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**Information technology — Metamodel  
framework for interoperability  
(MFI) —**

**Part 10:  
Core model and basic mapping**

*Technologies de l'information — Cadre du métamodèle pour  
l'interopérabilité (MFI) —  
Partie 10: Modèle de base et de cartographie de base*

ISO/IEC 19763-10:2023

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## 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.

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 document 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](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs)).

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents) and <https://patents.iec.ch>. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

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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](http://www.iso.org/iso/foreword.html). In the IEC, see [www.iec.ch/understanding-standards](http://www.iec.ch/understanding-standards).

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This second edition cancels and replaces the first edition (ISO/IEC 19763-10:2014), which has been technically revised.

The main changes are as follows.

- The Core Model has been revised to extend the facilities provided by ISO/IEC 11179-3 *Information technology — Metadata registries (MDR) — Part 3: Metamodel for registry common facilities* (part of the fourth edition of ISO/IEC 11179) to allow models to be registered in a metadata registry. The previous edition of ISO/IEC 11179-3 has been modularized and technically revised.
- The Basic Mapping facility has been removed as an extended mapping facility is provided by ISO/IEC 11179-3:2023, Clause 11.

A list of all parts in the ISO/IEC 19763 series can be found on the ISO and IEC websites.

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](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).

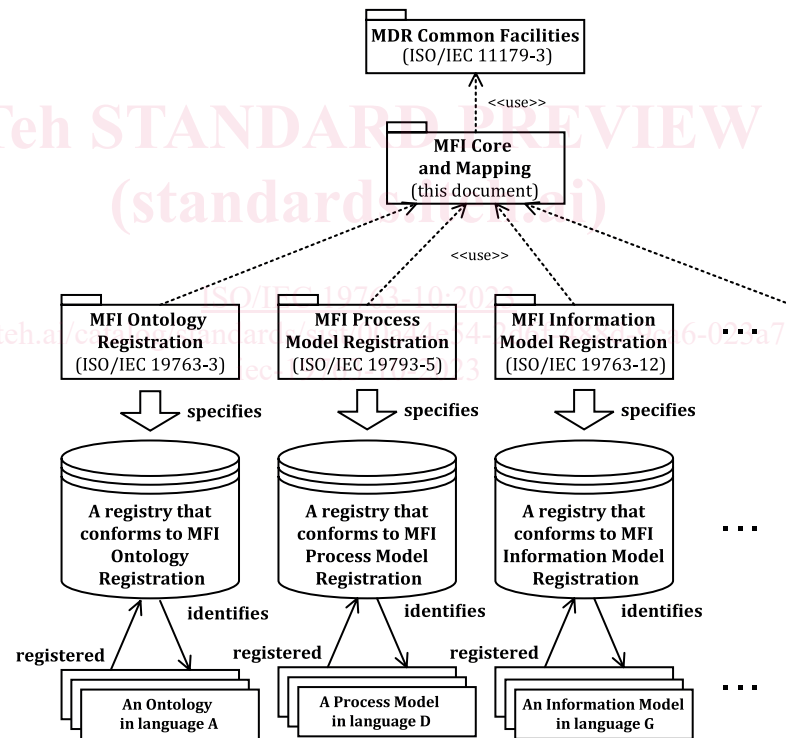
## Introduction

Industrial consortia have engaged in the standardization of domain-specific business objects including business process models and software components using common modelling facilities and interchange facilities such as UML<sup>1)</sup> and XML. They are very active in standardizing domain-specific business process models and standard modelling constructs such as data elements, entity profiles and value domains.

However, to promote interoperability across business domains, a generic framework for registering a variety of models and the mapping between them is required. This document provides a core metamodel as the basis for the other parts of the ISO/IEC 19763 series. The primary purpose of the multipart standard ISO/IEC 19763 is to specify a metamodel framework for interoperability.

The model registries specified in this document and the other parts of the ISO/IEC 19763 series utilise the common facilities specified in ISO/IEC 11179-3. The ISO/IEC 11179 series of standards specify a Metadata Registry (MDR). These common facilities provide the ability to identify and register models and their associated model elements and modelling languages within a metadata registry used to register models.

[Figure 1](#) shows the relationship between this document and the other parts of the ISO/IEC 19763 series.



**Figure 1 — Relationships between this document and other documents of the ISO/IEC 19763 series**

To maintain compatibility with the ISO/IEC 11179 series, this document uses bold font to highlight metamodel constructs in [Clauses 6](#) and [8](#), both for those constructs specified in this document and for those constructs specified in ISO/IEC 11179-3.

1) UML is a trademark of the Object Management Group. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO or IEC of the product named.



# Information technology — Metamodel framework for interoperability (MFI) —

## Part 10: Core model and basic mapping

### 1 Scope

This document specifies the metamodel that provides a facility to register administrative information and common semantics of models.

This document does not specify the metamodel of models in a specific language, but provides a common core metamodel for the other parts of the ISO/IEC 19763 series, each of which specifies a metamodel for a registry that can register models of a specific type, such as ontologies, process models or information models, in a number of different languages.

### 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/IEC 11179-3:2023, *Information technology — Metadata registries (MDR) — Part 3: Metamodel for registry common facilities*

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### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 11179-3 and the following apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

#### 3.1 model

representation of some aspect of a domain of interest using a normative modelling facility and modelling constructs

Note 1 to entry: models can be used to express a set of information requirements, processes, services, roles, goals or some other aspect of a domain of interest

[SOURCE: ISO/IEC 19763-1:2023, 3.1]

#### 3.2 model element

element or component in a *model* (3.1)

Note 1 to entry: Examples of model elements are a representation of an entity type in an information model, a representation of an event in a process model, a representation of a service operation in a service model, or a representation of an actor in a role and goal model.

[SOURCE: ISO/IEC 19763-1:2023, 3.2]

**3.3 modelling language**

language or notation that is used to express a *model* (3.1) of some aspect of a domain of interest

[SOURCE: ISO/IEC 19763-1:2023, 3.3 modified — notes deleted]

**3.4 concept**

unit of knowledge created by a unique combination of characteristics

Note 1 to entry: Concepts are not necessarily bound to particular natural languages. They are, however, influenced by the social or cultural background which often leads to different categorizations.

Note 2 to entry: A concept is independent of its representation.

[SOURCE: ISO/IEC 11179-3:2023, 3.2.7]

**4 Abbreviated terms**

MDR	Metadata registry
MFI	Metamodel framework for interoperability

**5 Conformance**

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**5.1 General**

An implementation claiming conformance to this part of ISO/IEC 19763 shall conform as further described in this clause.

**5.2 Conformance levels**

**5.2.1 Conformance Level 1**

The implementation supports the metamodel specified in 6.3 in addition to all provisions of the Basic Registry profile of ISO/IEC 11179-3:2023, 4.4.2.

**5.2.2 Conformance Level 2**

The implementation supports the metamodel specified in 6.3 in addition to all provisions of the Basic Registry with Mapping profile of ISO/IEC 11179-3:2023, 4.4.2.

**5.3 Implementation Conformance Statement (ICS)**

An implementation claiming conformance to this part of ISO/IEC 19763 shall include an Implementation Conformance Statement stating which conformance level it claims (see 5.2).

NOTE Other parts of the ISO/IEC 19763 series will require a conformance to this document as a part of its conformance claim.

**5.4 Conformance labels**

Conformance to the levels specified in 5.2 may be claimed using the following labels, respectively:

- ISO/IEC 19763-10:2023 Core Model Registry;

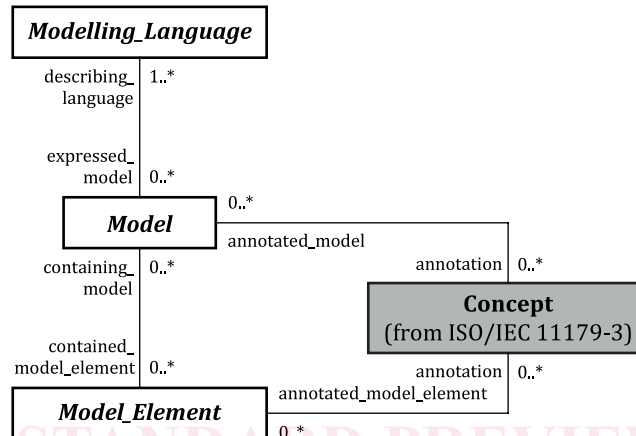


— ISO/IEC 19763-10:2023 Core Model Registry with mapping.

## 6 Core Model

### 6.1 Overview of the Core Model

The metamodel of the Core Model package specifies a model that is inherited by other parts of ISO/IEC 19763 to register administrative information and common semantics of models. [Figure 2](#) shows this metamodel.



NOTE 1 Classes whose names are italicized are abstract classes.

NOTE 2 Classes which are grey shaded are classes that are defined in other documents.

**Figure 2 — Metamodel of the Core Model**

<https://standards.iteh.ai/catalog/standards/sist/00a44e54-2d6f-488d-9ca6-023a70b824fe/iso-19763-10-2023>  
The metamodel comprises the following classes:

- **Model**;
- **Modelling\_Language**;
- **Model\_Element**;
- **Concept**.

The classes that represent models in other parts of ISO/IEC 19763 shall be subclasses of the **Model** class ([6.3.2](#)) and the classes representing the content of these models (the model elements) shall be subclasses of the **Model\_Element** class ([6.3.3](#)). Some of the classes in other parts of the ISO/IEC 19763 series inherited from the **Model** class or the **Model\_Element** class may override some attributes or references of the classes defined in this document. The classes that represent the modelling languages in which these models are expressed shall be subclasses of the **Modelling\_Language** class ([6.3.1](#)).

Each modelling language is a language or notation that is used to model concepts found in the other parts of the ISO/IEC 19763 series.

NOTE 1 Examples are languages used to express ontologies or to model information requirements, processes, services, forms, roles, goals or some other set of concepts that can be modelled.

Each model is a representation of concepts found in the other parts of the ISO/IEC 19763 series.

NOTE 2 Examples are an ontology or a model used to represent a set of information requirements, processes, services, forms, roles, goals or some other set of concepts that can be represented in a model.

Each model element is an element or component in a model, such as a non-logical symbol in an ontology, an entity type in an information model, an event in a process model, a service operation in a service model, or an actor in a role and goal model.

Each model shall be expressed in one or more modelling language. Each modelling language is used to describe zero, one or more models.

Each model contains zero, one or more model elements. Each model element is part of zero, one or more models.

Each concept annotates zero, one or more models. Each model can be annotated by zero, one or more concepts.

Each concept annotates zero, one or more model elements. Each model element can be annotated by zero, one or more concepts.

Each of the classes specified in this document are subclasses of the **Item** class, which is specified in ISO/IEC 11179-3:2023, 6.4.2.1. Hence, each instance of these classes can be identified, registered, administered, named, defined and classified.

### 6.2 Detail provided in each class definition

In this document, each class is defined in the following form.

- Each class is defined at its relevant subclause.
- A description of the class is provided.
- The direct superclass of the class is specified.
- The attributes of the class are specified, providing the name of the attribute, its datatype, its multiplicity and a description; none of the classes specified in this document have any attributes.
- The references of the class are specified, providing the name of the reference, the name of the associated class, its multiplicity, a description, its inverse reference name and whether it has precedence over its inverse reference or not, where the name of the inverse reference shall be the name of the reference in the associated class which is complementary to this reference.

NOTE 1 In UML, an association is equivalent to a reference and its inverse reference. In this document, to formally define a class, associations are not used, but each association is replaced by two references, a reference and its inverse reference. If a reference has precedence over its inverse reference, it means that instances of the relevant class have responsibility for maintenance of the links of the association defined by it and its inverse reference.

NOTE 2 For better understandability, diagrams show associations, rather than references. A role name of an association is a reference name of the associated class.

- Any constraints that apply to the class are specified; none of the classes specified in this document have any constraints other than those specified in [Clause 8](#).

Other documents of the ISO/IEC 19763 series specify the same information for the classes specified in those documents but may use a different format.

Multiplicity constraints of attributes and references and other constraints of a class are to be enforced when registration status of an instance of the class is “Recorded” or higher.

NOTE 3 Registration statuses are defined in ISO/IEC 11179-6<sup>[1]</sup>.

## 6.3 Classes in the Core Model

### 6.3.1 Modelling\_Language

#### 6.3.1.1 Description of Modelling\_Language

**Modelling\_Language** is an abstract class each instance of which represents a language or notation that is used to model concepts found in the other parts of the ISO/IEC 19763 series. The subclasses of **Modelling\_Language** are specified in the subordinate parts of the ISO/IEC 19763 series. Examples are languages used to express ontologies or to model information requirements, processes, services, forms, roles, goals or some other set of concepts that can be modelled.

#### 6.3.1.2 Direct superclass of Modelling\_Language

**Modelling\_Language** is a subclass of **Item** (specified in ISO/IEC 11179-3:2023, 6.4.2.1), allowing instances to be identified, registered, administered, named, defined and classified.

#### 6.3.1.3 Attributes of Modelling\_Language

**Modelling\_Language** has no attributes specified in this document.

#### 6.3.1.4 References of Modelling\_Language

##### 6.3.1.4.1 `expressed_model`

Reference name:	<b>expressed_model</b>
Associated class:	<b>Model</b>
Multiplicity:	0..*
Description:	The set of models that this language describes
Inverse reference:	<b>describing_language</b>
Precedence:	No

### 6.3.2 Model

#### 6.3.2.1 Description of Model

**Model** is an abstract class each instance of which represents a representation of concepts found in the other parts of the ISO/IEC 19763 series. The subclasses of **Model** are specified in the subordinate parts of the ISO/IEC 19763 series. Examples are an ontology or a model used to represent a set of information requirements, processes, services, form designs, roles, goals or some other set of concepts that can be represented in a model.

#### 6.3.2.2 Direct superclass of Model

**Model** is a subclass of **Item** (specified in ISO/IEC 11179-3:2023, 6.4.2.1), allowing instances to be identified, registered, administered, named, defined and classified.

#### 6.3.2.3 Attributes of Model

**Model** has no attributes specified in this document.

#### 6.3.2.4 References of Model

##### 6.3.2.4.1 describing\_language

Reference name: **describing\_language**  
Associated class: **Modelling\_Language**  
Multiplicity: 0..\*  
Description: The set of languages used to express this model  
Inverse reference: **expressed\_model**  
Precedence: Yes

##### 6.3.2.4.2 contained\_model\_element

Reference name: **contained\_model\_element**  
Associated class: **Model\_Element**  
Multiplicity: 0..\*  
Description: The set of model elements that are part of this model  
Inverse reference: **containing\_model**  
Precedence: Yes

##### 6.3.2.4.3 annotation

Reference name: **annotation**  
Associated class: **Concept**  
Multiplicity: 0..\*  
Description: The set of concepts that annotate this model  
Inverse reference: **annotated\_model**  
Precedence: No

#### 6.3.3 Model\_Element

##### 6.3.3.1 Description of Model\_Element

**Model\_Element** is an abstract class each instance of which represents an element or component in a model, such as those found in the other parts of the ISO/IEC 19763 series. The subclasses of **Model\_Element** are specified in the subordinate parts of the ISO/IEC 19763 series. Examples are a non-logical symbol in an ontology, an entity type in an information model, an event in a process model, a service operation in a service model, a section or question on a form, or an actor in a role and goal model or other types found in the ISO/IEC 19763 series.

##### 6.3.3.2 Direct superclass of Model\_Element

**Model\_Element** is a subclass of **Item** (specified in ISO/IEC 11179-3:2023, 6.4.2.1), allowing instances to be identified, registered, administered, named, defined and classified.