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Space data and information transfer systems — Space link extension (SLE) — Return-channel-frames service

Systèmes de transfert des informations et données spatiales — Extension de liaisons spatiales (SLE) — Service de réseau pour liaison retour

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 22670 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 911.2-B-1, November 2004) and was adopted (without modifications except those stated in Clause 2 of this International Standard) by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 13, *Space data and information transfer systems*.

Space data and information transfer systems — Space link extension (SLE) — Return-channel-frames service

1 Scope

This International Standard specifies a return-channel-frames (RCF) service for a space link extension (SLE). The RCF service is an SLE transfer service that delivers to a mission user all telemetry frames from one master channel or one virtual channel.

It defines, in an abstract manner, the RCF service in terms of:

a) the operations necessary to provide the service;

b) the parameter data associated with each operation;

c) the behaviours that result from the invocation of each operation; and

d) the relationship between, and the valid sequence of, the operations and resulting behaviours.

The scope and field of application are furthermore detailed in subclauses 1.2 and 1.3 of the enclosed CCSDS publication.

2 Requirements

Requirements are the technical recommendations made in the following publication (reproduced on the following pages), which is adopted as an International Standard:

CCSDS 911.2-B-1, November 2004, *Space link extension — Return channel frames service specification.*

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 911.2-B-1.

Pages i to v

This part is information which is relevant to the CCSDS publication only.

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Add the following information to the reference indicated:

[1] Document CCSDS 910.4-B-1, May 1996, is equivalent to ISO 15396:1998.

[2] Document CCSDS 131.0-B-1, September 2003, is equivalent to ISO 22641:2005.

[3] Document CCSDS 132.0-B-1, September 2003, is equivalent to ISO 22645:2005.

[4] Document CCSDS 732.0-B-1, September 2003, is equivalent to ISO 22666:2005

[5] Document CCSDS 301.0-B-3, January 2002, is equivalent to ISO 11104:2003

[7] ISO/IEC 8824:1998 (all parts) has been cancelled and replaced by ISO/IEC 8824:2002 (all parts), *Information technology — Abstract Syntax Notation One (ASN.1)*

3 Revision of publication CCSDS 911.2-B-1

It has been agreed with the Consultative Committee for Space Data Systems that Subcommittee ISO/TC 20/SC 13 will be consulted in the event of any revision or amendment of publication CCSDS 911.2-B-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

Consultative Committee for Space Data Systems

RECOMMENDATION FOR SPACE DATA SYSTEM STANDARDS

SPACE LINK EXTENSION—RETURN CHANNEL FRAMES SERVICE SPECIFICATION

CCSDS 911.2-B-1

Blue BOOK

November 2004

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AUTHORITY

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This document has been approved for publication by the Management Council of the Consultative Committee for Space Data Systems (CCSDS) and represents the consensus technical agreement of the participating CCSDS Member Agencies. The procedure for review and authorization of CCSDS Recommendations is detailed in the *Procedures Manual for the Consultative Committee for Space Data Systems*, and the record of Agency participation in the authorization of this document can be obtained from the CCSDS Secretariat at the address below.

This Recommendation is published and maintained by:

CCSDS Secretariat
Office of Space Communication (Code M-3)
National Aeronautics and Space Administration
Washington, DC 20546, USA

STATEMENT OF INTENT

(WHEN THIS RECOMMENDATION IS FINALIZED, IT WILL CONTAIN THE FOLLOWING STATEMENT OF AUTHORITY:)

The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of member space Agencies. The Committee meets periodically to address data systems problems that are common to all participants, and to formulate sound technical solutions to these problems. Inasmuch as participation in the CCSDS is completely voluntary, the results of Committee actions are termed **Recommendations** and are not considered binding on any Agency.

This **Recommendation** is issued by, and represents the consensus of, the CCSDS Plenary body. Agency endorsement of this **Recommendation** is entirely voluntary. Endorsement, however, indicates the following understandings:

o Whenever an Agency establishes a CCSDS-related **standard**, this **standard** will be in accord with the relevant **Recommendation**. Establishing such a **standard** does not preclude other provisions which an Agency may develop.

o Whenever an Agency establishes a CCSDS-related standard, the Agency will provide other CCSDS member Agencies with the following information:

-- The **standard** itself.

-- The anticipated date of initial operational capability.

-- The anticipated duration of operational service.

o Specific service arrangements shall be made via memoranda of agreement. Neither this **Recommendation** nor any ensuing **standard** is a substitute for a memorandum of agreement.

No later than five years from its date of issuance, this **Recommendation** will be reviewed by the CCSDS to determine whether it should: (1) remain in effect without change; (2) be changed to reflect the impact of new technologies, new requirements, or new directions; or, (3) be retired or canceled.

In those instances when a new version of a **Recommendation** is issued, existing CCSDS-related Agency standards and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each Agency to determine when such standards or implementations are to be modified. Each Agency is, however, strongly encouraged to direct planning for its new standards and implementations towards the later version of the Recommendation.

FOREWORD

(WHEN THIS RECOMMENDATION IS FINALIZED, IT WILL CONTAIN THE FOLLOWING STATEMENT OF AUTHORITY:)

This document is a technical **Recommendation** for use in developing ground systems for space missions and has been prepared by the **Consultative Committee for Space Data Systems** (CCSDS). The Space Link Extension Return Channel Frames Service described herein is intended for missions that are cross-supported between Agencies of the CCSDS.

This **Recommendation** specifies a data service that extends certain of the space-to-ground communications services previously defined by CCSDS (references [2], [3], and [4]) within the framework established by the CCSDS Space Link Extension Reference Model (reference [1]). It allows implementing organizations within each Agency to proceed with the development of compatible, derived Standards for the ground systems that are within their cognizance. Derived Agency Standards may implement only a subset of the optional features allowed by the **Recommendation** and may incorporate features not addressed by the **Recommendation**.

Through the process of normal evolution, it is expected that expansion, deletion or modification to this document may occur. This **Recommendation** is therefore subject to CCSDS document management and change control procedures, as defined in the *Procedures Manual for the Consultative Committee for Space Data Systems*. Current versions of CCSDS documents are maintained at the CCSDS Web site:

http://www.ccsds.org/

Questions relating to the contents or status of this document should be addressed to the CCSDS Secretariat at the address indicated on page i.

CCSDS RECOMMENDATION FOR SLE RETURN CHANNEL FRAMES SERVICE

At time of publication, the active Member and Observer Agencies of the CCSDS were:

Member Agencies

- Agenzia Spaziale Italiana (ASI)/Italy.
- British National Space Centre (BNSC)/United Kingdom.
- Canadian Space Agency (CSA)/Canada.
- Centre National d'Etudes Spatiales (CNES)/France.
- Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)/Germany.
- European Space Agency (ESA)/Europe.
- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- Japan Aerospace Exploration Agency (JAXA)/Japan.
- National Aeronautics and Space Administration (NASA)/USA.
- Russian Federal Space Agency (FSA)/Russian Federation.

Observer Agencies

- Austrian Space Agency (ASA)/Austria.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
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- Swedish Space Corporation (SSC)/Sweden.
- United States Geological Survey (USGS)/USA.

CCSDS RECOMMENDATION FOR SLE RETURN CHANNEL FRAMES SERVICE

DOCUMENT CONTROL

Document	Title	Date	Status
CCSDS 911.2-B-1	Space Link Extension—Return Channel Frames Service Specification	November 2004	Blue Book

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