channel Coding. Silver Book. Issue 3. May 1992.
33004	ISO 11754:2003 Space data and information transfer systems -- Telemetry channel coding	CCSDS 101.0-B-5:2001 Telemetry Channel Coding. Silver Book. Issue 5. June 2001
21114	ISO 12171:1998 Space data and information transfer systems -- Telecommand -- Channel service -- Architectural specification	CCSDS 201.0-B-2:1995 – Telecommand Part 1 — Channel Service. Silver Book. Issue 2. November 1995.
34711	ISO 12171:2002 Space data and information transfer systems -- Telecommand -- Channel service	CCSDS 201.0-B-3:2000 – Telecommand Part 1—Channel Service. Silver Book. Issue 3. June 2000.
21115	ISO 12172:1998 Space data and information transfer systems -- Telecommand -- Data routing service	CCSDS 202.0-B-2:1992 Telecommand Part 2—Data Routing Service. Silver Book. Issue 2. November 1992.
36591	ISO 12172:2003 Space data and information transfer systems -- Telecommand -- Data routing service	CCSDS 202.0-B-3:2001 Telecommand Part 2—Data Routing Service. Silver Book. Issue 3. June 2001.
21116	ISO 12173:1998 Space data and information transfer systems -- Telecommand -- Command operation	CCSDS 202.1-B-1:1991 Telecommand Part 2.1—Command Operation Procedures. Silver Book. Issue 1. October 1991.
36447	ISO 12173:2003 Space data and information transfer systems -- Telecommand -- Command operation	CCSDS 202.1-B-2:2001 Telecommand Part 2.1— Command Operation Procedures. Silver Book. Issue 2. June 2001.
36446	ISO 12174:2003 Space data and information transfer systems -- Telecommand -- Architectural specification for the data management service	CCSDS 203.0-B-2-S Telecommand Part 3—Data Management Service. Silver Book. Issue 2. June 2001.
21117	ISO 12174:1998 Space data and information transfer systems -- Telecommand -- Data management service -- Architectural specification	CCSDS 203.0-B-1:1987 Telecommand Part 3—Data Management Service. Silver Book. Issue 1. January 1987.
36446	ISO 12174:2003 Space data and information transfer systems -- Telecommand -- Architectural specification for the data management service	CCSDS 203.0-B-2:2001 Telecommand Part 3—Data Management Service. Silver Book. Issue 2. June 2001.
21968	ISO 13419:1997 Space data and information transfer systems -- Packet telemetry	CCSDS 102.0-B-4:1995 Packet Telemetry. Silver Book. Issue 4. November 1995.
36479	ISO 13419:2003 Space data and information transfer systems -- Packet telemetry	CCSDS 102.0-B-5-S 2000 Packet Telemetry. Silver Book. Issue 5. November 2000.
21969	ISO 13420:1997 Space data and information transfer systems -- Advanced orbiting systems -- Networks and data links --	CCSDS 701.0-B-2-S 1992 Advanced Orbiting Systems, Networks and Data Links: Architectural Specification. Silver Book. Issue 2. November



	Architectural specification	1992.
24682	ISO/WD 14712 Space systems -- Mission operations functions	
26095	ISO 14961:1997 Space data and information transfer systems -- Parameter value language specification	CCSDS 641.0-B-1 1992 Parameter Value Language Specification (CCSD0006). Silver Book. Issue 1. May 1992.
27535	ISO 15396:1998 Space data and information transfer systems -- Cross support reference model -- Space link extension services	CCSDS 910.4-B-1 S 1996 Cross Support Reference Model—Part 1: Space Link Extension Services. Silver Book. Issue 1. May 1996.
29442	ISO 15889:2000 Space data and information transfer systems -- Data description language -- EAST specification	CCSDS 644.0-B-1 1997 The Data Description Language EAST Specification (CCSD0010). Silver Book. Issue 1. May 1997.
29446	ISO 15893:2000 Space data and information transfer systems -- Protocol specification for space communications -- Transport protocol	CCSDS 714.0-B-1 1999 Space Communications Protocol Specification (SCPS)—Transport Protocol (SCPS-TP). Silver Book. Issue 1. May 1999.
33005	ISO 17355:2003 Space data and information transfer systems -- CCSDS file delivery protocol	CCSDS 727.0-B-1 2002 CCSDS File Delivery Protocol (CFDP). Silver Book. Issue 1. January 2002.
38593	ISO 17355:2004 Space data and information transfer systems -- CCSDS file delivery protocol	
28460	ISO 17433:2001 Space data and information transfer systems -- Packet telemetry services	CCSDS 103.0-B-1 S: 1996 Packet Telemetry Services. Silver Book. Issue 1. May 1996.
36448	ISO 17433:2003 Space data and information transfer systems -- Packet telemetry services	CCSDS 103.0-B-2 S: 2001 Packet Telemetry Service Specification. Silver Book. Issue 2. June 2001.
40248	ISO 21460:2006 Space data and information transfer systems -- Proximity-1 space link protocol -- Physical layer	CCSDS 211.1-B-1 Proximity-1 Space Link Protocol—Physical Layer. Silver Book. Issue 1. April 2003.
36383	ISO 22647:2006 Space data and information transfer systems -- Space link identifiers	CCSDS 135.0-B-1:2002 Space Link Identifiers. Silver Book. Issue 1. January 2002.
36386	ISO 22663:2006 Space data and information transfer systems -- Proximity-1 space link protocol -- Data link layer	CCSDS 211.0-B-3:2004 Proximity-1 Space Link Protocol—Data Link Layer. Silver Book. Issue 3. May 2004.
36391	ISO 22666:2005 Space data and information transfer systems -- AOS (advanced orbiting systems) space data link protocol	CCSDS 732.0-B-1:2003 AOS Space Data Link Protocol. Silver Book. Issue 1. September 2003.
36393	ISO/WD 22668 Space data and information transfer systems -- Space link extension (SLE) -- Service management specification	
36394	ISO 22669:2003 Space data and information transfer systems -- Space link extension (SLE) -- Return-all-frames service	CCSDS 911.1-B-1:2002 Space Link Extension – Return All Frames Service Specification. Silver Book. Issue 1. April 2002.
36396	ISO 22671:2005 Space data and information transfer systems -- Space link extension (SLE) -- Forward command link transmission unit (CLTU)	CCSDS 912.1-B-1:2002 Space Link Extension – Forward CLTU Service Specification. Silver Book. Issue 1. April 2002.



## International harmonized stage codes

STAGE	SUBSTAGE						
				90 Decision Substages			
	00 Registration	20 Start of main action	60 Completion of main action	92 Repeat an earlier phase	93 Repeat current phase	98 Abandon	99 Proceed
00 Preliminary stage	00.00 Proposal for new project received	00.20 Proposal for new project under review	00.60 Close of review			00.98 Proposal for new project abandoned	00.99 Approval to ballot proposal for new project
10 Proposal stage	10.00 Proposal for new project registered	10.20 New project ballot initiated	10.60 Close of voting	10.92 Proposal returned to submitter for further definition		10.98 New project rejected	10.99 New project approved
20 Preparatory stage	20.00 New project registered in TC/SC work programme	20.20 Working draft (WD) study initiated	20.60 Close of comment period			20.98 Project deleted	20.99 WD approved for registration as CD
30 Committee stage	30.00 Committee draft (CD) registered	30.20 CD study/ballot initiated	30.60 Close of voting/ comment period	30.92 CD referred back to Working Group		30.98 Project deleted	30.99 CD approved for registration as DIS
40 Enquiry stage	40.00 DIS registered	40.20 DIS ballot initiated: 5 <i>months</i>	40.60 Close of voting	40.92 Full report circulated: DIS referred back to TC or SC	40.93 Full report circulated: decision for new DIS ballot	40.98 Project deleted	40.99 Full report circulated: DIS approved for registration as FDIS
50 Approval stage	50.00 FDIS registered for formal approval	50.20 FDIS ballot initiated: 2 <i>months</i> . Proof sent to secretariat	50.60 Close of voting. Proof returned by secretariat	50.92 FDIS referred back to TC or SC		50.98 Project deleted	50.99 FDIS approved for publication
60 Publication stage	60.00 International Standard under publication		60.60 International Standard published				
90 Review stage		90.20 International Standard under periodical review	90.60 Close of review	90.92 International Standard to be revised	90.93 International Standard confirmed		90.99 Withdrawal of International Standard proposed by TC or SC
95 Withdrawal stage		95.20 Withdrawal ballot initiated	95.60 Close of voting	95.92 Decision not to withdraw International Standard			95.99 Withdrawal of International Standard