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The Consultative Committee for Space Data Systems

Recommendation for Space Data System Practices

SPACECRAFT ONBOARD INTERFACE SERVICES—DEVICE VIRTUALIZATION SERVICE

RECOMMENDED PRACTICE

CCSDS 871.2-M-1

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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*, 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.

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FOREWORD

This document is a technical Recommended Practice for use in developing flight and ground systems for space missions and has been prepared by the Consultative Committee for Space Data Systems (CCSDS). The Device Virtualisation Service described herein is intended for missions that are cross-supported between Agencies of the CCSDS, in the framework of the Spacecraft Onboard Interface Services (SOIS) CCSDS area.

This Recommended Practice specifies a set of related services to be used by space missions to access and manage files and packets within a spacecraft subnetwork. The Device Virtualisation Service provides a common service interface regardless of the particular type of data link or protocol being used for communication.

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-3). 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 addressed to the CCSDS Secretariat at the address indicated on page i.

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DOCUMENT CONTROL

Document	Title	Date	Status
CCSDS 871.2-M-1	Spacecraft Onboard Interface Services—Device Virtualization Service, Recommended Practice, Issue 1	March 2014	Original issue

CONTENTS

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.

This document defines the SOIS Device Virtualisation Service (DVS). The definition encompasses specification of the service interface exposed to onboard software (user applications and libraries) as well as the conceptual mapping of the DVS primitives to the protocols implementing such services.

The SOIS DVS is for use by onboard software to provide a standard interface between onboard software applications and flight hardware such as sensors and actuators.

1.2 APPLICABILITY

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

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 Virtualisation Service, in terms of the service 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 Protocol Implementation 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.