
**Space data and information transfer
systems — Space Link Extension —
Application Program Interface for Return
Operational Control Fields Service**

*Systèmes de transfert des informations et données spatiales —
Extension de liaisons spatiales — Interface du programme d'application
pour service des champs de contrôle de retour opérationnel*

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ISO 18444 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 915.5-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*.4:2013

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Space data and information transfer systems — Space Link Extension — Application Program Interface for Return Operational Control Fields Service

1 Scope

This International Standard specifies extensions to the API needed for support of the Return Operational Control Fields (ROCF) service defined in *Space Link Extension—Return Operational Control Fields Service Specification*, CCSDS 911.5-B-1.

This International Standard defines extensions to the SLE API in terms of:

- the ROCF-specific functionality provided by API components;
- the ROCF-specific interfaces provided by API components; and
- the externally visible behavior associated with the ROCF interfaces exported by the components.

It does not specify:

- individual implementations or products; [ISO 18444:2013](https://standards.iteh.ai/catalog/standards/sist/d2ba6179-2eb2-41e0-88c6-193ad9651d1/iso-18444-2013)
- the internal design of the components; and
- the technology used for communications.

This International Standard defines only interfaces and behavior that must be provided by implementations supporting the Return Operational Control Fields service in addition to the specification in *Space Link Extension—Application Program Interface for Transfer Services—Core Specification*, CCSDS 914.0-M-1.

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 915.5-M-1, October 2008, Space Link Extension — Application Program Interface for Return Operational Control Fields Service.

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 915.5-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 910.4-B-2, October 2005, is equivalent to ISO 15396:2007.
- [2] Document CCSDS 911.5-B-1, December 2004, is equivalent to ISO 26143:2007.
- [3] Document CCSDS 914.0-M-1, October 2008, is equivalent to ISO 18441:2013.

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Add the following information to the reference indicated:

- [C3] Document CCSDS 913.1-B-1, September 2008, is equivalent to ISO 18440:2013.

3 Revision of publication CCSDS 915.5-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 915.5-M-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

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Recommendation for Space Data System Practices

**SPACE LINK EXTENSION—
APPLICATION PROGRAM
INTERFACE FOR RETURN
OPERATIONAL CONTROL
FIELDS SERVICE**

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RECOMMENDED PRACTICE

CCSDS 915.5-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.

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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

This document is a technical **Recommended Practice** for use in developing ground systems for space missions and has been prepared by the **Consultative Committee for Space Data Systems** (CCSDS). The Application Program Interface described herein is intended for missions that are cross-supported between Agencies of the CCSDS.

This **Recommended Practice** specifies service type-specific extensions of the Space Link Extension Application Program Interface for Transfer Services specified by CCSDS (reference [3]). 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 **Recommended Practice** and may incorporate features not addressed by the **Recommended Practice**.

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:

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DOCUMENT CONTROL

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CCSDS 915.5-M-1	Space Link Extension—Application Program Interface for Return Operational Control Fields Service, Recommended Practice, Issue 1	October 2008	Original issue

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1 INTRODUCTION

1.1 PURPOSE

The Recommended Practice *Space Link Extension—Application Program Interface for Transfer Services—Core Specification* (reference [3]) specifies a C++ API for CCSDS Space Link Extension Transfer Services. The API is intended for use by application programs implementing SLE transfer services.

Reference [3] defines the architecture of the API and the functionality on a generic level, which is independent of specific SLE services and communication technologies. It is thus necessary to add service type-specific specifications in supplemental Recommended Practices. The purpose of this document is to specify extensions to the API needed for support of the Return Operational Control Fields (ROCF) service defined in reference [2].

1.2 SCOPE

This specification defines extensions to the SLE API in terms of:

- a) the ROCF-specific functionality provided by API components;
- b) the ROCF-specific interfaces provided by API components; and
- c) the externally visible behavior associated with the ROCF interfaces exported by the components.

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- a) individual implementations or products;
- b) the internal design of the components; and
- c) the technology used for communications.

This specification defines only interfaces and behavior that must be provided by implementations supporting the Return Operational Control Fields service in addition to the specification in reference [3].

1.3 APPLICABILITY

The ROCF Application Program Interface specified in this document supports version 1 of the ROCF service, as specified by reference [2].

1.4 RATIONALE

This Recommended Practice specifies the mapping of the ROCF service specification to specific functions and parameters of the SLE API. It also specifies the distribution of responsibility for specific functions between SLE API software and application software.

The goal of this Recommended Practice is to create a standard for interoperability between:

- a) application software using the SLE API and SLE API software implementing the SLE API; and
- b) service user and service provider applications communicating with each other using the SLE API on both sides.

This interoperability standard also allows exchangeability of different products implementing the SLE API, as long as they adhere to the interface specification of this Recommended Practice.

1.5 DOCUMENT STRUCTURE

1.5.1 ORGANIZATION

This document is organized as follows:

- section 1 provides purpose and scope of this specification, identifies conventions, and lists definitions and references used throughout the document;
- section 2 provides an overview of the ROCF service and describes the API model extension including support for the ROCF service defined in reference [2];
- section 3 contains detailed specifications for the API components and for applications using the API; <https://standards.iteh.ai/catalog/standards/sist/d2ba6179-2eb2-41e0-88c6-444444444444/iso-18444-2013>
- annex A provides a formal specification of the API interfaces and data types specific to the ROCF service;
- annex B lists all acronyms used within this document;
- annex C lists informative references.

1.5.2 SLE SERVICE DOCUMENTATION TREE

The SLE suite of Recommended Standards is based on the cross support model defined in the SLE Reference Model (reference [1]). The SLE services constitute one of the three types of Cross Support Services:

- a) Part 1: SLE Services;
- b) Part 2: Ground Domain Services; and
- c) Part 3: Ground Communications Services.

The SLE services are further divided into SLE Service Management and SLE transfer services.