![SIST logo]

SLOVENSKI STANDARD
oSIST prEN ISO 12006-3:2021

01-oktober-2021

Gradnja objektov - Organizacija podatkov o gradbenih delih - 3. del: Okvirna struktura objektno orientiranih podatkov (ISO/DIS 12006-3:2021)

Building construction - Organization of information about construction works - Part 3: Framework for object-oriented information (ISO/DIS 12006-3:2021)

Bauwesen - Organisation von Daten zu Bauwerken - Teil 3: Struktur für den objektorientierten Informationsaustausch (ISO/DIS 12006-3:2021)

Construction immobilière - Organisation de l'information des travaux de construction - Partie 3: Schéma pour l'information basée sur l'objet (ISO/DIS 12006-3:2021)

Ta slovenski standard je istoveten z: **prEN ISO 12006-3**

ICS:

35.240.67	Uporabniške rešitve IT v gradbeništvu	IT applications in building and construction industry
91.010.01	Gradbeništvo na splošno	Construction industry in general

oSIST prEN ISO 12006-3:2021   **en,fr,de**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

DRAFT INTERNATIONAL STANDARD
ISO/DIS 12006-3

ISO/TC **59**/SC **13**

Secretariat: **SN**

Voting begins on:
2021-08-09

Voting terminates on:
2021-11-01

Building construction — Organization of information about construction works —

Part 3:
Framework for object-oriented information

Construction immobilière — Organisation de l'information des travaux de construction —

Partie 3: Schéma pour l'information basée sur l'objet

ICS: 91.010.01

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 12006-3:2021(E)

© ISO 2021

ISO/DIS 12006-3:2021(E)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

COPYRIGHT PROTECTED DOCUMENT

Contents

ISO/DIS 12006-3:2021(E)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

oSIST prEN ISO 12006-3:2021
https://standards.iteh.ai/catalog/standards/sist/40a274bf-8b44-44ff-ae9f-
84939b92f7a/osist-pren-iso-12006-3-2021

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 59, *Buildings and civil engineering works*, Subcommittee SC 13, *Organization of information about construction works*.

This second edition cancels and replaces the first edition (ISO 12006:2007), which has been technically revised.

The main changes compared to the previous edition to meet industry needs and implementations are as follows:

- Model is changed and adapted for multiple implementations of dictionaries.
- UML, and XML introduced in informative annexes.
- API specification included.
- Concepts must have relations to other concepts and are more rigid, specific and object orientated.

A list of all parts in the ISO 12006 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document defines a specification for an extensible taxonomy model, which provides the ability to add concepts like subjects and properties, describe subject by means of properties, and to define relationships between concepts The set of properties associated with a subject provide the formal definition of the subject as well as its typical behaviour. Properties might have predefined values, and they might be associated with units.

ISO/DIS 12006-3:2021(E)

The model makes it possible to describe multiple dictionaries based on the same model. Each concept belongs to one data dictionary. The concepts in one data dictionary might be related to concepts in another data dictionary.

Every entity in the model has a universal unique identifier. The model allows to describe the development and maintenance of data dictionary by providing change request, and it also allows to describe the experts reviewing change requests. The model described in this document is proposed as a bridge between classification systems as described in ISO 12006-2 [5], and product modelling as described in several publications [2], [3], [6], [7].

This document supports the requirements for implementation concept in ISO 23386 [8] and ISO 23387 [9].

To simplify and support implementation of dictionaries based on this framework, the standard has included UML model [10] and XML schema [11] as informative appendices. An API specificationhas been added as a normative appendix to standardise and define the minimum functionality to extract and exchange data between dictionaries based on this document.

Building construction — Organization of information about construction works — Part 3: Framework for object-oriented information

1 Scope

This document specifies a language-independent information model which can be used for the development of dictionaries used to store or provide information about construction works. The model is extended by instantiating content, such as further objects and their relationships, allowing the content to serve as an ontology, taxonomy, meronomy, lexicon and thesaurus.

It enables classification systems, information models, object models, data templates and process models to be cross referenced from within a common framework.

This document provides the description of an API allowing the interconnection of data dictionaries as described in ISO 23386.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10303,-11 *Industrial automation systems and integration — Product data representation and exchange —Part 11: Description methods: The EXPRESS language reference manual*

ISO 80000-1:2009, *Quantities and units — Part 1: General*

ISO/IEC 10646, *Information technology — Universal Multiple-Octet Coded Character Set (UCS)*

ISO/IEC 9834-8:2014, *Information technology — Procedures for the operation of object identifier registration authorities — Part 8: Generation of universally unique identifiers (UUIDs) and their use in object identifiers*

ISO/IEC 20802 – 1: 2016, *Information technology — Open data protocol (OData) v4.0 — Part 1: Core*

ISO/IEC 20802-2:2016, *Information technology — Open data protocol (OData) v4.0 — Part 2: OData JSON Format*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

ISO/DIS 12006-3:2021(E)

— IEC Electropedia: available at http://www.electropedia.org/

3.4
lexicon
resource comprising lexical entries for a given language

Note 1 to entry: A lexicon may be used to map between languages.

[SOURCE: ISO 24613:2008, 3.28]

3.5
data dictionary
formal repository of terms used to describe data

[SOURCE: ISO 13527:2010, 1.4.2.12]

3.6
meronomy
type of hierarchy which deals with part-whole relationships

[SOURCE: ISO/IEC 11179-3:2013, 3.2.73]

3.7
ontology
formal, explicit specification of a shared conceptualization

Note 1 to entry: An ontology typically includes definitions of concepts and specified relationships between them, set out in a formal way so that a machine can use them.

Note 2 to entry: Applied in this document as a set of concepts, (reference) individuals, value types, (reference) values, attributes, relations, constraints and derivations.

[SOURCE: ISO 5127:2017, 3.1.2.03]

3.8
classification
terminological resource which has characteristics of mutual exclusiveness and exhaustiveness to aggregate data to a pre-prescribed level of specialization for a specific purpose

[SOURCE: ISO 17117-1:2018, 3.4.3]

3.9
data template
data structure used to describe the characteristics of construction objects

[SOURCE: ISO 23387:2020, 3.3]

3.10
object
any part of the perceivable or conceivable world

Note 1 to entry: An object is something abstract or physical toward which thought, feeling, or action is directed

[SOURCE: ISO 12006-2:2015, 3.1.1]

3.11
property
inherent or acquired feature of an object

[SOURCE: ISO 6707-1:2017, 3.7.1.3]

4   Language encoding

All information that is specified as type "String", or that resolves to type "String", shall be able to be expressed using the UNICODE character set [8] as set out in ISO/IEC 10646, preferably using the UTF-8 encoding form, the UTF-8 encoding scheme and the "UCS Transformation Format 8" [4].

5   Specification

5.1 General

The model in this part of ISO 12006 is specified using the EXPRESS data definition language according to ISO 10303-11.

The model is described informally in 5.2, conforming to the EXPRESS-G notation.

The model is described formally in the EXPRESS language specification presented in 5.3and as an EXPRESS long form specification in Annex A.

NOTE: ISO 10303 specifies mappings to XML (part 28) and XML (part 25) representations, and an API (part 22).

5.2 EXPRESS-G specification

The informal EXPRESS-G specification that uses the EXPRESS-G notation is given in three diagrams (Figures 1 through 3), where each diagram specifies a part of the model. All entities in these diagrams are specified formally in 6.3.

-   Figure 1 shows the diagram with abstact object of xtdRoot, its attributes and its derived types xtdDictionary, xtdExpertWithStatus, xtdInterval, xtdLanguage, xtdMedia, xtdMultiLanguageText, xtdObject, xtdRational, xtdSymbol, xtdText, xtdUser and xtdUserWithRoles and its subtypes
-   Figure 2 shows the diagram with abstract object of xtdObject, its attribues and its derived types xtdConcept, xtdOrderedValue, xtdChangeRequest, xtdValue, xtdRelationahipToSubject and its subtypes.
-   Figure 3 shows the diagram with abstract type of xtdConcept, its attributes and its derived types xtdFilter, xtdCountry, xtdSubdivision, xtdDimension, xtdRelationshipType, xtdExternalDocument, xtdVisualRepresentation, xtdUnit, xtdValueList, xtdRelationshipToProperty, xtdSubject, xtdProperty and its subtypes
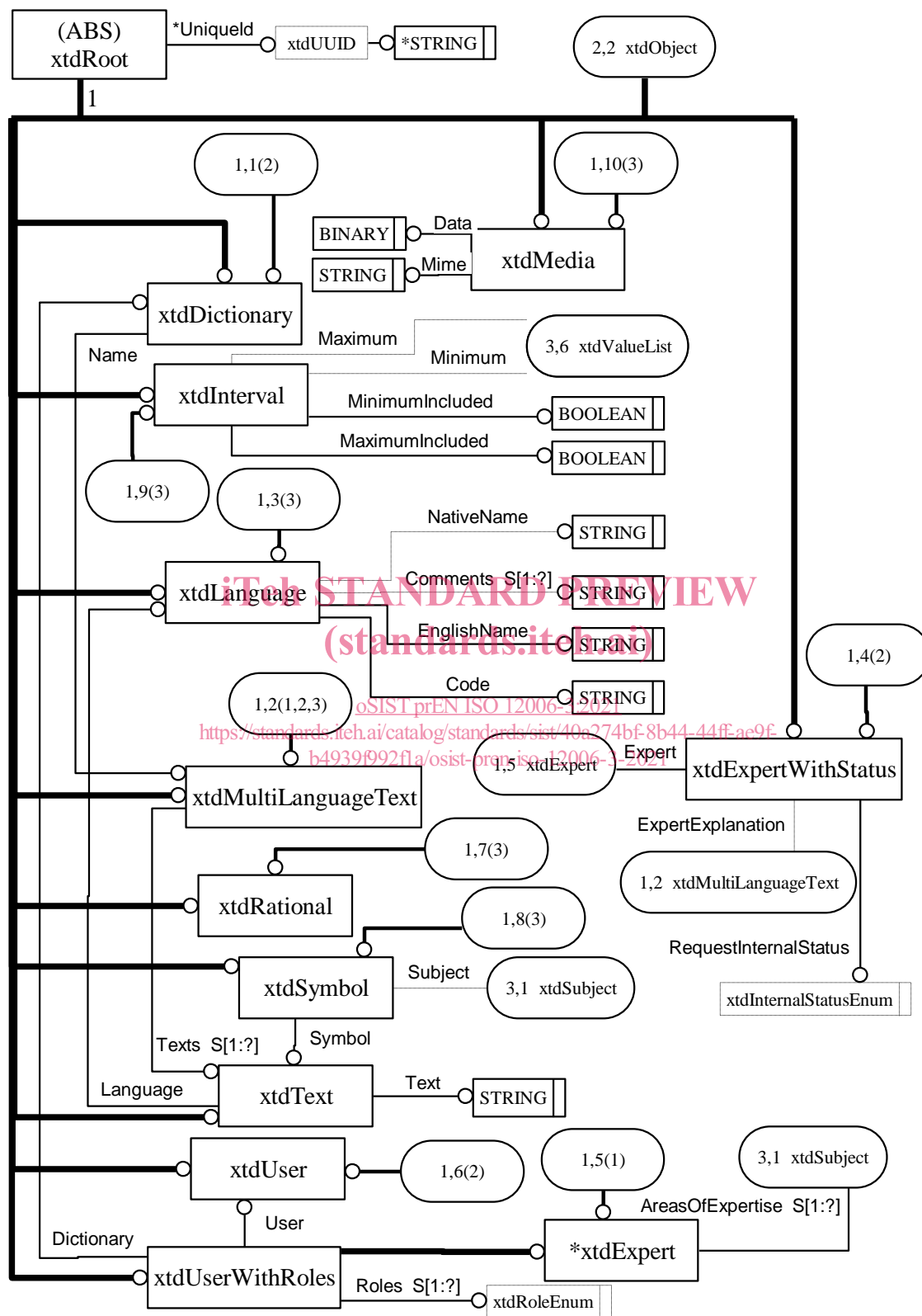
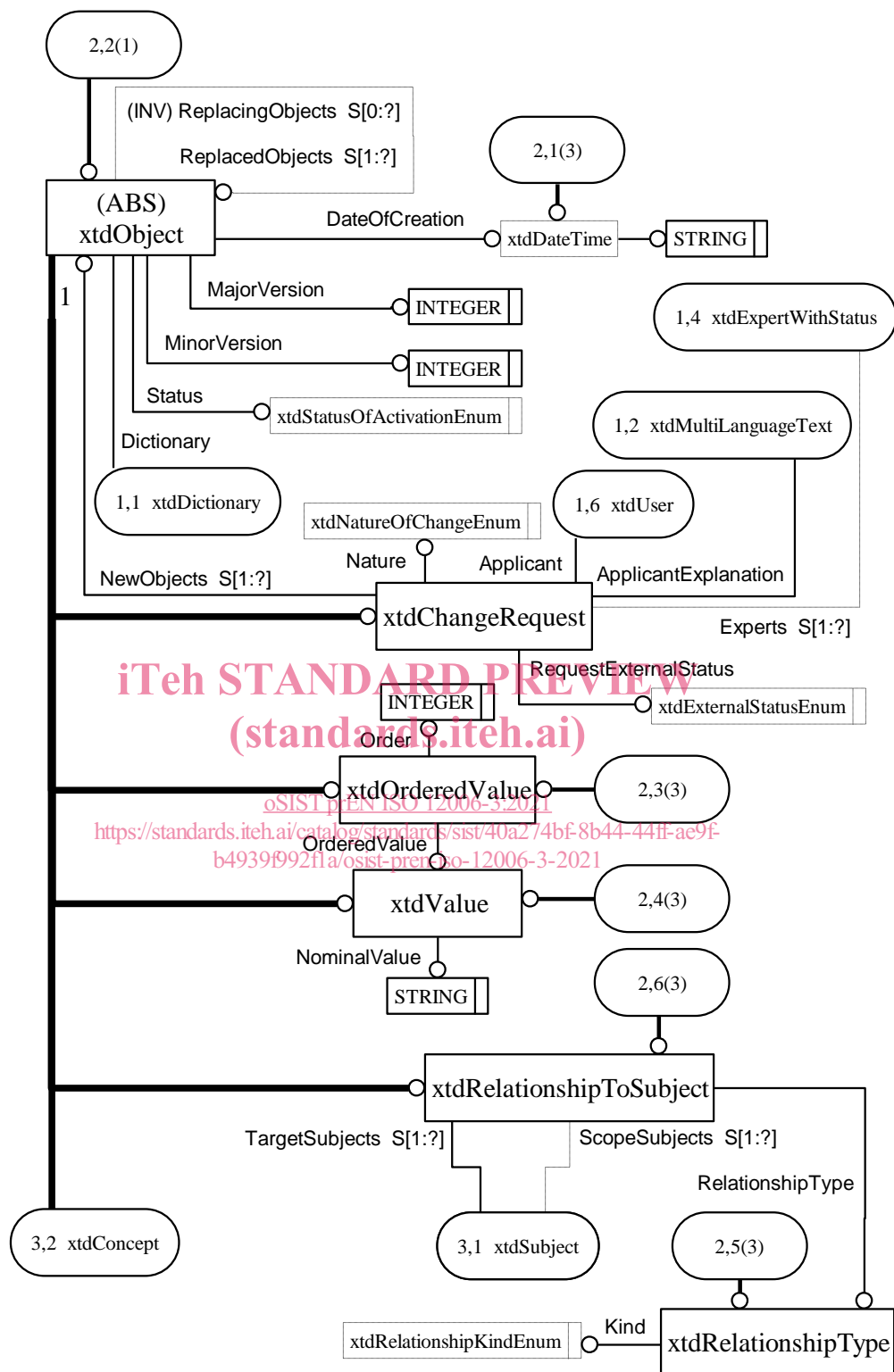**Figure 1 — EXPRESS-G diagram 1 — Top level with root concept**

Figure 2 — EXPRESS-G diagram 2 — xtdObject representation
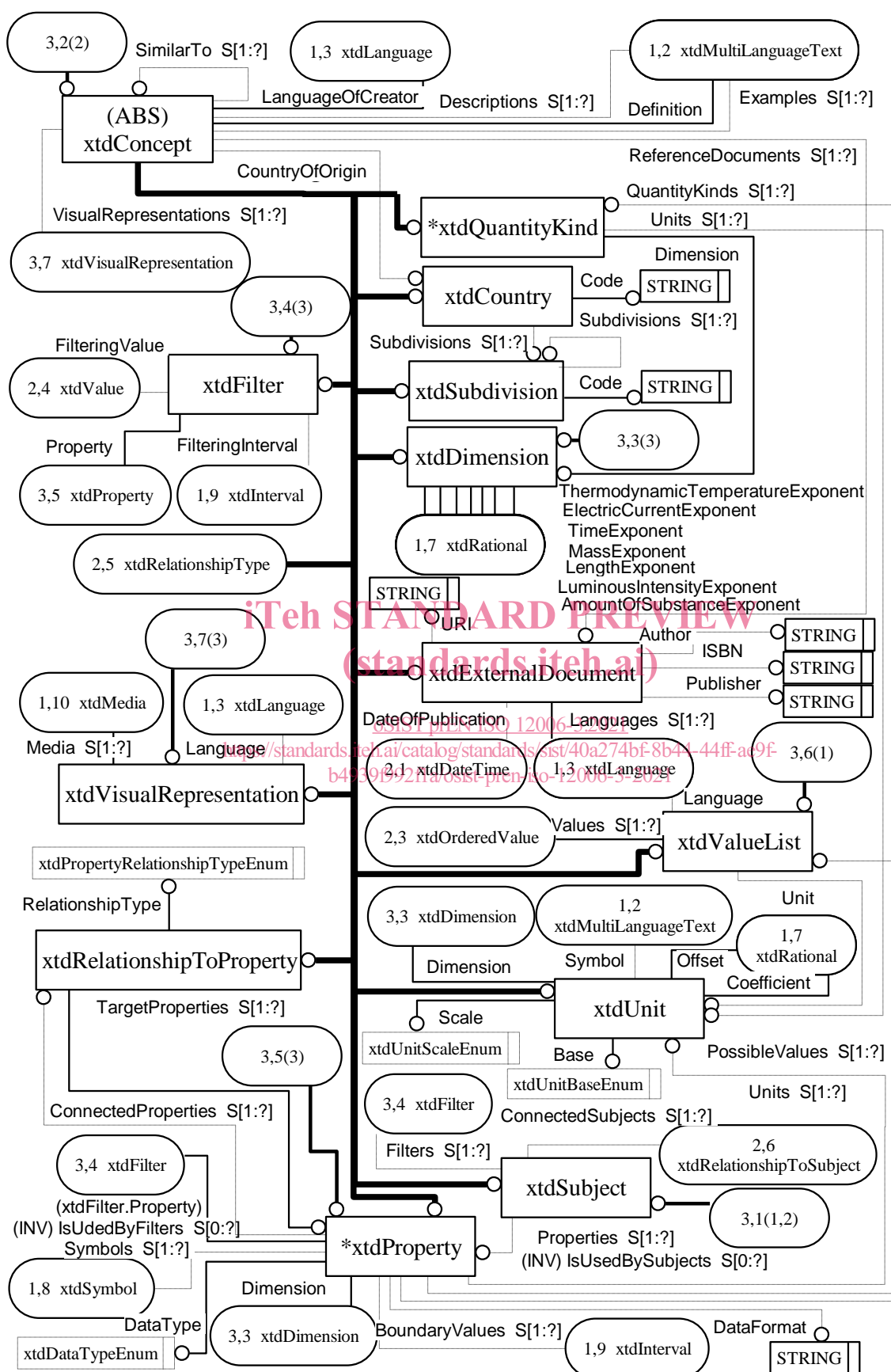
ISO/DIS 12006-3:2021(E)

Figure 3 — EXPRESS-G diagram 3 — xtdConcept representation

5.3 EXPRESS specification

5.3.1   General

This formal specification is **provided in the EXPRESS language.**

The EXPRESS long form specification is provided in Annex A.

Express Specification
(*
ISO_12006_3_VERSION_4

<u>EXPRESS specification:</u>
```
*)
SCHEMA ISO_12006_3_VERSION_4;
(*
```

5.3.2   xtdDateTime

xtdDateTime is a defined data type of simple data type STRING that is used to identify a particular point in time. It is recommended that date format (ISO 8601) "YYYY-MM-DDThh:mm:ssTZD" should be used.

EXAMPLE: The 31st day of May in the year 2000 should be written as "2000-05-31T00:00:00Z".

<u>EXPRESS specification:</u>
```
*)
    Type xtdDateTime = STRING;
    END_TYPE;
(*
```

5.3.3   xtdUUID

xtdUUID is a defined data type of simple data type STRING that holds an identifier that is universally unique.

For more explanations and mechanism to create a UUID, see ISO/IEC 9834-8:2014.

An identifier is a unique 128-bit number.

EXAMPLE: The 36-character string 1cbeacb2-7449-4671-97d2-3b84def86927 is a universally unique identifier.