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Space data and information transfer systems — Spacecraft onboard interface services — Device enumeration service

Systèmes de transfert des informations et données spatiales — Services d'interface à bord du vaisseau spatial — Service d'énumération du dispositif

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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.

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ISO 20618 was prepared by the Consultative Committee for Space Data Systems (CCSDS) as CCSDS 871.3-M-1, October 2014 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*.

The Consultative Committee for Space Data Systems

Recommendation for Space Data System Practices

SPACECRAFT ONBOARD INTERFACE SERVICES—DEVICE ENUMERATION SERVICE

RECOMMENDED PRACTICE

CCSDS 871.3-M-1

MAGENTA BOOK

October 2014

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 *Organization and Processes for the Consultative Committee for Space Data Systems* (CCSDS A02.1-Y-4), and the record of Agency participation in the authorization of this document can be obtained from the CCSDS Secretariat at the e-mail 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.

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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 *Organization and Processes for the Consultative Committee for Space Data Systems* (CCSDS A02.1-Y-4). Current versions of CCSDS documents are maintained at the CCSDS Web site:

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

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DOCUMENT CONTROL

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CCSDS 871.3-M-1	Spacecraft Onboard Interface Services—Device Enumeration Service, Recommended Practice, Issue 1	October 2014	Original issue

CONTENTS

Section Page

Figure

1 INTRODUCTION

1.1 PURPOSE AND SCOPE OF THIS DOCUMENT

This document is one of a family of documents specifying the Spacecraft Onboard Interface Services (SOIS)-compliant service to be provided in support of applications.

The purpose of this document is to define services and service interfaces provided by the SOIS Device Enumeration Service (DES). Its scope is to specify the service only and not to specify methods of providing the service, although use of the SOIS subnetwork services is assumed.

This document conforms to the principles set out in the SOIS Green Book (reference [D3]) and is intended to be applied together with it.

1.2 APPLICABILITY

This document applies to any mission or equipment claiming to provide a SOIS-compatible DES.

1.3 RATIONALE

SOIS provide service interface specifications in order to promote commonality of functionality amongst systems implementing well-defined services. These interfaces do not dictate implementation of interfaces or protocols supporting the services.

1.4 DOCUMENT STRUCTURE

This document comprises three sections:

- this section, containing administrative information, definitions, and references;
- section 2 containing general concepts and assumptions;
- section 3 containing the DES specification.

In addition, one normative and three informative annexes are provided:

- annex A, comprising a Protocol Implementation Conformance Proforma;
- annex B, discussing security considerations relating to the specifications of this document;
- annex C, containing a list of acronyms;
- annex D containing a list of informative references.

1.5 DEFINITIONS

1.5.1 GENERAL

For the purpose of this document the following definitions apply.

1.5.2 DEFINITIONS FROM THE OPEN SYSTEMS INTERCONNECTION (OSI) BASIC REFERENCE MODEL

This document is defined using the style established by the Open Systems Interconnection (OSI) Basic Reference Model (reference [D2]). This model provides a common framework for the development of standards in the field of systems interconnection.

The following terms used in this Recommended Practice are adapted from definitions given in reference [D2]:

layer: A subdivision of the architecture, constituted by subsystems of the same rank.

service: A capability of a layer, and the layers beneath it (a service provider), which is provided to the service-users at the boundary between the service-providers and the service-users.

1.5.3 TERMS DEFINED IN THIS RECOMMENDED PRACTICE

For the purposes of this Recommended Practice, the following definitions also apply.

application: Any component of the onboard software that makes use of the DES. This includes flight software applications and higher-layer services.

device: A real hardware component of the spacecraft, such as a sensor or actuator, or a single register within such a component.

notification: A service interface provided by applications that is invoked by a service implementation to provide a means for the service implementation to deliver a message to a set of applications.

1.6 NOMENCLATURE

1.6.1 NORMATIVE TEXT

The following conventions apply for the normative specifications in this Recommended Practice:

a) the words ‘shall’ and ‘must’ imply a binding and verifiable specification;

b) the word ‘should’ implies an optional, but desirable, specification;