INTERNATIONAL STANDARD

ISO 21961

First edition
2003-03-15

Space data and information transfer systems — Data entity dictionary specification language (DEDSL) — Abstract syntax

Systèmes de transfert des informations et données spatiales — Langage de spécification pour le dictionnaire d'entités de données — Syntaxe abrégée

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

Reference number
ISO 21961:2003(E)

© ISO 2003

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

© ISO 2003

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

 © ISO 2003 – All rights reserved

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 2.

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.

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.

International Standard ISO 21961 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 647.1-B-1, June 2001) 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*.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

© ISO 2003 – All rights reserved

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

Space data and information transfer systems — Data entity dictionary specification languages (DEDSL) — Abstract syntax

1 Scope

This International Standard gives requirements and defines the abstract syntax for a specification language to be used in the creation of a data entity dictionary (DED).

The scope and field of application are furthermore detailed in subclauses 1.1 and 1.2 of the enclosed CCSDS publication.

2 Requirements

Requirements are the technical recommendations made in the following publication (reproduced on the following pages), which is adopted as an International Standard:

iTeh STANDARD PREVIEW

CCSDS 647.1-B-1, June 2001, *Data entity dictionary specification language (DEDSL) — Abstract syntax (CCSD0011)*.

(standards.iteh.ai)

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 647.1-B-1.

ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

Pages i to v

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

Page 1-7

Add the following information to the references indicated in 1.6:

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

[2] Document CCSDS 643.0-B-1, November 1992, is equivalent to ISO 14962:1997.

[4] Document CCSDS 630.0-B-1, June 1993, is equivalent to ISO 13764:1996.

Update the following reference as follows:

[6] ISO/IEC 8859-1:1998, *Information technology — 8-bit single-byte coded graphic character sets — Part 1: Latin alphabet No. 1*

© ISO 2003 – All rights reserved

Page C-1

Update and add the following information to the references in Annex C as follows:

[C2] Document CCSDS 644.0-B-2, November 2000, is equivalent to ISO 15889:2003.

[C8] Document CCSDS 301.0-B-3, January 2002, is equivalent to ISO 11104:—[1)].

[C11] ISO/IEC 11179-3:2003, *Information technology — Metadata registries (MDR) — Part 3: Registry metamodel and basic attributes*

Delete the following reference:

[C10] It is cited for normative purposes and is given in 1.6, page 1-7 (see reference [7]).

3 Revision of publication CCSDS 647.1-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 647.1-B-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

1) To be published. (Revision of ISO 11104:1991)

© ISO 2003 – All rights reserved

Consultative Committee for Space Data Systems

RECOMMENDATION FOR SPACE DATA SYSTEM STANDARDS

DATA ENTITY DICTIONARY SPECIFICATION LANGUAGE (DEDSL)—

ABSTRACT SYNTAX

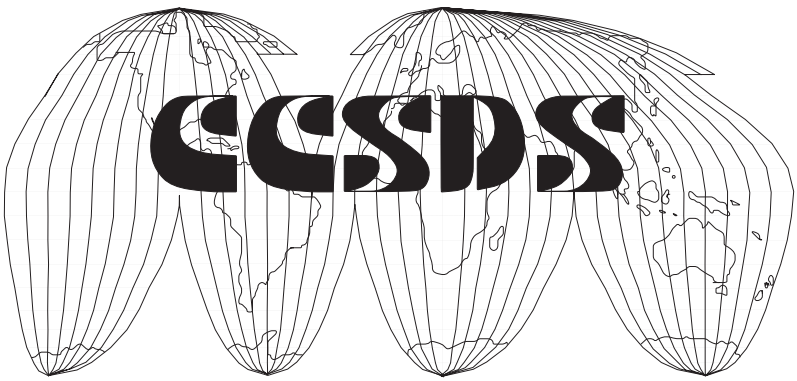
(CCSD0011)

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551ee8a1/iso-21961-2003

CCSDS 647.1-B-1

BLUE BOOK

June 2001



© ISO 2003 – All rights reserved

(Blank page)

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

© ISO 2003 – All rights reserved

CCSDS RECOMMENDATION FOR DEDSL—ABSTRACT SYNTAX

AUTHORITY

Issue:	Blue Book, Issue 1
Date:	June 2001
Location:	Oxfordshire, England

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 [C1], 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:

CCSDS Secretariat
Program Integration Division (Code MT)
National Aeronautics and Space Administration
Washington, DC 20546, USA

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

© ISO 2003 – All rights reserved

STATEMENT OF INTENT

The Consultative Committee for Space Data Systems (CCSDS) is an organisation 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:

- o 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.

- o 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.

- o 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b9f7351ecdaf/iso-21961-2003

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 standards and implementations towards the later version of the Recommendation.

 © ISO 2003 – All rights reserved

FOREWORD

This Recommendation is a technical Recommendation that provides a model and language to increase the standardisation of the expression of semantic concepts that are to be carried with data. These semantic concepts are given standard names, and a standard way of expressing them is also provided. The semantic information may be conveyed either in a computer-processable manner or via conventional (e.g., paper) documentation.

Through the process of normal evolution, it is expected that expansion, deletion or modification to this document may occur. This Recommendation is therefore subject to CCSDS document management and change control procedures defined in reference [C1]. Current versions of CCSDS documents are maintained at the CCSDS Web site:

http://www.ccsds.org/

Questions relative to the contents or status of this document should be addressed to the CCSDS Secretariat at the address indicated on page i.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

© ISO 2003 – All rights reserved

CCSDS RECOMMENDATION FOR DEDSL—ABSTRACT SYNTAX

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

Member Agencies

- Agenzia Spaziale Italiana (ASI)/Italy.
- British National Space Centre (BNSC)/United Kingdom.
- Canadian Space Agency (CSA)/Canada.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- Centre National d'Etudes Spatiales (CNES)/France.
- Deutsches Zentrum 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 HQ)/USA.
- National Space Development Agency of Japan (NASDA)/Japan.

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.
- Industry Canada/Communications Research Centre (CRC)/Canada.
- Institute of Space and Astronautical Science (ISAS)/Japan.
- Institute of Space Research (IKI)/Russian Federation.
- KFKI Research Institute for Particle & Nuclear Physics (KFKI)/Hungary.
- MIKOMTEK: CSIR (CSIR)/Republic of South Africa.
- Korea Aerospace Research Institute (KARI)/Korea.
- Ministry of Communications (MOC)/Israel.
- National Oceanic & Atmospheric Administration (NOAA)/USA.
- National Space Program Office (NSPO)/Taipei.
- Swedish Space Corporation (SSC)/Sweden.
- United States Geological Survey (USGS)/USA.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f82-41e3-a664-b907551cc8a1/iso-21961-2003

© ISO 2003 – All rights reserved

DOCUMENT CONTROL

Document	Title and Issue	Date	Status
CCSDS 647.1-B-1.	Data Entity Dictionary Specification Language (DEDSL)—Abstract Syntax	June 2001	Original Issue

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

© ISO 2003 – All rights reserved

CCSDS RECOMMENDATION FOR DEDSL—ABSTRACT SYNTAX

CONTENTS

Section Page

1 INTRODUCTION 1-1

1.1 PURPOSE AND SCOPE 1-1
1.2 APPLICABILITY 1-2
1.3 RATIONALE 1-2
1.4 DOCUMENT STRUCTURE 1-3
1.5 DEFINITIONS 1-4
1.6 REFERENCES 1-7

2 OVERVIEW 2-1

2.1 GENERAL 2-1
2.2 USES OF DATA ENTITY DICTIONARIES 2-1
2.3 APPLICATION OF THE DEDSL 2-6
2.4 REGISTERING DED 2-8

3 DESCRIPTORS OF A DATA ENTITY ATTRIBUTE 3-1

3.1 GENERAL 3-1
3.2 LIST OF DESCRIPTORS 3-1
3.3 ATTRIBUTE_NAME 3-3
3.4 ATTRIBUTE_DEFINITION 3-4
3.5 ATTRIBUTE_OBLIGATION 3-5
3.6 ATTRIBUTE_CONDITION 3-6
3.7 ATTRIBUTE_MAXIMUM_OCCURRENCE 3-6
3.8 ATTRIBUTE_VALUE_TYPE 3-7
3.9 ATTRIBUTE_MAXIMUM_SIZE 3-9
3.10 ATTRIBUTE_ENUMERATION_VALUES 3-10
3.11 ATTRIBUTE_COMMENT 3-10
3.12 ATTRIBUTE_INHERITANCE 3-11
3.13 ATTRIBUTE_DEFAULT_VALUE 3-11
3.14 ATTRIBUTE_VALUE_EXAMPLE 3-12
3.15 ATTRIBUTE_SCOPE 3-12

4 DATA ENTITY ATTRIBUTES AND DATA ENTITY DICTIONARY ATTRIBUTES 4-1

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551ec8a1/iso-21961-2003

© ISO 2003 – All rights reserved

4.1 CONCEPT DEFINITIONS....4-1
4.2 GENERAL VIEW OF THE STANDARD ATTRIBUTES....4-2
4.3 STANDARD ATTRIBUTES FOR DATA ENTITY DICTIONARIES....4-4
4.4 STANDARD ATTRIBUTES FOR DATA ENTITIES....4-13
4.5 USER-DEFINED ATTRIBUTES....4-34
4.6 RELATIONSHIP RULES....4-37

5 IMPLEMENTATION GUIDELINES....5-1
6 DEDSL CONFORMANCE: ABSTRACT DEDSL (ADID = CCSD0011)....6-1

6.1 GENERAL....6-1
6.2 CONFORMANCE LEVEL 1: BASE COMPLIANCE....6-1
6.3 CONFORMANCE LEVEL 2: FULL COMPLIANCE....6-1

ANNEX A DEDSL EXAMPLES....A-1
ANNEX B MAPPING OF THE CONCEPTS BETWEEN THIS RECOMMENDATION AND THE ISO/IEC 11179-3:1994 STANDARD....B-1
ANNEX C INFORMATIVE REFERENCES....C-1

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 21961:2003
https://standards.iteh.ai/catalog/standards/sist/d38494a8-9f92-41c3-a664-b907551cc8a1/iso-21961-2003

Figure

2-1 Organisation of the Data Product Product_X....2-2
2-2 Organisation of the Data Product Product_Y....2-3
2-3 Organisation of the DED Relative to Product_X and Product_Y....2-4
2-4 “Uses some models of” Links between Data Product Dictionaries....2-6

Table

2-1 Comparison of Community DED and Product DED Descriptions....2-5
3-1 General Descriptors....3-2
4-1 Data Entity Dictionary Attributes....4-2
4-2 Data Entity Attributes....4-3

Example

3-1 Elementary Type....3-7
3-2 Ordered List of Elementary Types....3-8
3-3 Ordered List of the Same Elementary Type....3-8
3-4 Use of Entity_Type....3-8
3-5 Use of Choice....3-8

© ISO 2003 – All rights reserved