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Systèmes de transfert des informations et données spatiales — Services d'interfaces à bord des véhicules spatiaux — Service d'accès aux périphériques

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The Consultative Committee for Space Data Systems

Recommendation for Space Data System Practices

SPACECRAFT ONBOARD INTERFACE SERVICES—DEVICE ACCESS SERVICE

RECOMMENDED PRACTICE

CCSDS 871.0-M-1

MAGENTA BOOK

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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-3), 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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FOREWORD

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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 Access Service (DAS). 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 DAS.

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 has four major sections:

- this section, containing administrative information, definitions, and references;
- section 2, containing general concepts and assumptions;
- section 3, containing the Device Access Service, in terms of the services provided, services expected from underlying layers, and the service interface;
- section 4, containing the Management Information Base (MIB) for this service.

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

- annex A, comprising a Service Conformance Statement 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.

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1.5 CONVENTIONS AND DEFINITIONS

1.5.1 DEFINITIONS

1.5.1.1 General

For the purpose of this document the following definitions apply.

1.5.1.2 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]:

(N)-layer: A subdivision of the architecture, constituted by subsystems of the same rank (N).

(N)-protocol: A set of rules and formats (semantic and syntactic) which determines the communication behaviour of (N)-entities in the performance of (N)-functions.

(N)-protocol-data-unit: A unit of data specified in an (N)-protocol and consisting of (N)-protocol-controlinformation and possibly (N)-user-data.

(N)-service: Capability of a layer, and the layers beneath it (service providers), provided to the service users at the boundary between the service providers and the service users.

(N)-service-access-point, (N)-SAP: The point at which (N)-services are provided by an (N)-entity to an (N+l)-entity. Within the spacecraft, a SOIS User SAP. As a minimum it locates a data system and an application within that data system.

1.5.2 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 DAS.

NOTE – Such components include flight software applications and higher-layer services.

device: Real hardware component of the spacecraft or a single register within such a component.

NOTE – Examples of such component are sensors and actuators.

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