
**Information technology — Topic Maps —
Part 2:
Data model**

*Technologies de l'information — Plans relatifs à des sujets —
Partie 2: Modèle de données*

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[ISO/IEC 13250-2:2006](https://standards.iteh.ai/catalog/standards/sist/01ca162f-c5b0-4b0f-a93f-cc8486ba2b03/iso-iec-13250-2-2006)

<https://standards.iteh.ai/catalog/standards/sist/01ca162f-c5b0-4b0f-a93f-cc8486ba2b03/iso-iec-13250-2-2006>

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/IEC 13250-2:2006](https://standards.iteh.ai/catalog/standards/sist/01ca162f-c5b0-4b0f-a93f-cc8486ba2b03/iso-iec-13250-2-2006)

<https://standards.iteh.ai/catalog/standards/sist/01ca162f-c5b0-4b0f-a93f-cc8486ba2b03/iso-iec-13250-2-2006>

© ISO/IEC 2006

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

Contents

Page

Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 The metamodel.....	4
4.1 Introduction.....	4
4.2 Locators.....	5
4.3 The fundamental types.....	5
4.4 Datatypes.....	6
5 The data model.....	6
5.1 General.....	6
5.2 The topic map item.....	7
5.3 Topic items.....	8
5.3.1 Subjects and topics.....	8
5.3.2 Identifying subjects.....	8
5.3.3 Scope.....	9
5.3.4 Reification.....	9
5.3.5 Properties.....	10
5.4 Topic name items.....	10
5.5 Variant items.....	12
5.6 Occurrence items.....	12
5.7 Association items.....	13
5.8 Association role items.....	14
6 Merging.....	15
6.1 General.....	15
6.2 Merging topic items.....	15
6.3 Merging topic name items.....	15
6.4 Merging variant items.....	15
6.5 Merging occurrence items.....	16
6.6 Merging association items.....	16
6.7 Merging association role items.....	16
7 Core subject identifiers.....	17
7.1 General.....	17
7.2 The type-instance relationship.....	17
7.3 The supertype-subtype relationship.....	17
7.4 Sort names.....	18
7.5 The default name type.....	18
Annex A (informative) Subject identifiers for defined terms.....	19
Bibliography.....	21

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national 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 and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 13250-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 34, *Document description and processing languages*.

This first edition of ISO/IEC 13250-2 is part of a multi-part standard. The complete series will cancel and replace ISO/IEC 13250:2003.

ISO/IEC 13250 consists of the following parts, under the general title *Information technology — Topic Maps*:

- *Part 2: Data model*
- *Part 3: XML syntax*
- *Part 4: Canonicalization*

Introduction

Topic Maps is a technology for encoding knowledge and connecting this encoded knowledge to relevant information resources. Topic maps are organized around topics, which represent subjects of discourse; associations, representing relationships between the subjects; and occurrences, which connect the subjects to pertinent information resources.

Topic maps may be represented in many ways: using Topic Maps syntaxes in files, inside databases, as internal data structures in running programs, and even mentally in the minds of humans. All these forms are different ways of representing the same abstract structure. It is that structure which this part of ISO/IEC 13250 defines, in the form of a data model.

NOTE The phrase "topic maps" is used in two ways in this part of ISO/IEC 13250: as a (capitalized) proper noun, "Topic Maps", denoting the name of ISO/IEC 13250; and as the plural of a common noun "topic map". Both terms are defined in Clause 3.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC 13250-2:2006](https://standards.iteh.ai/catalog/standards/sist/01ca162f-c5b0-4b0f-a93f-cc8486ba2b03/iso-iec-13250-2-2006)

<https://standards.iteh.ai/catalog/standards/sist/01ca162f-c5b0-4b0f-a93f-cc8486ba2b03/iso-iec-13250-2-2006>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 13250-2:2006

<https://standards.iteh.ai/catalog/standards/sist/01ca162f-c5b0-4b0f-a93f-cc8486ba2b03/iso-iec-13250-2-2006>

Information technology — Topic Maps —

Part 2: Data model

1 Scope

This part of ISO/IEC 13250 specifies a data model of Topic Maps. It defines the abstract structure of Topic Maps, using the information set formalism, and to some extent their interpretation, using prose. The rules for merging in Topic Maps are also defined, as are some fundamental subject identifiers.

The purpose of the data model is to define the interpretation of the Topic Maps interchange syntaxes, and to serve as a foundation for the definition of supporting standards for canonicalization, querying, constraints, and so on. All of these standards fall outside the scope of this part of ISO/IEC 13250.

NOTE 1 This clause defines the scope of this part of ISO/IEC 13250. It should not be confused with the concept of "scope" defined in 5.3.3, which only applies in the context of Topic Maps.

NOTE 2 This part of ISO/IEC 13250 does not have a conformance section since it is only a data model, and as such it has no boundary with the outside world in terms of which conformance can be specified.

2 Normative references

The following referenced documents are indispensable for the application 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.

NOTE Each of the following documents has a unique identifier that is used to cite the document in the text. The unique identifier consists of the part of the reference up to the first comma, and referenced thus: *[Identifier]*.

Unicode, *The Unicode Standard, Version 4.0*, The Unicode Consortium, Reading, Massachusetts, USA, Addison-Wesley, 2003, ISBN 0-321-18578-1

RFC 3986, *Uniform Resource Identifiers (URI): Generic Syntax*, Internet Standards Track Specification, January 2005, available at <<http://www.ietf.org/rfc/rfc3986.txt>>

RFC 3987, *Internationalized Resource Identifiers (IRIs)*, Internet Standards Track Specification, January 2005, available at <<http://www.ietf.org/rfc/rfc3987.txt>>

XML Infoset, *XML Information Set (Second Edition)*, World Wide Web Consortium, 4 February 2004, available at <<http://www.w3.org/TR/2004/REC-xml-infoset-20040204>>

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

XML, *Extensible Markup Language (XML) 1.0 (Third Edition)*, W3C Recommendation, 4 February 2004, available at <<http://www.w3.org/TR/2004/REC-xml-20040204>>

XML Schema-2, *XML Schema Part 2: Datatypes Second Edition*, W3C Recommendation, 28 October 2004, available at <<http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/>>

3 Terms and definitions

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

NOTE These definitions are reproduced from the body of this document; for those unfamiliar with the terminology the definitions are best read in context. They are repeated here for reference.

**3.1
association**

representation of a relationship between one or more subjects

**3.2
association role**

representation of the involvement of a subject in a relationship represented by an association

**3.3
association role type**

subject describing the nature of the participation of an association role player in an association

**3.4
association type**

subject describing the nature of the relationship represented by associations of that type

**3.5
information resource**

representation of a resource as a sequence of bytes; it could thus potentially be retrieved over a network

**3.6
item identifier**

locator assigned to an information item in order to allow it to be referred to

**3.7
locator**

string conforming to some locator notation that references one or more information resources

**3.8
merging**

process applied to a topic map in order to eliminate redundant topic map constructs in that topic map

**3.9
occurrence**

representation of a relationship between a subject and an information resource

**3.10
occurrence type**

subject describing the nature of the relationship between the subjects and information resources linked by the occurrences of that type

**3.11
reification**

making a topic represent the subject of another topic map construct in the same topic map

**3.12
scope**

context within which a statement is valid

3.13 statement

claim or assertion about a subject (where the subject may be a topic map construct)

3.14 subject

anything whatsoever, regardless of whether it exists or has any other specific characteristics, about which anything whatsoever may be asserted by any means whatsoever

3.15 subject identifier

locator that refers to a subject indicator

3.16 subject indicator

information resource that is referred to from a topic map in an attempt to unambiguously identify the subject represented by a topic to a human being

3.17 subject locator

locator that refers to the information resource that is the subject of a topic

3.18 topic

symbol used within a topic map to represent one, and only one, subject, in order to allow statements to be made about the subject

3.19 topic map

set of topics and associations

3.20 topic map construct

component of a topic map; that is, a topic map, a topic, a topic name, a variant name, an occurrence, an association, or an association role.

3.21 Topic Maps

technology for encoding knowledge and connecting this encoded knowledge to relevant information resources

3.22 topic name

name for a topic, consisting of the base form, known as the base name, and variants of that base form, known as variant names

3.23 topic name type

subject describing the nature of the topic names of that type

3.24
topic type

subject that captures some commonality in a set of subjects

3.25
unconstrained scope

scope used to indicate that a statement is considered to have unlimited validity

3.26
variant name

alternative form of a topic name that may be more suitable in a certain context than the corresponding base name

4 The metamodel

4.1 Introduction

The metamodel used in this document is the same as that used by the XML Information Set [*XML Infoset*]. An instance of this data model consists of a number of information items, each one of which is an abstract representation of a topic map construct. Every information item is an instance of some information item type, which specifies a number of named properties which the information item shall have. Throughout this part of ISO/IEC13250 the term "information item" refers to the information item types defined in this model, while information items of particular types are referred to as "topic items", "topic name items", and so on.

ITih STANDARD PREVIEW

The names of properties are written in square brackets: [property name], following the convention used in [*XML Infoset*]. Every property has a type that constrains what values it may have. Properties are not allowed to have null as their value unless this is explicitly stated in the definition of the property.

ISO/IEC 13250-2:2006

Certain properties in the model are specified as computed properties, which means that they are specified in terms of how their values may be produced from other properties in the model. These properties are specified for reasons of convenience or to better reflect the semantics of the data model but are strictly speaking redundant.

A number of constraints on the allowed instances of the model are also defined. The purpose of these constraints is to prevent inconsistencies in instances of the data model.

All information item types and fundamental types defined in this part of ISO/IEC13250 have a well-defined test of equality. This equality test is used to avoid duplicate values in properties whose values are of type set. Information items have identity, independent of their values, so items can be compared both by identity and by value. Equality throughout this part of ISO/IEC13250 should be taken to mean equality according to the rules defined for the types of the values being compared.

UML diagrams [*UML*] are used in addition to the infoset formalism for purposes of illustration. These diagrams are purely informative, and in cases of discrepancy between the diagrams and normative prose, the prose is definitive.

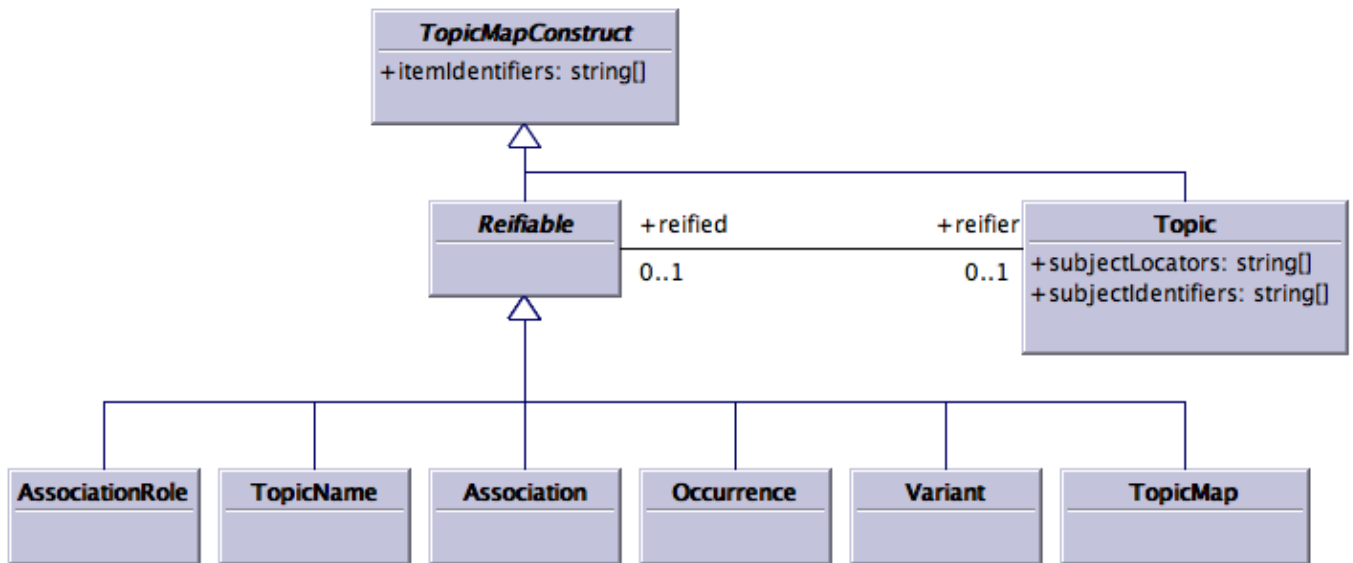


Figure 1 — The class hierarchy

NOTE `TopicMapConstruct` is the abstract superclass of all classes used in these UML diagrams. It is used here to simplify the UML diagrams using inheritance. The `Reifiable` class is also abstract, and is used as the common superclass of all classes corresponding to item types which can occur in the `[reified]` property of topic items.

4.2 Locators

(standards.iteh.ai)

An *information resource* is a representation of a resource as a sequence of bytes; it could thus potentially be retrieved over a network. Topic maps can refer to information resources external to themselves in order to make statements about them. These information resources are *not* part of the topic map; they are only referenced from it.

A *locator* is a string conforming to some locator notation that references one or more information resources. Locators are always expressed in some locator notation, which is a definition of the formal syntax and interpretation of a class of locators. The definition of locator notations is outside the scope of this part of ISO/IEC13250. All locators in this model use the notation defined by *[RFC 3986]* and *[RFC 3987]*.

4.3 The fundamental types

The values of information item properties may be either other information items, or values of one of the types defined below:

String

Strings are sequences of Unicode scalar values (see *[Unicode]* and *[ISO 10646]*).

Strings are equal if they consist of the exact same sequence of Unicode scalar values.

NOTE 1 This part of ISO/IEC13250 does not require Unicode normalization to be applied to strings order to detect that syntactically different but logically equivalent strings are in fact equivalent. The application of such logic is encouraged, however. As it cannot be guaranteed that normalization will be performed reliance on normalization is strongly discouraged.

Set

Sets are collections of zero or more unordered elements that contain no elements that are equal to each other. In this data model the elements of a set are always information items or strings.

Two sets are equal unless there exists an element in one set for which no equal element can be found in the other.