

## **Management**

### ***Organization / Changes***

Within the UK, the Space Software and Standards Panel handles organization of CCSDS activities, including the discussion of which activities should be supported, by having people attend working group meetings and contribute to the development of CCSDS recommendations, as well as the organization of the review of draft ISO standards.

SSSP reports to both the BSi technical committee ACE/68, which deals with all space related standards activities including liaison with bodies such as ECSS. Peter Allan is the chair of the panel although it is the chair of ACE/68 who signs off new BSi standards.

Part of the CCSDS and BSi standards work is funded by UKSA. Nick Cox at UKSA has the responsibility of overseeing international standards development.

### ***Areas of Agency Involvement***

The funding for CCSDS activities in the UK is provided by the UK Space Agency, by industrial self funding, and through EC Framework projects.

### ***Manpower Allotted***

The manpower allotted specifically to SC13 and ACE/68 activities amounts to approximately 6 days per year.

## **Implementation Activities**

### ***Spacecraft Utilizing SC13 Standards***

Most spacecraft that have a UK involvement are part of international consortia. Examples of missions with a large UK involvement are SOHO, STEREO, XMM Newton, Hinode, Mars Express and Beagle2, Venus Express, Herschel, Planck, JWST, GAIA, ExoMars. Hence it is difficult to highlight ones that might be considered UK spacecraft. Even so, the UK has a considerable involvement in the development of the standards that are used on these ESA missions.

### ***Ground Facilities Utilizing SC13 Standards***

RAL ground station

Dundee Satellite Receiving Station

Surrey Satellites Ltd (partial)

The above do not use all of the available standards, although the usage is increasing with time.

Since a large part of the UK involvement in missions is building instruments for international missions, standards in the SOIS area are particularly important to us.

### Documentation Activities

All of the draft standards from SC13, are reviewed by SSSP and have been approved and passed on for issue as BSi Standards.

Since the previous meeting of SC13, the UK has voted to accept the following documents as international standards.

ISO	Document Title
17807	Asynchronous message service
17808	Telemetry (TM) channel coding profiles
17809	Delta-differential one-way ranging (Delta-DOR) operations
17810	Data transmission and pseudo-random noise (PN) ranging for 2 GHz code division multiple access (CDMA) link via data relay satellite

The UK has voted to confirm the following standards as a result of a systematic ISO review.

ISO	Document Title
22641	TM (telemetry) synchronization and channel coding

The ISO standards currently issued as BSi standards are as follows:

BS ISO 10537:2010	Space data and information transfer systems. Encapsulation service
BS ISO 11104:2011	Space data and information transfer systems. Time code formats
BS ISO 11754:2003	Space data and information transfer systems. Telemetry channel coding
BS Z 4:1997 (ISO 12175:1994)	Space data and information transfer systems. Standard formatted data units. Structure and construction rules
BS Z 9:1998 (ISO 13420:1997)	Space data and information transfer systems. Advanced orbiting systems. Networks and data links. Architectural specification

BS ISO 13526:2010	Space data and information transfer systems. Tracking data message
BS ISO 13527:2010	Space data and information transfer systems. XML formatted data unit (XFDU) structure and construction rules
BS ISO 13537:2010	Space data and information transfer systems. Reference architecture for space data systems
BS ISO 13541:2010	Space data and information transfer systems. Attitude data messages
BS Z 5:1997 (ISO 13764:1996)	Space data and information transfer systems. Standard formatted data units. Control authority procedures
BS ISO 14721:2003	Space data and information transfer systems. Open archival information systems. Reference model
BS ISO 14961:2002	Space data and information transfer systems. Parameter value language specification
BS Z 7:1998 (ISO 14962:1997)	Space data and information transfer systems. ASCII encoded English
BS ISO 15396:2007	Space data and information transfer systems. Cross support reference model. Space link extension services
BS Z 10:1998 (ISO 15395:1998)	Space data and information transfer systems. Standard formatted data units. Control Authority data structures
BS Z 17:2000 (ISO 15887:2000)	Space data and information transfer Systems. Data systems. Lossless data compression
BS Z 18:2000 (ISO 15888:2000)	Space data and information transfer systems. Standard formatted data units. Referencing environment
BS ISO 15889:2011	Space data and information transfer systems. The data description language EAST specification
BS ISO 15893:2010	Space data and information transfer systems. Space communications protocol specification (SCPS). Transport protocol (SCPS-TP)
BS ISO 16363:2012	Space data and information transfer systems. Audit and certification of trustworthy digital repositories
BS ISO 17107:2011	Space data and information transfer systems. XML specification for navigation data messages
BS ISO 17214:2011	Space data and information transfer systems. Spacecraft onboard interface services. Time access service
BS ISO 17355:2007	Space data and information transfer systems. CCSDS file delivery protocol
BS ISO 20652:2006	Space data and information transfer systems. Producer-archive interface. Methodology abstract standard
BS ISO 21459:2006	Space data and information transfer systems. Proximity-1 space link protocol. Coding and synchronization sublayer
BS ISO 21460:2007	Space data and information transfer systems. Proximity-1 space link protocol. Physical layer

BS ISO 21961:2003	Space data and information transfer systems. Data entity dictionary specification language (DEDSL). Abstract syntax
BS ISO 21962:2003	Aerospace series. Space data and information transfer systems. Data entity dictionary specification language (DEDSL). PVL syntax
BS ISO 22641:2005	Space data and information transfer systems. TM (telemetry) synchronization and channel coding
BS ISO 22642:2005	Space data and information transfer systems. TC (telecommand) synchronization and channel coding
BS ISO 22643:2003	Space data and information transfer systems. Data entity dictionary specification language (DEDSL). XML/DTD Syntax
BS ISO 22644:2006	Space data and information transfer systems. Orbit data messages
BS ISO 22645:2005	Space data and information transfer systems. TM (telemetry) space data link protocol
BS ISO 22646:2005	Space data and information transfer systems. Space packet protocol
BS ISO 22647:2010	Space data and information transfer systems. Space link identifiers
BS ISO 22663:2007	Space data and information transfer systems. Proximity-1 space link protocol. Data link layer
BS ISO 22664:2005	Space data and information systems. TC (telecommand) space data links protocol
BS ISO 22666:2007	Space data and information transfer systems. AOS (advanced orbiting systems) space data link protocol
BS ISO 22667:2005	Space data and information transfer systems. Communications operations procedure-1
BS ISO 22669:2007	Space data and information transfer systems. Space link extension (SLE). Return-all-frames service
BS ISO 22670:2006	Space data and information transfer systems. Space link extension(SLE). Return-channel-frames service
BS ISO 22671:2011	Space data and information transfer systems. Space link extension (SLE). Forward communications link transmission unit (CLTU) service
BS ISO 22672:2011	Space data and information transfer systems. Space link extension (SLE). Forward space packet service specification
BS ISO 26143:2007	Space data and information transfer systems. Space link extension (SLE). Return operational control fields service
BS ISO 26868:2009	Space data and information transfer systems. Image data compression

Note that BSi no longer gives ISO documents additional BS Z numbers as is indicated in the above table. As time goes by, old BS Z documents will be replaced by updated ISO ones.

## **Technical Activities**

### ***Status of Action Items***

There are no action items that currently apply.

### ***Status of On-Going Assignments***

The on-going assignment is to receive documents through the British Standards Institute and to ensure that it is reviewed for BSi and to then approve it (or not) for issuance as a British Standard.

### ***Status of Liaison Activities***

The chair of SSSP (Peter Allan) attends meetings of ACE/68, which processes standards relating to space systems and operations. In addition, ACE/68 shadows the work of the European Co-operation for Space Standardization (ECSS) committees.