INTERNATIONAL STANDARD

ISO 22670

Third edition
2021-06

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

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

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 22670:2021
https://standards.iteh.ai/catalog/standards/iso/f51dfe93-2cab-4b98-a1d2-8e25b2470f70/iso-22670-2021

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 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 911.2-B-3, August 2016) and was adopted (without modifications) by Technical Committee ISO/TC 20, *Space vehicles,* Subcommittee SC 13, *Space data and information transfer systems*.

This third edition cancels and replaces the second edition (ISO 22670:2013), which has been technically revised.

The main changes compared to the previous edition are as follows:

— adds clarifications and corrections;

— adds production status annex.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

CCSDS RECOMMENDED STANDARD FOR SLE RCF SERVICE

CONTENTS

CCSDS RECOMMENDED STANDARD FOR SLE RCF SERVICE

CONTENTS (continued)

CCSDS RECOMMENDED STANDARD FOR SLE RCF SERVICE

1 INTRODUCTION

1.1 PURPOSE OF THIS RECOMMENDED STANDARD

The purpose of this Recommended Standard is to define the Space Link Extension (SLE) Return Channel Frames (RCF) service in conformance with the SLE Reference Model (reference [1]). 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.

NOTE – Reference [1] defines the Return Master Channel Frames (Rtn MC Frames) service and the Return Virtual Channel Frames (Rtn VC Frames) service as two distinct services. Subsequent study has indicated that it is preferable to define one service that provides the functionality of both. The RCF service defined here does just that. It is anticipated that a future issue of reference [1] will take the same approach, deleting the Rtn MC Frames and Rtn VC Frames services and replacing them with the RCF service.

1.2 SCOPE

This Recommended Standard 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 behaviors that result from the invocation of each operation; and

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

It does not specify:

a) individual implementations or products;

b) the implementation of entities or interfaces within real systems;

c) the methods or technologies required to acquire telemetry frames from signals received from a spacecraft;

d) the methods or technologies required to provide a suitable environment for communications; or

e) the management activities required to schedule, configure, and control the RCF service.

CCSDS RECOMMENDED STANDARD FOR SLE RCF SERVICE

1.3 APPLICABILITY

1.3.1 APPLICABILITY OF THIS RECOMMENDED STANDARD

This Recommended Standard provides a basis for the development of real systems that implement the RCF service. Implementation of the RCF service in a real system additionally requires the availability of a communications service to convey invocations and returns of RCF service operations between RCF service users and providers. This Recommended Standard requires that such a communications service must ensure that invocations and returns of operations are transferred:

a) in sequence;

b) completely and with integrity;

c) without duplication;

d) with flow control that notifies the application layer in the event of congestion; and

e) with notification to the application layer in the event that communications between the RCF service user and the RCF service provider are disrupted, possibly resulting in a loss of data.

It is the specific intent of this Recommended Standard to define the RCF service in a manner that is independent of any particular communications services, protocols, or technologies.

1.3.2 LIMITS OF APPLICABILITY

This Recommended Standard specifies the RCF service that may be provided by an SLE Complex for inter-Agency cross support. It is neither a specification of, nor a design for, real systems that may be implemented for the control and monitoring of existing or future missions.

1.4 RATIONALE

The goal of this Recommended Standard is to create a standard for interoperability between the tracking stations or ground data handling systems of various Agencies and the consumers of spacecraft telemetry.

1.5 DOCUMENT STRUCTURE

1.5.1 ORGANIZATION

This document is organized as follows: