



ISO/TC 20/SC 13  
Space data and information transfer systems

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Secretariat: NASA

**ISO/TC 20/SC 13 Report to ISO/TC 20 Plenary Meeting - Moscow, Oct 2016**

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

**FOREWORD:** This report is being submitted in association to the 50<sup>th</sup> ISO TC20 Committee on Aircraft and Space Vehicles Plenary Meeting, to be held in Moscow, Russian Federation, in October 17-21, 2016.

**1 Title and Scope**

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

**Scope:** Space data systems

**2 Chairman and secretary**

**Chairman:**

Name (tenure): Eduardo Whitaker Bergamini

Organization/Country: National Institute for Space Research-INPE (Brazil)

Address: Avenida dos Astronautas, 1758, São José dos Campos,SP, Brazil

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**Secretary:**

Name (tenure): James Afarin

Organization/Country: National Aeronautics and Space Administration-NASA

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**Secretariat (Optional)**

Name (tenure): Michael Blackwood (ANSI/U.S.A.)

Organization/Country: ASRC Federal Technical Services

Address: 7515 Mission drive, Seabrook, MD 20706, U.S.A.

Phone: +1 301 837 3901

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### 3 Meetings Held Since Last Report (SC and WG)

#### Meetings held

No.	Date	Place
40	2011-11-16	Moscow, Russia
41	2012-04-24	Darmstadt, Germany
42	2012-12-11	Kennedy Space Center, FL, U.S.A.
43	2013-04-23	Bordeaux-Latresne, France
44	2013-12-10	St. Hubert, Montreal, Quebec, Canada
45	2014-04-08	Noordwijk, Netherlands
46	2015-05-20	Nagano, Japan (Formal Meeting)
47	2015-11-17	Darmstadt, Germany (Informal M.)
48	2016-04-27	São José dos Campos, Brazil (Formal M.)

#### Schedule of future meetings

49            2016-10-24            Rome, Italy (Informal Meet.)

#### Agenda of the 48<sup>th</sup> Meeting in São José dos Campos, Brazil, in April 27, 2016

1. (15:00)            - Opening of the meeting.
2. (15:00-15:05)   - Roll call of delegates.
3. (15:05-15:10)   - Appointment of the drafting committee.
4. (15:10-15:15)   - Approval of the 48<sup>th</sup> meeting Agenda (**N1555**).
5. (15:15-15:20)   - Approval of the previous, 47<sup>th</sup> Meeting Package (Minutes - Ref. **N1552**).
6. (15:20- 15:40)   - Presentation of Member Report by Delegates.

7. (15:40-15:50) - Report of the Secretary on the last version of the Program of Work.
8. (15:50-15:55) - Report on the cooperation initiative between CCSDS - ISO TC20/SC13 and ISO TC20/SC14
9. (15:55-16:05) - Report on the Proposal of Liaison by ISO TC46/SC04 to ISO TC20/SC13.
- 10.(16:05-16:30) - Affiliation of CCSDS to ISO TC20/SC13
- 11.(16:30-16:45) - Review and update of the Resolutions and Action Items.
- 12.(16:45-16:50) - Other Business and Planning for the (Informal) 49<sup>th</sup> meeting.
- 13.(16:50) - Adjourn

**OBS.** A P-Member REPORT is: 1) Expected, in a FORMAL meeting; 2) Optional, in an INFORMAL meeting.

## Meeting Packages

The comprehensive compilation of all the information (minutes, resolutions, action items, reports, etc.) which result from each of the Subcommittee meetings, named MEETING PACKAGES, can be found with the URL pointers to each of the Subcommittee Website folders, as follows:

### a) ISO Livelink Website:

<http://isotc.iso.org/livelink/livelink?func=ll&objId=11659509&objAction=browse&viewType=1>

### b) CWE/CCSDS Website:

<http://cwe.ccsds.org/cmc/docs/Forms/AllItems.aspx?RootFolder=%2Fcmc%2Fdocs%2FISO%20TC20%2DSC13%20Subcommittee%2F04%2EISO%20TC20%2DSC13%20Subcommittee%20Meeting%20Packages&View=%7BD5DD30F7%2D53FC%2D45B9%2D8B93%2D709B280A475B%7D&>

## 4 Participation and liaisons

### 4.1 P-member bodies (12)

No.	Country	Member Body
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1	BRAZIL ( <b>Chairman</b> )	ABNT
2	CHINA	SAC
3	FRANCE	AFNOR
4	GERMANY	DIN
5	INDIA	BIS
6	ITALY	UNI
7	JAPAN	JISC
8	KAZAKHSTAN [*]	KAZMEMST
9	RUSSIAN FEDERATION	GOST R
10	UKRAINE	DSTU
11	UNITED KINGDOM	BSI
12	UNITED STATES ( <b>Secretariat</b> )	ANSI

[\*] Pending the Nomination of KAZMEMST to ISO TC20/SC13 (Oct. 2016).

### Criteria used for the realization of the subcommittee meetings

ISO TC20/SC13 Subcommittee Plenary meetings have been observing a methodical alternation between FORMAL and INFORMAL meetings. In INFORMAL meetings, P-Member are not expected to present a Report. It is expected the realization of at least one Subcommittee meeting per year and, in this case, it will, necessarily, be a FORMAL meeting, accompanied by the presentation of Reports, by the P-Members.

### 4.2 O-member bodies (9)

No.	Country	Member Body
1	Argentina	IRAM
2	Czech Republic [*]	UNMZ
3	Finland	SFS
4	Iran, Islamic Republic of	ISIRI
5	Israel	SII
6	Korea, Republic of	KATS
7	Poland	PKN

8  
9

Romania  
Sweden

ASRO  
SIS

[\*] Pending the Nomination of UNMZ to ISO TC20/SC13 (Oct. 2016).

**Total:** 12(P) + 9(O) = 21 Member bodies

### 4.3 Liaisons (Contacts)

Liaisons of ISO TC20/SC13 Subcommittee are going through a complete review with different parties: ISO CS, CCSDS Secretariat, and CCSDS CESG Areas, at this very moment. The Subcommittee expects that at its coming meeting, to be held in 24 October 2016, at least a substantial part of the pending liaisons may become updated, be it with reconfirmation, deletion or, even, eventual inclusion of one or more liaisons. Therefore, items listed below with (t.b.c.) are passive of reconfirmation, at the moment.

TC/SC	Organization	Category	Person	Contact	E-mail
n/a	CCSDS	A	James Afarin	<a href="mailto:James.Afarin@nasa.gov">James.Afarin@nasa.gov</a>	
n/a	ESA	A	Juan Miró	<a href="mailto:Juan.Miro@esa.int">Juan.Miro@esa.int</a>	
n/a	ECSS	A	Gilles Moury	<a href="mailto:Gilles.Moury@cnes.fr">Gilles.Moury@cnes.fr</a>	
20/14	ISO	B	Fred Slane (t.b.c.)	<a href="mailto:freds@spacestandards.org">freds@spacestandards.org</a>	
20/14/WG3	ISO	B	Fred Slane (t.b.c.)	<a href="mailto:freds@spacestandards.org">freds@spacestandards.org</a>	
ISOCS	ISO-TPM	B	Andy Dryden	<a href="mailto:dryden@iso.org">dryden@iso.org</a>	
46/4	ISO	B	K.Heiskanen	<a href="mailto:kati.heiskanen@sfs.fi">kati.heiskanen@sfs.fi</a>	
46/4	ISO	B	Hakala, Juha	<a href="mailto:juha.hakala@helsinki.fi">juha.hakala@helsinki.fi</a>	

46/11	ISO	B	Agnes Simai (t.b.c.)	<a href="mailto:agnes.simai@standards.org.au">agnes.simai@standards.org.au</a>
211	ISO	B	B. Saeteroy (t.b.c.)	<a href="mailto:bjs@standard.no">bjs@standard.no</a>
JTC1/SC2	ISO/IEC	B	T. Kimura (t.b.c.)	<a href="mailto:kimura@itsci.ipsj.or.jp">kimura@itsci.ipsj.or.jp</a>
JTC1/SC29	ISO/IEC	B	Y. Ogura (t.b.c.)	<a href="mailto:sc29-sec@itsci.ipsj.or.jp">sc29-sec@itsci.ipsj.or.jp</a>
JTC1/SC29/ WG1	ISO/IEC	B	Y. Ogura (t.b.c.)	<a href="mailto:sc29-sec@itsci.or.jp">sc29-sec@itsci.or.jp</a>
JTC1/SC32	ISO/IEC	B	T. Schoechle (t.b.c.)	<a href="mailto:timothy@schoechle.org">timothy@schoechle.org</a>

#### **NAMES OF LIAISON ORGANIZATIONS:**

- CCSDS: Consultative Committee for Space Data Systems
- ESA: European Space Agency
- ECSS: European Cooperation for Space Standardization
- ISOCS-TPM: ISO Central Secretariat-Technical Program Manager
- ISO TC20/SC14: Subcommittee on space systems and operations
- ISO TC20/SC14 WG3: Working Group on operations and ground support
- ISO JTC1/SC2: Subcommittee on coded character sets
- ISO JTC1/SC29: Subcommittee on coding audio, picture, multimedia and hypermedia information
- ISO JTC1/SC29/WG1: Working Group on coding of still pictures
- ISO JTC1/SC32: Subcommittee on data management and interchange
- ISO TC 211: Technical Committee on geographic information/geomatics
- ISO TC46/SC11: Subcommittee on archives/records management
- ISO TC46/SC4: Subcommittee on technical interoperability



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

KAZMEMST/Kazakhstan moved from O-Member to P-Member, pending (Oct.2016) nomination of Representative to Subcommittee. UNMZ/Czech Republic has become an O-Member, pending (Oct.2016) nomination of Representative to Subcommittee.

#### **4.5 Inactive P-member bodies**

Most of the P-members who have not been attending the past meetings in recent years have not presented their justifications of absence.

## 5 Constitution

### 5.1 Working Groups

Last August 17 (2016) the Chairman, Dr. Eduardo Bergamini and the Secretary, Dr. James Afarin, of the Subcommittee, forwarded a formal letter (doc. ref. **N1593**) addressed to Mr. Andrew (“Andy Dryden”), ISO CS Technical Program Manager and Liaison to the Subcommittee requesting the Elimination of the existing six (6) Working Groups in the organizational structure of ISO TC2/SC13 Subcommittee.

The background that justified this request was expressed under the following terms:

“Some years ago, the Subcommittee Secretariat believed it would be beneficial to create six Working Groups (WGs) in the structure of the Subcommittee to mirror the existing six technical Areas of CCSDS Engineering Steering Group (CESG). However, the current Secretary and Chairman of the Subcommittee jointly find that there has been no concrete reason to justify the existence of the aforementioned WGs in the organization of the Subcommittee. For this reason, we are requesting ISO CS to eliminate these six Subcommittee. The listing of the aforementioned WGs are in the contents of the pointing, at <http://isotc.iso.org/livelink/livelink/open/tc20sc13>. As an additional convenience, the listing of the same WGs are in the APPENDIX, below.”

#### APPENDIX TO THE LETTER (**N1593**):



ISO/TC 020/SC 13 "Space data and information transfer systems" ▾  
ISO/TC 020/SC 13/WG 01 "Systems engineering" ▾  
ISO/TC 020/SC 13/WG 02 "Mission operations and information management" ▾  
ISO/TC 020/SC 13/WG 03 "Cross support services" ▾  
ISO/TC 020/SC 13/WG 04 "Spacecraft onboard interface services" ▾  
ISO/TC 020/SC 13/WG 05 "Space link services" ▾  
ISO/TC 020/SC 13/WG 06 "Space internetworking services" ▾

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

Apart from the changes justified in the previous item (5.1) of this report, there were no changes in constitution of the Subcommittee over the last year.

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

### **6.1 Extension of the current term of the Chairman**

The term of Eduardo Bergamini as the Subcommittee Chairman, would have expired in December 2015. But, because no candidate for a new term was presented in the subcommittee meeting held in Nagano, Japan, in May 2015, Eduardo Bergamini was asked if he would accept to have his term as Chairman, should: 1) A voting among the P-Member approve it and, then; 2) Should ISO Technical Management Board (TMB) ratify it, at the end of the process. Eduardo Bergamini expressed his acceptance for a possible extended term, at the occasion (May 2015). Then, indeed, the process for observing the mentioned requirements 1 and 2, was put in practice. The P-Member voting did approve the extension of the term of the Chairman and, subsequently ISO TBM ended up issuing its final approval for the mentioned extended term for the chairman, from January 2016 to December 2017, as published in the ISO [February 2016 TMB Resolutions](#).

### **6.2 Formalization of a Liaison with ISO TC46/SC4**

After the initiative taken by the Chair and Secretary of ISO TC46/SC4 Subcommittee, back in October 2015, ISO TC46/SC04 Subcommittee – Computer Applications in Information and Documentation, with URL: <http://isotc.iso.org/livelink/livelink?func=ll&objId=8802581&objAction=browse&viewType=1> proposed to ISO TC20/SC13 a formal liaison. After and exchange of correspondence between both parties, a formal acceptance letter was sent from this subcommittee to ISO TC46/SC14 in March 2016.

### **6.3 OAIS-Open Archive Information System (Keywords) – Overview, Five Year Review and Comment Process.**

In consideration to the initiative taken by the Chairman of CCSDS Data Archive and Information (DAI) Working Group (WG) a CALL-AT-LARGE addressing ALL Members, Liaisons and Associates to Subcommittee ISO TC20/SC13 asking for suggestions that will be analyzed and eventually considered as part of the Five-Year-Review-and-Comment Process of document CCSDS 650.0-M-2/Magenta Book- ISO 14721:2003/Standard. Suggestions and comments should be received by 7 October, 2016, but additional comments will be accepted up to 31st December 2016. Comments may be submitted via: <http://review.oais.info>.

## 6.4 Maintenance of the information structure of the subcommittee

A modular and scalable structured information system which deals with different items, in the form of a hierarchy of folders, sub-folders and files is being regularly maintained and updated with key contents (meeting packages, reports, listing of packages, etc.) which are derived from the Subcommittee activities. The two following URL pointers, associated to two different Websites, provide entries for reaching the structured contents which are maintained and regularly updated by the Subcommittee:

### 6.4.1 In the ISO TC20/SC13 ISO-LiveLink Website:

<http://isotc.iso.org/livelink/livelink?func=ll&objId=8791604&objAction=browse&sort=name&viewType=1>

### 6.4.2 In the ISO TC20/SC13 CCSDS-CWE Website:

<http://cwe.ccsds.org/cmc/docs/Forms/AllItems.aspx?RootFolder=%2Fcmc%2Fdocs%2FISO%20TC20%2DSC13%20Subcommittee&View=%7BD5DD30F7%2D53FC%2D45B9%2D8B93%2D709B280A475B%7D&>

## 7 Programme of work

In the last months of this year long report, there was a decision to review: **a)** The roster of Members, Liaisons and Associates of the Subcommittee; **b)** The method that was being practiced in the elaboration of the Subcommittee Program of Work (PoW). In respect to item **(a)**, What has already been commented in this Report, related to Membership and Liaison, already reflects the practice of a new methodology that permits, on a monthly basis, to maintain and to improve the list or roster of persons related to the Subcommittee. Concerning item **(b)**, it is already in practice, a new methodology that produces on a monthly basis, the called INTEGRATED PROGRAM OF WORK, that results from the combined compilation of two different sources of information, each of them, originated from separately maintained PoWs, as provided by: 1) The secretariat of the Subcommittee, named SECRETARIAT POW, and; 2) The ISO Central Secretariat, named ISO CS POW.

### 7.1 INTEGRATED POWs available in the Subcommittee Websites

The existing folder in each of the two Websites of the Subcommittee, that contains the monthly issue of ALL the available, combined, now being named INTEGRATED POWs of the Subcommittee, can be accessed by the following URL pointers:

### 7.1.1 Folder available In the ISO TC20/SC13 ISO-LiveLink Website:

<http://isotc.iso.org/livelink/livelink?func=ll&objId=10035623&objAction=browse&viewType=1>

### 7.1.2 Folder available In the ISO TC20/SC13 CCSDS-CWE Website:

<http://cwe.ccsds.org/cmc/docs/Forms/AllItems.aspx?RootFolder=%2fcmc%2fdocs%2fISO%20TC20-SC13%20Subcommittee%2f03%2eISO%20TC20-SC13%20Subcommittee%20Program%20of%20Work&FolderCTID=&View=%7bD5DD30F7-53FC-45B9-8B93-709B280A475B%7d>

## 7.2 INTEGRATED POW of AUGUST 2016

The following items, from **a** to **e**, followed by an ISO International Harmonized Stage Codes table, present the **AUGUST 2016** issue of the Subcommittee **INTEGRATED PROGRAM OF WORK**.

### a. Published standards: 60 (Publication Stage)

ISO 17107:2011	Space data and information transfer systems -- XML specification for navigation data messages	60.60
ISO 17214:2011	Space data and information transfer systems -- Spacecraft onboard interface services -- Time access service	60.60
ISO 22671:2011	Space data and information transfer systems -- Space link extension (SLE) -- Forward communications link transmission unit (CLTU) service	60.60
ISO 15889:2011	Space data and information transfer systems -- The data description language EAST specification	60.60
ISO 22672:2011	Space data and information transfer systems -- Space link extension (SLE) -- Forward space packet service specification	60.60
ISO 11104:2011	Space data and information transfer systems -- Time code formats	60.60
ISO 16363:2012	Space data and information transfer systems -- Audit and certification of trustworthy digital repositories	60.60
ISO 22641:2012	Space data and information transfer systems -- TM (telemetry) synchronization and channel coding	60.60
ISO 14721:2012	Space data and information transfer systems -- Open archival information system (OAIS) -- Reference model	60.60
ISO 22666:2007/Amd 1:2015	Space data and information transfer systems -- AOS (advanced orbiting systems) space data link protocol -- Amendment 1	60.60
ISO 13526:2010/Amd 1:2015	Space data and information transfer systems -- Tracking data message -- Amendment 1	60.60
ISO 18428:2013	Space data and information transfer systems -- Spacecraft Onboard Interface Services -- Subnetwork Device Discovery Service	60.60
ISO 16919:2014	Space data and information transfer systems -- Requirements for bodies providing audit and certification of candidate trustworthy digital repositories	60.60
ISO 18423:2015	Space data and information transfer systems -- Pseudo-Noise (PN) Ranging Systems	60.60
ISO 12175:1994/Amd	Space data and information transfer systems -- Standard formatted data units -- Structure and construction rules --	60.60

1:2015	Amendment 1	
ISO 18446	Space data and information transfer systems -- Space link extension -- Application program interface for the forward space packet service	60.00
ISO 18425:2013	Space data and information transfer systems -- Spacecraft Onboard Interface Services -- Subnetwork Packet Service	60.60
ISO 17809:2014	Space data and information transfer systems - Delta-differential one-way ranging (Delta-DOR) operations	60.60
ISO 22669:2013	Space data and information transfer systems -- Space link extension (SLE) -- Return-all-frames service	60.60
ISO 20104:2015	Space data and information transfer systems -- Producer-Archive Interface Specification (PAIS)	60.60
ISO 20217:2015	Space data and information transfer systems -- Spacecraft onboard interface services -- File and packet store services	60.60
ISO 18424:2013	Space data and information transfer systems -- XML Telemetric and Command Exchange (XTCE)	60.60
ISO 21323	Space data and information transfer systems -- CCSDS Bundle protocol specification	60.00
ISO 18426:2013	Space data and information transfer systems -- Spacecraft Onboard Interface Services -- Subnetwork Memory Access Service	60.60
ISO 19389:2014	Space data and information transfer systems -- Conjunction data message	60.60
ISO 21080:2016	Space data and information transfer systems -- Licklider transmission protocol (LTP) for CCSDS	60.60
ISO 17854:2013	Space data and information transfer systems -- Flexible advanced coding and modulation scheme for high rate telemetry applications	60.60
ISO 18427:2013	Space data and information transfer systems -- Spacecraft Onboard Interface Services -- Subnetwork Synchronization Service	60.60
ISO 21324	Space data and information transfer systems -- Space data link security protocol	60.00
ISO 22667:2013	Space data and information transfer systems -- Communications operation procedure-1	60.60
ISO 10537	Space data and information transfer systems -- Encapsulation service	60.00
ISO 18381:2013	Space data and information transfer systems -- Lossless multispectral and hyperspectral image compression	60.60
ISO 21077:2016	Space data and information transfer systems -- Digital motion imagery	60.60
ISO 22645	Space data and information transfer systems -- TM (telemetry) space data link protocol	60.00
ISO 18444	Space data and information transfer systems -- Space link extension -- Application program interface for return operational control fields service	60.00
ISO 20216:2015	Space data and information transfer systems -- Spacecraft onboard interface services -- Device data pooling service	60.60
ISO 18201:2013	Space data and information transfer systems -- Mission operations reference model	60.60
ISO 20106:2015	Space data and information transfer systems -- Mission operations common object model	60.60
ISO 22666	Space data and information transfer systems -- AOS (advanced orbiting systems) space data link protocol	60.00
ISO 22664:2013/Amd 1:2015	Space data and information transfer systems -- TC (telecommand) space data link protocol -- Amendment 1	60.60
ISO 20211:2015	Space data and information transfer systems -- Spacecraft Onboard Interface Services -- Device Access Service	60.60
ISO 18438:2013	Space data and information transfer systems -- Spacecraft Onboard Interface Services -- Subnetwork Test Service	60.60
ISO 20618:2015	Space data and information transfer systems -- Spacecraft onboard interface services -- Device enumeration service	60.60
ISO 18443	Space data and information transfer systems -- Space link extension -- Application program interface for return	60.00

	channel frames service	
ISO 18202:2015	Space data and information transfer systems -- Mission operations message abstraction layer	60.60
ISO 20207:2015	Space data and information transfer systems -- CCSDS Space Link Protocols over ETSI DVB-S2 Standard	60.60
ISO 22646:2005/Amd 1:2015	Space data and information transfer systems -- Space packet protocol -- Amendment 1	60.60
ISO 18442	Space data and information transfer systems -- Space link extension -- Application program interface for return all frames service	60.00
ISO 20205:2015	Space data and information transfer systems -- Spacecraft Onboard Interface Systems -- Low Data-Rate Wireless Communications for Spacecraft Monitoring and Control	60.60
ISO 20107:2015	Space data and information transfer systems -- Spacecraft onboard interface services -- Device virtualization service	60.60
ISO 22664	Space data and information transfer systems -- TC (telecommand) space data link protocol	60.00
ISO 20210:2015	Space data and information transfer systems -- Mission Operations Message Abstraction Layer - JAVA API	60.60
ISO 18441	Space data and information transfer systems -- Space link extension -- Application program interface for transfer services -- Core specification	60.00
ISO 21460:2015	Space data and information transfer systems -- Proximity-1 space link protocol -- Physical layer	60.60
ISO 18445	Space data and information transfer systems -- Space link extension -- Application program interface for the forward CLTU service	60.00
ISO 20208:2015	Space data and information transfer systems -- Delta-DOR Raw Data Exchange Format	60.60
ISO 15887:2013	Space data and information transfer systems -- Lossless data compression	60.60
ISO 20206:2015	Space data and information transfer systems -- IP over CCSDS space links	60.60
ISO 18439:2013	Space data and information transfer systems -- Space Communication Cross Support -- Service Management -- Service Specification	60.60
ISO 17810:2014	Space data and information transfer systems -- Data transmission and pseudo-random noise (PN) ranging for 2 GHz code division multiple access (CDMA) link via data relay satellite	60.60
ISO 21082:2016	Mission operations -- MAL space packet transport binding and binary encoding	60.60
ISO 18440	Space data and information transfer systems -- Space link extension -- Internet protocol for transfer services	60.00
ISO 26143:2013	Space data and information transfer systems -- Space link extension (SLE) -- Return operational control fields service	60.60
ISO 21076:2016	Space data and information transfer systems -- Space communications cross support -- Architecture requirements document	60.60
ISO 17807:2013	Space data and information transfer systems - Asynchronous message service	60.60
ISO 20213:2015	Space data and information transfer systems -- Spacecraft onboard interface services -- Message transfer service	60.60
ISO 21459:2015	Space data and information transfer systems -- Proximity-1 space link protocol -- Coding and synchronization sublayer	60.60
ISO 22642:2015	Space data and information transfer systems -- TC synchronization and channel coding	60.60
ISO 20215:2015	Space data and information transfer systems -- CCSDS cryptographic algorithms	60.60
ISO 17808:2014	Space data and information transfer systems -- Telemetry (TM) channel coding profiles	60.60
ISO 22670:2013	Space data and information transfer systems -- Space link extension (SLE) -- Return-channel-frames service	60.60

ISO 22645:2005/Amd 1:2015	Space data and information transfer systems -- TM (telemetry) space data link protocol -- Amendment 1	60.60
ISO 22663:2015	Space data and information transfer systems -- Proximity-1 space link protocol -- Data link layer	60.60
ISO 20214:2015	Space data and information transfer systems -- Security architecture for space data systems	60.60
ISO 20105:2015	Space data and information transfer systems -- Operation of CFDP over encapsulation service	60.60
ISO 18382:2013	Space data and information transfer systems -- Spacecraft onboard interface services -- RFID-based inventory management systems	60.60
ISO 10537:2010/Amd 1:2015	Space data and information transfer systems -- Encapsulation service -- Amendment 1	60.60

**b. Registered Work items: 2 including 1 revision**

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

**NONE**

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

**NONE**

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

ISO/CD 17355	Space data and information transfer systems -- CCSDS file delivery protocol	30.99
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**Preparatory Stage: 20 (Preparatory stage)**

**NONE**

**c. Possible new work items: 4 including 0 revisions**

**Proposal Stage: 10 (Proposal stage)**

**NONE**



**Preliminary Stage: 00 (Preliminary stage)**

**NONE**

**d. Work Programme Reallocation: 90 (Review stage)**

ISO 15888:2000	Space data and information transfer systems -- Standard formatted data units -- Referencing environment	90.20
ISO 13541:2010	Space data and information transfer systems -- Attitude data messages	90.93
ISO 10537:2010	Space data and information transfer systems -- Encapsulation service	90.92
ISO 20652:2006	Space data and information transfer systems -- Producer-archive interface -- Methodology abstract standard	90.93
ISO 18444:2013	Space data and information transfer systems -- Space Link Extension -- Application Program Interface for Return Operational Control Fields Service	90.92
ISO 13764:1996	Space data and information transfer systems -- Standard formatted data units -- Control authority procedures	90.93
ISO 22645:2005	Space data and information transfer systems -- TM (telemetry) space data link protocol	90.92
ISO 18442:2013	Space data and information transfer systems -- Space Link Extension -- Application Program Interface for Return All Frames Service	90.92
ISO 26868:2009	Space data and information transfer systems -- Image data compression	90.93
ISO 14961:2002	Space data and information transfer systems -- Parameter value language specification	90.93
ISO 21961:2003	Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- Abstract syntax	90.93
ISO 14962:1997	Space data and information transfer systems -- ASCII encoded English	90.93
ISO 13537:2010	Space data and information transfer systems -- Reference architecture for space data systems	90.93
ISO 17355:2007	Space data and information transfer systems -- CCSDS file delivery protocol	90.92
ISO 22646:2005	Space data and information transfer systems -- Space packet protocol	90.93
ISO 18443:2013	Space data and information transfer systems -- Space Link Extension -- Application Program Interface for Return Channel Frames Service	90.92
ISO 13526:2010	Space data and information transfer systems -- Tracking data message	90.93
ISO 13527:2010	Space data and information transfer systems -- XML formatted data unit (XFDU) structure and construction rules	90.93
ISO 15893:2010	Space data and information transfer systems -- Space communications protocol specification (SCPS) -- Transport protocol (SCPS-TP)	90.93
ISO 22666:2007	Space data and information transfer systems -- AOS (advanced orbiting systems) space data link protocol	90.92
ISO 15396:2007	Space data and information transfer systems -- Cross support reference model -- Space link extension services	90.93
ISO 21962:2003	Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- PVL syntax	90.93
ISO 22643:2003	Space data and information transfer systems -- Data entity dictionary specification language (DEDSL) -- XML/DTD Syntax	90.93
ISO 18440:2013	Space data and information transfer systems -- Space Link Extension -- Internet Protocol for Transfer Services	90.92
ISO 18441:2013	Space data and information transfer systems -- Space Link Extension -- Application Program Interface for Transfer Services -- Core Specification	90.92

ISO 18446:2013	Space data and information transfer systems -- Space Link Extension -- Application Program Interface for the Forward Space Packet Service	90.92
ISO 15395:1998	Space data and information transfer systems -- Standard formatted data units -- Control authority data structures	90.93
ISO 22664:2013	Space data and information transfer systems -- TC (telecommand) space data link protocol	90.92
ISO 12175:1994	Space data and information transfer systems -- Standard formatted data units -- Structure and construction rules	90.93
ISO 18445:2013	Space data and information transfer systems -- Space Link Extension -- Application Program Interface for the Forward CLTU Service	90.92

**e. Standards withdrawn: 95 (Withdrawal stage)**

**NONE**

## 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

This annual report was prepared by the ISO TC20/SC13 Subcommittee Chairman and Secretary, declared as follows:

**EDUARDO W. BERGAMINI**  
Chairman, ISO TC20/SC13  
Subcommittee

**São José dos Campos, Brazil**

**October 16, 2016**

**JAMES AFARIN**  
Secretary, ISO TC20/SC13  
Subcommittee

**Washington D.C., U.S.A.**

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