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Space data and information transfer systems — Space Link Extension — Application Program Interface for Transfer Services — Core Specification

Systèmes de transfert des informations et données spatiales — Extension de liaisons spatiales — Interface du programme d'application pour les services de transfert — Spécification de base

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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ISO 18441 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 914.0-M-1, October 2008) 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 — Application Program Interface for Transfer Services — Core Specification

1 Scope

This International Standard defines a C++ Application Program Interface (API) for CCSDS Space Link Extension (SLE) Transfer Services, which is independent of any specific technology used for communications between an SLE service user and an SLE service provider.

This International Standard defines the Application Program Interface in terms of:

a) the components that provide the services of the API;

b) the functionality provided by each of the components;

c) the interfaces provided by each of the components; and

d) the externally visible behavior associated with the interfaces exported by the components.

It does not specify:

a) individual implementations or products;

b) the internal design of the components; and

c) the technology used for communications.

This International Standard defines those aspects of the Application Program Interface which are common for all SLE service types or for a subset of the SLE service types, e.g. all return link services or all forward link services. It also defines a framework for specification of service type-specific elements of the API. Service-specific aspects of the API are defined by supplemental Recommended Practice documents for SLE return link services and SLE forward link services.

This International Standard for the Application Program Interface responds to the requirements imposed on such an API by the CCSDS SLE transfer service Recommended Standards that were available when this International Standard was released.

The scope and field of application are furthermore detailed in subclause 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 914.0-M-1, October 2008, Space Link Extension — Application Program Interface for Transfer Services — Core Specification.

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 914.0-M-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 301.0-B-3, January 2002, is equivalent to ISO 11104:2011.

[3] Document CCSDS 910.4-B-2, October 2005, is equivalent to ISO 15396:2007.

[4] Document CCSDS 911.1-B-2, December 2004, is equivalent to ISO 22669:2007.

[5] Document CCSDS 911.2-B-1, December 2004, is equivalent to ISO 22670:2006.

[6] Document CCSDS 911.5-B-2, December 2004, is equivalent to ISO 26143:2007.

[7] Document CCSDS 912.1-B-2, December 2004, is equivalent to ISO 22671:2011.

[8] Document CCSDS 912.3-B-1, December 2004, is equivalent to ISO 22672:2011.

[9] Document CCSDS 913.1-B-1, September 2008, is equivalent to ISO 18440:2013.

[10] Document CCSDS 915.1-M-1, October 2008, is equivalent to ISO 18442:2013.

[11] Document CCSDS 915.2-M-1, October 2008, is equivalent to ISO 18443:2013.

[12] Document CCSDS 915.5-M-1, October 2008, is equivalent to ISO 18444:2013.

[13] Document CCSDS 916.1-M-1, October 2008, is equivalent to ISO 18445:2013.

[14] Document CCSDS 916.3-M-1, October 2008, is equivalent to ISO 18446:2013.

3 Revision of publication CCSDS 914.0-M-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 914.0-M-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

The Consultative Committee for Space Data Systems

Recommendation for Space Data System Practices

SPACE LINK EXTENSION—APPLICATION PROGRAM INTERFACE FOR TRANSFER SERVICES—CORE SPECIFICATION

RECOMMENDED PRACTICE

CCSDS 914.0-M-1

Magenta Book
October 2008

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 documents 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 document is published and maintained by:

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STATEMENT OF INTENT

The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of its members. 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 in themselves considered binding on any Agency.

CCSDS Recommendations take two forms: **Recommended Standards** that are prescriptive and are the formal vehicles by which CCSDS Agencies create the standards that specify how elements of their space mission support infrastructure shall operate and interoperate with others; and **Recommended Practices** that are more descriptive in nature and are intended to provide general guidance about how to approach a particular problem associated with space mission support. This **Recommended Practice** is issued by, and represents the consensus of, the CCSDS members. Endorsement of this **Recommended Practice** is entirely voluntary and does not imply a commitment by any Agency or organization to implement its recommendations in a prescriptive sense.

No later than five years from its date of issuance, this **Recommended Practice** 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 **Recommended Practice** is issued, existing CCSDS-related member Practices and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each member to determine when such Practices or implementations are to be modified. Each member is, however, strongly encouraged to direct planning for its new Practices and implementations towards the later version of the Recommended Practice.

FOREWORD

Through the process of normal evolution, it is expected that expansion, deletion, or modification of this document may occur. This Recommended Practice is therefore subject to CCSDS document management and change control procedures, which are 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.

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.
- China National Space Administration (CNSA)/People's Republic of China.
- Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)/Germany.
- European Space Agency (ESA)/Europe.
- Federal Space Agency (FSA)/Russian Federation.
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- Japan Aerospace Exploration Agency (JAXA)/Japan.
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- Space and Upper Atmosphere Research Commission (SUPARCO)/Pakistan.
- Swedish Space Corporation (SSC)/Sweden.
- United States Geological Survey (USGS)/USA.

DOCUMENT CONTROL

Document	Title	Date	Status
CCSDS 914.0-M-1	Space Link Extension—Application Program Interface for Transfer Services—Core Specification, Recommended Practice, Issue 1	October 2008	Original issue
EC 1	Editorial Change 1	December 2008	Updates references to recent publications

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