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**Space data and information transfer  
systems — Standard formatted data  
units — Referencing environment**

*Systèmes de transfert des informations et données spatiales — Unités de  
données à structuration normalisée — Environnement de référence*

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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15888 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 622.0-B-1, May 1997) 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*.

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# Space data and information transfer systems — Standard formatted data units — Referencing environment

## 1 Scope

This International Standard specifies the requirements for referencing environments for standard formatted data units for space data and information transfer systems.

## 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 622.0-B-1, May 1997, *Recommendation for space data system standards — Standard formatted data units — Referencing requirements*.

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 622.0-B-1.

Pages *i* to *v*

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This part is information which is relevant to the CCSDS publication only.

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Add the following information to the references indicated:

- [1] Document CCSDS 620.0-B-2, May 1992, is equivalent to ISO 12175:1994.
- [2] Document CCSDS 641.0-B-1, May 1992, is equivalent to ISO 14961:1997.

Page B-2

Reference to ISO documents should read:

- [B2] ISO/IEC 9945-1:1996, *Information technology — Portable Operating System Interface (POSIX) — Part 1: System Application Program Interface (API) [C Language]*.

## 3 Revision of publication CCSDS 622.0-B-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 622.0-B-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

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# ***Consultative Committee for Space Data Systems***

## **RECOMMENDATION FOR SPACE DATA SYSTEM STANDARDS**

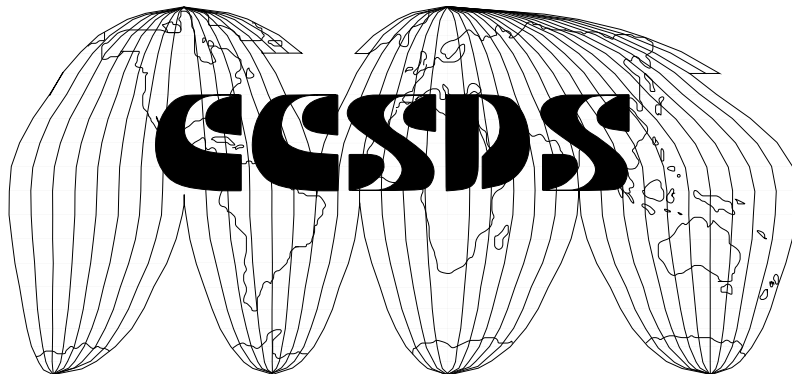
# **STANDARD FORMATTED DATA UNITS — REFERENCING ENVIRONMENT**

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**CCSDS 622.0-B-1**

**BLUE BOOK**

May 1997



## AUTHORITY

Issue:	Blue Book, Issue 1
Date:	May 1997
Location:	São José dos Campos São Paulo, Brazil

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 Recommendations is detailed in reference [B1], 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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## CCSDS RECOMMENDATION FOR SFDUs -- REFERENCING ENVIRONMENT

## STATEMENT OF INTENT

The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of member space Agencies. 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 considered binding on any Agency.

This **Recommendation** is issued by, and represents the consensus of, the CCSDS Plenary body. Agency endorsement of this **Recommendation** is entirely voluntary. Endorsement, however, indicates the following understandings:

- Whenever an Agency establishes a CCSDS-related **standard**, this **standard** will be in accord with the relevant **Recommendation**. Establishing such a **standard** does not preclude other provisions which an Agency may develop.
- Whenever an Agency establishes a CCSDS-related **standard**, the Agency will provide other CCSDS Member Agencies with the following information:
  - The **standard** itself.
  - The anticipated date of initial operational capability.
  - The anticipated duration of operational service.
- Specific service arrangements shall be made via memoranda of agreement. Neither this **Recommendation** nor any ensuing **standard** is a substitute for a memorandum of agreement.

No later than five years from its date of issuance, this **Recommendation** will be reviewed by the CCSDS to determine whether it should: (1) remain in effect without change; (2) be changed to reflect the impact of new technologies, new requirements, or new directions; or, (3) be retired or canceled.

In those instances when a new version of a **Recommendation** is issued, existing CCSDS-related Agency **standards** and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each Agency to determine when such **standards** or implementations are to be modified. Each Agency is, however, strongly encouraged to direct planning for its new implementations towards the later version of the **Recommendation**.

## FOREWORD

This Recommendation extends the standardization of the Standard Formatted Data Unit (SFDU) concept in support of the digital transfer of space-related information. This Recommendation defines valid CCSDS Referencing Environments and provides syntax specifications for expressing file names within those Referencing Environments.

Through the process of normal evolution, it is expected that expansion, deletion, or modification of this document may occur. This Recommendation is therefore subject to CCSDS document management and change control procedures which are defined in Reference [B1]. Current versions of CCSDS documents are maintained at the CCSDS Web site:

<http://www.ccsds.org/ccsds/>

Questions relating to the contents or status of this Recommendation should be addressed to the CCSDS Secretariat at the address on page i.

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## CCSDS RECOMMENDATION FOR SFDUs -- REFERENCING ENVIRONMENT

At time of publication, the active Member and Observer Agencies of the CCSDS were

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- Agenzia Spaziale Italiana (ASI)/Italy.
- British National Space Centre (BNSC)/United Kingdom.
- Canadian Space Agency (CSA)/Canada.
- Centre National d'Etudes Spatiales (CNES)/France.
- Deutsche Forschungsanstalt für Luft- und Raumfahrt e.V. (DLR)/Germany.
- European Space Agency (ESA)/Europe.
- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- National Aeronautics and Space Administration (NASA)/USA.
- National Space Development Agency of Japan (NASDA)/Japan.
- Russian Space Agency (RSA)/Russian Federation.

### Observer Agencies

- Austrian Space Agency (ASA)/Austria.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- Centro Tecnico Aeroespacial (CTA)/Brazil.
- Chinese Academy of Space Technology (CAST)/China.
- Commonwealth Scientific and Industrial Research Organization (CSIRO)/Australia.
- Communications Research Laboratory (CRL)/Japan.
- Danish Space Research Institute (DSRI)/Denmark.
- European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)/Europe.
- European Telecommunications Satellite Organization (EUTELSAT)/Europe.
- Federal Service of Scientific, Technical & Cultural Affairs (FSST&CA)/Belgium.
- Hellenic National Space Committee (HNSC)/Greece.
- Indian Space Research Organization (ISRO)/India.
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- National Space Program Office (NSPO)/Taipei.
- Swedish Space Corporation (SSC)/Sweden.
- United States Geological Survey (USGS)/USA.

## DOCUMENT CONTROL

Document	Title	Date	Status/ Remarks
CCSDS 622.0-B-1	Recommendation for Space Data Systems Standards: Standard Formatted Data Units - Referencing Environment, Issue 1	May 1997	Original Issue

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## CCSDS RECOMMENDATION FOR SFDUs -- REFERENCING ENVIRONMENT

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## CCSDS RECOMMENDATION FOR SFDUs -- REFERENCING ENVIRONMENT

## 1 INTRODUCTION

### 1.1 PURPOSE AND SCOPE

The purpose of this Recommendation is to define a number of valid CCSDS Referencing Environments to facilitate open system data interchange. Each Referencing Environment is defined in terms of a syntax specification for referencing external objects within each of these environments.

### 1.2 APPLICABILITY

This Recommendation applies to the use of Standard Formatted Data Unit (SFDU) Replacement Service Objects, i.e. Label Value Objects (LVOs) with Class ID = R. The use of CCSDS Referencing Environments within these objects is required for open system data interchange.

### 1.3 RATIONALE

The Consultative Committee for Space Data Systems (CCSDS) defined the SFDU concept for the implementation of standard data structures to be used for the interchange of data within and among space agencies. The format of these objects are defined in the SFDU - Structure and Construction Rules Recommendation (Reference [1]).

When SFDU products are generated that reference data objects that are not located in the immediate sequence of octets, they make use of Replacement Service Objects, i.e., Label Value Objects with Class ID = R. The CCSDS realizes it is essential to have at least a small number of well known referencing environments defined to support open system data interchange.

### 1.4 DOCUMENT STRUCTURE

This document is structured as follows:

- Section 1 contains introductory material;
- Section 2 is an overview of this Recommendation;
- Section 3 contains the specifications of the CCSDS Referencing Environment;
- Section 4 defines the conformance level of this specification;
- Annex A presents the acronyms and abbreviations used in this document;
- Annex B provides an informative reference list;
- Annex C provides a tutorial on the use of the CCSDS Referencing Environments;
- Annex D provides information on the prototype \$CCSDS3 referencing environment;