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**Author:** Dongwon Jeong

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WG4: CJU-005r1, 1WD-08-MDR-2009-07, June 2009.

WG4: LCY-005r1, 2WD-08-MDR-2009-11, November 2009.

**Information technology — Database languages —  
SQL Multimedia and Application Packages —  
Part 8: Metadata Registry Access (MRA)**

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# Contents

Page

- Foreword ..... vii
- Introduction..... viii
- 1 Scope ..... 1
- 2 Normative references.....2
- 2.1 International standards.....2
- 3 Terms, Notations, Conventions, and Definitions .....3
- 3.1 Terms .....3
- 3.1.1 Terms defined in ISO/IEC 9075 Part 1 .....3
- 3.1.2 Terms defined in ISO/IEC 11179 Part 1 .....3
- 3.1.3 Terms defined in ISO/IEC 13249 Part 1 .....3
- 3.2 Notations .....3
- 3.2.1 Notations provided in ISO/IEC 13249 Part 1 .....3
- 3.3 Conventions.....3
- 3.4 Definitions .....3
- 3.4.1 Definitions provided in ISO/IEC 9075 Part 1 .....3
- 3.4.2 Definitions provided in ISO/IEC 11179 Part 1 .....3
- 3.4.3 Definitions provided in ISO/IEC 13249 Part 1 .....3
- 4 Concepts .....4
- 4.1 Overview.....4
- 4.2 MDR Types .....4
- 4.2.1 MDR\_Designatable\_Item Type .....5
- 4.2.2 MDR\_Classifiable\_Item Type .....5
- 4.2.3 MDR\_Administered\_Item Type .....5
- 4.2.4 MDR\_Attached\_Item Type .....6
- 4.2.5 MDR\_Registered\_Item Type.....6
- 4.2.6 MDR\_Identified\_Item Type .....6
- 4.2.7 MDR\_Language\_Identification Type .....6
- 4.2.8 MDR\_Registration\_Authority\_Identifier Type .....7
- 4.2.9 MDR\_Organization Type.....7
- 4.2.10 MDR\_Reference\_Document Type.....8
- 4.2.11 MDR\_Individual Type .....8
- 4.2.12 MDR\_Contact Type.....8
- 4.2.13 MDR\_Slot Type .....9
- 4.2.14 MDR\_Namespace Type.....9
- 4.2.15 MDR\_Scoped\_Identifier Type.....10
- 4.2.16 MDR\_Naming\_Convention Type.....10
- 4.2.17 MDR\_Designation Type .....10
- 4.2.18 MDR\_Definition Type .....11
- 4.2.19 MDR\_Context Type.....11
- 4.2.20 MDR\_Designation\_Context Type.....11
- 4.2.21 MDR\_Definition\_Context Type.....12
- 4.2.22 MDR\_Acceptability Type.....12
- 4.2.23 MDR\_Registry\_Specification Type .....12
- 4.2.24 MDR\_Registrar Type .....13
- 4.2.25 MDR\_Stewardship\_Record Type .....13
- 4.2.26 MDR\_Submission\_Record Type .....14
- 4.2.27 MDR\_Reference Type.....14
- 4.2.28 MDR\_Registration\_State Type .....14
- 4.2.29 MDR\_Registration Type.....15
- 4.2.30 MDR\_Registration\_Authority Type.....15
- 4.2.31 MDR\_Concept\_System Type.....15
- 4.2.32 MDR\_Concept Type.....16
- 4.2.33 MDR\_Assertion Type .....16
- 4.2.34 MDR\_Link Type.....16
- 4.2.35 MDR\_Relation Type.....16

4.2.36	MDR_Link_End Type .....	17
4.2.37	MDR_Relation_Role Type .....	17
4.2.38	MDR_Classification Type .....	17
4.2.39	MDR_Classifiable_Item Type .....	17
4.2.40	MDR_Binary_Relation Type .....	18
4.2.41	MDR_Reflexivity Type .....	18
4.2.42	MDR_Symmetry Type .....	18
4.2.43	MDR_Transitivity Type .....	19
4.2.44	MDR_Data_Element_Concept Type .....	19
4.2.45	MDR_Data_Element Type .....	19
4.2.46	MDR_Conceptual_Domain Type .....	20
4.2.47	MDR_Value_Domain Type .....	20
4.2.48	MDR_Object_Class Type .....	20
4.2.49	MDR_Characteristic Type .....	21
4.2.50	MDR_Enumerated_Conceptual_Domain Type .....	21
4.2.51	MDR_Described_Conceptual_Domain Type .....	21
4.2.52	MDR_Value_Meaning Type .....	22
4.2.53	MDR_Permissible_Value Type .....	22
4.2.54	MDR_Enumerated_Value_Domain Type .....	22
4.2.55	MDR_Described_Value_Domain Type .....	23
4.2.56	MDR_Datatype Type .....	23
4.2.57	MDR_Dimensionality Type .....	23
4.2.58	MDR_Unit_of_Measure Type .....	24
4.2.59	MDR_Data_Element_Example Type .....	24
4.2.60	MDR_Data_Element_Derivation Type .....	24
4.2.61	MDR_Derivation_Rule Type .....	24
4.2.62	MDR_Natural_Range Type .....	25
4.2.63	MDR_Value Type .....	25
4.2.64	MDR_Sign Type .....	25
4.2.65	MDR_Notation Type .....	25
4.2.66	MDR_Postal_Address Type .....	26
4.2.67	MDR_Phone_Number Type .....	26
4.2.68	MDR_Datetime Type .....	26
5	Conformance .....	27
5.1	Requirements for conformance .....	27
5.2	Claims of conformance .....	27
Annex A (informative) Consolidated Class Hierarchy .....		28
Annex B (informative) Relationships and Relevant Classes of ISO/IEC 11179 .....		29

## 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.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC1.

ISO/IEC 13249 consists of the following parts, under the general title Information technology — Database languages — SQL Multimedia and Application Packages:

- *Part 1: Framework*
- *Part 2: Full-Text*
- *Part 3: Spatial*
- *Part 4: Multimedia and Application*
- *Part 5: Still Image*
- *Part 6: Data Mining*
- *Part 7: History*
- *Part 8: Metadata Registry Access*

Parts other than this part specify requirements, and all are dependent on various parts of ISO/IEC 9075 and also on this part of ISO/IEC 13249.

## **Introduction**

The purpose of this International Standard is to define multimedia and application specific types and their associated routines using the user-defined features in ISO/IEC 9075.

SQL/MM is structured as a multi-part standard. At present it consists of the following parts:

Part 1: Framework

Part 2: Full-Text

Part 3: Spatial

Part 5: Still Image

Part 6: Data Mining

Part 7: History

Part 8: Metadata Registry Access

The organization of this part of ISO/IEC 13249 is as follows:

- 1) Clause 1, "Scope", specifies the scope of this part of ISO/IEC 13249.
- 2) Clause 2, "Normative references", identifies additional standards that, through reference in this part of ISO/IEC 13249, constitute provisions of this part of ISO/IEC 13249.
- 3) Clause 3, "Terms, Notations, Conventions, and Definitions", defines terms, notations, conventions, and definitions used in this part of ISO/IEC 13249.
- 4) Clause 4, "Concepts", presents concepts used in the definition of this part of ISO/IEC 13249, and "MDR Types", defines user-defined types for the metamodel defined in ISO/IEC 11179.
- 5) Clause 5, "Conformance", defines the criteria for conformance to this part of ISO/IEC 13249.
- 6) Annex A, "Consolidated Class Hierarchy", is an informative Annex. It visually describes the inheritance relationship between user-defined types in this part of ISO/IEC 13249. Annex B, "Relationships and Classes of ISO/IEC 11179", is an informative Annex. It shows the relationships between classes in the metamodel of 11179-3.

# Information technology — Database languages — SQL Multimedia and Application Packages — Part 8: Metadata Registry Access (MRA)

## 1 Scope

This part of ISO/IEC 13249 covers a retrieve method for accessing metadata in various application fields, and includes the followings.

- a) introduces the metadata registry for this part of ISO/IEC 13249,
- b) gives the references necessary for this part of ISO/IEC 13249,
- c) defines terms, notations, conventions, and definitions specific to this part of ISO/IEC 13249,
- d) defines concepts specific to this part of ISO/IEC 13249,
- e) defines metadata registry user-defined types,
- f) covers simple database operation for retrieving metadata from a registry,
- g) does not includes operations such as insert, update, and delete.

The MDR user-defined types defined in this part adhere to the following:

- A MDR user-defined type is generic to metadata handling. It addresses the need to retrieve information based on aspects of metadata stored in a metadata registry.
- A MDR user-defined type contains attributes of a class of the metamodel of ISO/IEC 11179-3.

## 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.

### 2.1 International standards

ISO/IEC 11179-1, Information technology — Metadata Registries (MDR) Part 1: Framework.

ISO/IEC 11179-3, Information technology — Metadata Registries (MDR) Part 3: Registry metamodel and basic attributes.

ISO/IEC 13249-1, Information technology — Database languages — SQL Multimedia and Application Packages — Part 1: Framework.

ISO/IEC 9075-1, Information technology — Database languages — SQL — Part 1: Framework (SQL/Framework).

ISO/IEC 9075-2:2008, Information technology — Database languages — SQL — Part 2: Foundation (SQL/Foundation).

## **3 Terms, Notations, Conventions, and Definitions**

### **3.1 Terms**

#### **3.1.1 Terms defined in ISO/IEC 9075 Part 1**

This part of ISO/IEC 13249 makes use of all terms defined in part 1 of ISO/IEC 9075.

#### **3.1.2 Terms defined in ISO/IEC 11179 Part 1**

This part of ISO/IEC 13249 makes use of all terms defined in part 1 of ISO/IEC 11179.

#### **3.1.3 Terms defined in ISO/IEC 13249 Part 1**

This part of ISO/IEC 13249 makes use of all terms defined in part 1 of ISO/IEC 13249.

### **3.2 Notations**

#### **3.2.1 Notations provided in ISO/IEC 13249 Part 1**

The notations used in this part of ISO/IEC 13249 are defined in part 1 of ISO/IEC 13249.

### **3.3 Conventions**

The convention is used in this part of ISO/IEC 13249 are defined in part 1 of ISO/IEC 13249.

### **3.4 Definitions**

#### **3.4.1 Definitions provided in ISO/IEC 9075 Part 1**

This part of ISO/IEC 13249 makes use of all definitions defined in part 1 of ISO/IEC 9075.

#### **3.4.2 Definitions provided in ISO/IEC 11179 Part 1**

This part of ISO/IEC 13249 makes use of all definitions defined in part 1 of ISO/IEC 11179.

#### **3.4.3 Definitions provided in ISO/IEC 13249 Part 1**

This part of ISO/IEC 13249 makes user of all definitions defined in part 1 of ISO/IEC 13249.

## 4 Concepts

### 4.1 Overview

A metadata registry (MDR) has been used for systematic management of metadata describing data. A variety of registry frameworks have been developed for applications fields, and many registries have been built for management of metadata. Even though MDR provides advantages for data management, there still remain several problems. For facilitating usability of MDR, the following problems should be resolved:

- Inconsistent access method
- Invalid registries
- Difficulty of registry management system development

This part therefore aims to provide a consistent access method for retrieving metadata. This part will facilitate usage of the standard, ISO/IEC 11179.

This part includes the specifications for management of metadata registries, and the specifications are defined in the same way as SQL packages such as SQL/MM Spatial, SQL/MM Mining, SQL/MM Still Image, and so on.

This part specifies user-defined types for the ISO/IEC 11179 standard. In this part, a user can create user-defined types following this document that makes a reference to the metamodel. This specification reflects the metamodel of ISO/IEC 11179 without information loss

### 4.2 MDR Types

MDR types are defined in this document correspond to the classes in the metamodel of ISO/IEC 11179. The metamodel consists of many classes that have attributes to describe its characteristics. In this part, each class of the metamodel is mapped to and defined as one MDR type.

Any MDR type can be used as the type for a column. Declaring a column to be of a particular type implies that any value of the type or of any of its subtypes can be stored in the column.

The following MDR types are defined: MDR\_Classifiable\_Item, MDR\_Administered\_Item, MDR\_Attached\_Item, MDR\_Registered\_Item, MDR\_Identified\_Item, MDR\_Language\_Identification, MDR\_Registration\_Authority\_Identifier, MDR\_Organization, MDR\_Reference\_Document, MDR\_Individual, MDR\_Contact, MDR\_Slot, MDR\_Namespace, MDR\_Scoped\_Identifier, MDR\_Naming\_Convention, MDR\_Designation, MDR\_Definition, MDR\_Context, MDR\_Designation\_Context, MDR\_Definition\_Context, MDR\_Acceptability, MDR\_Registry\_Specification, MDR\_Registrar, MDR\_Stewardship\_Record, MDR\_Submission\_Record, MDR\_Reference, MDR\_Registration\_State, MDR\_Registration, MDR\_Registration\_Authority, MDR\_Concept\_System, MDR\_Concept, \_Assertion, MDR\_Link, MDR\_Relation, MDR\_Link\_End, MDR\_Relation\_Role, MDR\_Classification, MDR\_Classifiable\_Item, MDR\_Binary\_Relation, MDR\_Reflexivity, MDR\_Symmetry, MDR\_Transitivity, MDR\_Data\_Element\_Concept, MDR\_Data\_Element, MDR\_Conceptual\_Domain, MDR\_Value\_Domain, MDR\_Object\_Class, MDR\_Characteristic, MDR\_Enumerated\_Conceptual\_Domain, MDR\_Described\_Conceptual\_Domain, MDR\_Value\_Meaning, MDR\_Permissible\_Value, MDR\_Enumerated\_Value\_Domain, MDR\_Described\_Value\_Domain, MDR\_Datatype, MDR\_Dimensionality, MDR\_Unit\_of\_Measure, MDR\_Data\_Element\_Example, MDR\_Data\_Element\_Derivation, MDR\_DataDerivation\_Rule, MDR\_Natural\_Range, MDR\_Value, MDR\_Sign, MDR\_Notation, MDR\_Postal\_Address, MDR\_Phone\_Number, MDR\_Datetime.

A user can use mutator functions which are implied into each user-defined type in order to retrieve information from tables that is based on the metamodel of ISO/IEC 11179-3.

#### 4.2.1 MDR\_Designatable\_Item Type

##### Purpose

The MDR\_Desigantable\_Item type corresponds to Designable\_Item of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Designatable_Item AS  
(  
)
```

#### 4.2.2 MDR\_Classifiable\_Item Type

##### Purpose

The MDR\_Classifiable\_Item type corresponds to Classifiable\_Item of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Classifiable_Item AS  
(  
)
```

#### 4.2.3 MDR\_Administered\_Item Type

##### Purpose

The MDR\_Administered\_Item type corresponds to Administered\_Item of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Administered_Item under MDR_Registered_Item AS  
(  
    Version String  
    creation_date MDR_Datetime  
    last_change_date MDR_Datetime  
    change_description Text  
    explanatory_comment Text  
    origin Text  
)
```

#### 4.2.4 MDR\_Attached\_Item Type

##### Purpose

The MDR\_Attached\_Item type corresponds to Attached\_Item of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Attached_Item under MDR_Registered_Item AS  
  
(  
  
)
```

#### 4.2.5 MDR\_Registered\_Item Type

##### Purpose

The MDR\_Registered\_Item type corresponds to Registered\_Item of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Registered_Item under MDR_Identified_Item AS  
  
(  
  
)
```

#### 4.2.6 MDR\_Identified\_Item Type

##### Purpose

The MDR\_Identified\_Item type corresponds to Identified\_Item of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Identified_Item AS  
  
(  
  
)
```

#### 4.2.7 MDR\_Language\_Identification Type

##### Purpose

The MDR\_Language\_Identification type corresponds to Language\_Identification of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Language_Identification AS
```

```
(
    language_identifier    String
    script_identifier      String
    geopolitical_territory_identifier String
    variant_identifier     String
    extension_identifier   String
    private_use_qualifier String
)
```

#### 4.2.8 MDR\_Registration\_Authority\_Identifier Type

##### Purpose

The MDR\_Registration\_Authority\_Identifier type corresponds to Registration\_Authority\_Identifier of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Registration_Authority_Identifier AS
(
    international_code_designator String
    organization_identifier String
    organization_part_identifier   String
    OPI_source String
)
```

#### 4.2.9 MDR\_Organization Type

##### Purpose

The MDR\_Organization type corresponds to Organization of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Organization AS
(
    name      MDR_Sign
    mail_address MDR_Postal_Address
)
```

#### 4.2.10 MDR\_Reference\_Document Type

##### Purpose

The MDR\_Reference\_Document type corresponds to Reference\_Document of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Reference_Document AS
(
    reference_document_identifier String
    reference_document_type_description Text
    reference_document_language_identifier MDR_Language_Identification
    reference_document_notation MDR_Notation
    reference_document_title Text
    reference_provider MDR_Organization
    reference_document_uri String
)
```

#### 4.2.11 MDR\_Individual Type

##### Purpose

The MDR\_Individual type corresponds to Individual of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Individual AS
(
    name MDR_Sign
)
```

#### 4.2.12 MDR\_Contact Type

##### Purpose

The MDR\_Contact type corresponds to Contact of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Contact AS
```

```
(
    contact_individual    MDR_Individual
    contact_organization  MDR_Organization
    contact_title        MDR_Sign
    contact_mail_address MDR_Postal_Address
    contact_phone        MDR_Phone_Number
    contact_email        String
)
```

#### 4.2.13 MDR\_Slot Type

##### Purpose

The MDR\_Slot type corresponds to Slot of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Slot AS
(
    slot_name    String
    slot_value   String
    slot_type    String
)
```

#### 4.2.14 MDR\_Namespace Type

##### Purpose

The MDR\_Namespace type corresponds to Namespace of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Namespace AS
(
    naming_authority    MDR_Organization
    one_name_per_item_indicator Boolean
    one_item_per_name_indicator Boolean
    mandatory_naming_convention_indicator Boolean
    shorthand_prefix    String
    namespace_scheme_reference MDR_Sign
)
```

)

#### 4.2.15 MDR\_Scoped\_Identifier Type

##### Purpose

The MDR\_Scoped\_Identifier type corresponds to Scoped\_Identifier of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Scoped_Identifier AS
```

```
(  
    identifier    String  
    full_expansion String  
    shorthand_expansion String  
)
```

#### 4.2.16 MDR\_Naming\_Convention Type

##### Purpose

The MDR\_Naming\_Convention type corresponds to Naming\_Convention of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Naming_Convention AS
```

```
(  
    scope_rule    Text  
    authority_rule Text  
    semantic_rule  Text  
    syntactic_rule Text  
    lexical_rule   Text  
)
```

#### 4.2.17 MDR\_Designation Type

##### Purpose

The MDR\_Designation type corresponds to Designation of the metamodel of ISO/IEC 11179-3.

##### Definition

```

CREATE TYPE MDR_Designation AS
(
    designation_sign    MDR_Sign
    designation_language    MDR_Language_Identification
)

```

#### 4.2.18 MDR\_Definition Type

##### Purpose

The MDR\_Definition type corresponds to Definition of the metamodel of ISO/IEC 11179-3.

##### Definition

```

CREATE TYPE MDR_Definition AS
(
    definition_text    Text
    definition_language    MDR_Language_Identification
    definition_source_reference    MDR_Reference_Document
)

```

#### 4.2.19 MDR\_Context Type

##### Purpose

The MDR\_Context type corresponds to Context of the metamodel of ISO/IEC 11179-3.

##### Definition

```

CREATE TYPE MDR_Context AS
(
)

```

#### 4.2.20 MDR\_Designation\_Context Type

##### Purpose

The MDR\_Designation\_Context type corresponds to Designation\_Context of the metamodel of ISO/IEC 11179-3.

##### Definition

```

CREATE TYPE MDR_Designation_Context AS
(
    designation_acceptability    MDR_Acceptability
)

```

)

#### 4.2.21 MDR\_Definition\_Context Type

##### Purpose

The MDR\_Definition\_Context type corresponds to Definition\_Context of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Definition_Context AS
(
    definition_acceptability MDR_Acceptability
)
```

#### 4.2.22 MDR\_Acceptability Type

##### Purpose

The MDR\_Acceptability type corresponds to Acceptability of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Acceptability AS
(
    preferred Text
    accepted Text
    deprecated Text
    obsolete Text
    superseded Text
)
```

#### 4.2.23 MDR\_Registry\_Specification Type

##### Purpose

The MDR\_Registry\_Specification type corresponds to Registry\_Specification of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Registry_Specification AS
(
```

```

registry_name    MDR_Sign
registry_comment Text
registry_web_address    String
registry_standard    String
registry_conformance_level    String
registry_primary_language    MDR_Language_Identification
registry_character_repertoire    String
registry_reference_document_identifier_form    String
registry_representation_class_scheme    MDR_Concept_System
registry_context    MDR_Context
)

```

#### 4.2.24 MDR\_Registrar Type

##### Purpose

The MDR\_Registrar type corresponds to Registrar of the metamodel of ISO/IEC 11179-3.

##### Definition

```

CREATE TYPE MDR_Registrar under MDR_Contact AS
(
    registrar_identifier    String
)

```

#### 4.2.25 MDR\_Stewardship\_Record Type

##### Purpose

The MDR\_Stewardship\_Record type corresponds to Stewardship\_Record of the metamodel of ISO/IEC 11179-3.

##### Definition

```

CREATE TYPE MDR_Stewardship_Record AS
(
    stewardship_organization    MDR_Organization
    stewardship_contact    MDR_Contact
)

```

#### 4.2.26 MDR\_Submission\_Record Type

##### Purpose

The MDR\_Submission\_Record type corresponds to Submission\_Record of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Submission_Record AS
(
    submitter    MDR_Organization
    submission_contact  MDR_Contact
)
```

#### 4.2.27 MDR\_Reference Type

##### Purpose

The MDR\_Reference type corresponds to Reference of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Reference AS
(
    reference_type  String
)
```

#### 4.2.28 MDR\_Registration\_State Type

##### Purpose

The MDR\_Registration\_State type corresponds to Registration\_State of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Registration_State AS
(
    registration_status  String
    effective_date       Datetime
    until_date           Datetime
    administrative_note  Text
    unresolved_issue     Text
)
```

```
        administrative_status String
        previous_state MDR_Registration_State
    )
```

#### 4.2.29 MDR\_Registration Type

##### Purpose

The MDR\_Registration type corresponds to Registration of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Registration AS
(
    registration_state MDR_Registration_State
)
```

#### 4.2.30 MDR\_Registration\_Authority Type

##### Purpose

The MDR\_Registration\_Authority type corresponds to Registration\_Authority of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Registration_Authority under MDR_Organization AS
(
    registration_authority_identifier MDR_Registration_Authority_Identifier
    documentation_language_identifier MDR_Language_Identification
)
```

#### 4.2.31 MDR\_Concept\_System Type

##### Purpose

The MDR\_Concept\_System type corresponds to Concept\_System of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Concept_System AS
(
    concept_system_notation MDR_Notation
)
```

#### 4.2.32 MDR\_Concept Type

##### Purpose

The MDR\_Concept type corresponds to Concept of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Concept AS  
(  
)
```

#### 4.2.33 MDR\_Assertion Type

##### Purpose

The MDR\_Assertion type corresponds to Assertion of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Assertion AS  
(  
    assertion_formula    Text  
)
```

#### 4.2.34 MDR\_Link Type

##### Purpose

The MDR\_Link type corresponds to Link of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Link under MDR_Assertion AS  
(  
)
```

#### 4.2.35 MDR\_Relation Type

##### Purpose

The MDR\_Relation type corresponds to Relation of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Relation under MDR_Concept AS  
(
```

```
        arity MDR_Natural_Range
    )
```

#### 4.2.36 MDR\_Link\_End Type

##### Purpose

The MDR\_Link\_End type corresponds to Link\_End of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Link_End AS
(
)
```

#### 4.2.37 MDR\_Relation\_Role Type

##### Purpose

The MDR\_Relation\_Role type corresponds to Relation\_Role of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Relation_Role under MDR_Concept AS
(
    Multiplicity MDR_Natural_Range
    ordinal Integer
)
```

#### 4.2.38 MDR\_Classification Type

##### Purpose

The MDR\_Classification type corresponds to Classification of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Classification AS
(
)
```

#### 4.2.39 MDR\_Classifiable\_Item Type

##### Purpose

The MDR\_Classifiable\_Item type corresponds to Classifiable\_Item of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Classifiable_Item AS
```

```
(  
  
)
```

#### 4.2.40 MDR\_Binary\_Relation Type

##### Purpose

The MDR\_Binary\_Relation type corresponds to Binary\_Relation of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Binary_Relation under MDR_Relation AS
```

```
(  
  
    reflexivity    MDR_Reflexivity  
  
    symmetry      MDR_Symmetry  
  
    transitivity  MDR_Transitivity  
  
)
```

#### 4.2.41 MDR\_Reflexivity Type

##### Purpose

The MDR\_Reflexivity type corresponds to Reflexivity of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Reflexivity AS
```

```
(  
  
    reflexive      Text  
  
    irreflexive    Text  
  
    antireflexive Text  
  
)
```

#### 4.2.42 MDR\_Symmetry Type

##### Purpose

The MDR\_Symmetry type corresponds to Symmetry of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Symmetry AS
```

```
(  
    symmetric    Text  
    asymmetric  Text  
    antisymmetric Text  
)
```

#### **4.2.43 MDR\_Transitivity Type**

##### **Purpose**

The MDR\_Transitivity type corresponds to Transitivity of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Transitivity AS
```

```
(  
    transitive    Text  
    intransitive  Text  
    antitransitive Text  
)
```

#### **4.2.44 MDR\_Data\_Element\_Concept Type**

##### **Purpose**

The MDR\_Data\_Element\_Concept type corresponds to Data\_Element\_Concept of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Data_Element_Concept under MDR_Concept AS
```

```
(  
  
)
```

#### **4.2.45 MDR\_Data\_Element Type**

##### **Purpose**

The MDR\_Data\_Element type corresponds to Data\_Element of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Data_Element AS
```

```
(  
    data_element_precision Integer  
)
```

#### 4.2.46 MDR\_Conceptual\_Domain Type

##### Purpose

The MDR\_Conceptual\_Domain type corresponds to Conceptual\_Domain of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Conceptual_Domain under MDR_Concept AS  
  
(  
    dimensionality MDR_Dimensionality  
)
```

#### 4.2.47 MDR\_Value\_Domain Type

##### Purpose

The MDR\_Value\_Domain type corresponds to Value\_Domain of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Value_Domain AS  
  
(  
    value_domain_datatype Datatype  
    value_domain_maximum_character_quantity Integer  
    value_domain_format String  
    value_domain_unit_of_measure MDR_Unit_of_Measure  
)
```

#### 4.2.48 MDR\_Object\_Class Type

##### Purpose

The MDR\_Object\_Class type corresponds to Object\_Class of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Object_Class under MDR_Concept AS
```

```
(  
)
```

#### 4.2.49 MDR\_Characteristic Type

##### **Purpose**

The MDR\_Characteristic type corresponds to Characteristic of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Characteristic under MDR_Concept AS
```

```
(  
)
```

#### 4.2.50 MDR\_Enumerated\_Conceptual\_Domain Type

##### **Purpose**

The MDR\_Enumerated\_Conceptual\_Domain type corresponds to Enumerated\_Conceptual\_Domain of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Enumerated_Conceptual_Domain under MDR_Conceptual_Domain AS
```

```
(  
)
```

#### 4.2.51 MDR\_Described\_Conceptual\_Domain Type

##### **Purpose**

The MDR\_Described\_Conceptual\_Domain type corresponds to Described\_Conceptual\_Domain of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Described_Conceptual_Domain under MDR_Conceptual_Domain AS
```

```
(  
    conceptual_domain_description    Text  
)
```

#### 4.2.52 MDR\_Value\_Meaning Type

##### Purpose

The MDR\_Value\_Meaning type corresponds to Value\_Meaning of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Value_Meaning under MDR_Concept AS  
  
(  
    value_meaning_begin_date    Date  
    value_meaning_end_date      Date  
  
)
```

#### 4.2.53 MDR\_Permissible\_Value Type

##### Purpose

The MDR\_Permissible\_Value type corresponds to Permissible\_Value of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Permissible_Value AS  
  
(  
    permitted_value    MDR_Value  
    permissible_value_begin_date    Date  
    permissible_value_end_date      Date  
  
)
```

#### 4.2.54 MDR\_Enumerated\_Value\_Domain Type

##### Purpose

The MDR\_Enumerated\_Value\_Domain type corresponds to Enumerated\_Value\_Domain of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Enumerated_Value_Domain under MDR_Value_Domain AS  
  
(  
  
)
```

#### 4.2.55 MDR\_Described\_Value\_Domain Type

##### Purpose

The MDR\_Described\_Value\_Domain type corresponds to Described\_Value\_Domain of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Described_Value_Domain under MDR_Value_Domain AS  
  
(  
  
    value_domain_description Text  
  
)
```

#### 4.2.56 MDR\_Datatype Type

##### Purpose

The MDR\_Datatype type corresponds to Datatype of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Datatype AS  
  
(  
  
    datatype_name String  
  
    datatype_description Text  
  
    datatype_scheme_reference MDR_Sign  
  
    datatype_annotation Text  
  
)
```

#### 4.2.57 MDR\_Dimensionality Type

##### Purpose

The MDR\_Dimensionality type corresponds to Dimensionality of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Dimensionality under MDR_Concept AS  
  
(  
  
    coordinate_indicator Boolean  
  
)
```

#### 4.2.58 MDR\_Unit\_of\_Measure Type

##### Purpose

The MDR\_Unit\_of\_Measure type corresponds to Unit\_of\_Measure of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Unit_of_Measure under MDR_Concept AS
```

```
(  
  
)
```

#### 4.2.59 MDR\_Data\_Element\_Example Type

##### Purpose

The MDR\_Data\_Element\_Example type corresponds to Data\_Element\_Example of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Data_Element_Example AS
```

```
(  
  
    example_item    Text  
  
)
```

#### 4.2.60 MDR\_Data\_Element\_Derivation Type

##### Purpose

The MDR\_Data\_Element\_Derivation type corresponds to Data\_Element\_Derivation of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Data_Element_Derivation AS
```

```
(  
  
)
```

#### 4.2.61 MDR\_Derivation\_Rule Type

##### Purpose

The MDR\_Derivation\_Rule type corresponds to Derivation\_Rule of the metamodel of ISO/IEC 11179-3.

##### Definition

```
CREATE TYPE MDR_Derivation_Rule AS
(
    derivation_rule_specification    Text
    derivation_rule_notation        MDR_Notation
)
```

#### **4.2.62 MDR\_Natural\_Range Type**

##### **Purpose**

The MDR\_Natural\_Range type corresponds to Natural\_Range of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Natural_Range AS
```

```
(
)
```

#### **4.2.63 MDR\_Value Type**

##### **Purpose**

The MDR\_Value type corresponds to Value of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Value AS
```

```
(
)
```

#### **4.2.64 MDR\_Sign Type**

##### **Purpose**

The MDR\_Sign type corresponds to Sign of the metamodel of ISO/IEC 11179-3.

##### **Definition**

```
CREATE TYPE MDR_Sign AS
```

```
(
)
```

#### **4.2.65 MDR\_Notation Type**

##### **Purpose**

The MDR\_Notation type corresponds to Notation of the metamodel of ISO/IEC 11179-3.

### Definition

```
CREATE TYPE MDR_Notation AS
```

```
(  
  
)
```

### 4.2.66 MDR\_Postal\_Address Type

#### Purpose

The MDR\_Postal\_Address type corresponds to Postal\_Address of the metamodel of ISO/IEC 11179-3.

#### Definition

```
CREATE TYPE MDR_Postal_Address AS
```

```
(  
  
)
```

### 4.2.67 MDR\_Phone\_Number Type

#### Purpose

The MDR\_Phone\_Number type corresponds to Phone\_Number of the metamodel of ISO/IEC 11179-3.

#### Definition

```
CREATE TYPE MDR_Phone_Number AS
```

```
(  
  
)
```

### 4.2.68 MDR\_Datetime Type

#### Purpose

The MDR\_Datetime type corresponds to Datetime of the metamodel of ISO/IEC 11179-3.

#### Definition

```
CREATE TYPE MDR_Datetime AS
```

```
(  
  
)
```

## **5 Conformance**

### **5.1 Requirements for conformance**

A conforming implementation supports user-defined types given by this part of ISO/IEC 13249

### **5.2 Claims of conformance**

Claims of conformance to this part of ISO/IEC 13249 shall state:

- 1) The definitions for all elements that this part of ISO/IEC 13249 specifies as implementation-defined.

## Annex A

(Informative)

### Consolidated Class Hierarchy

Figure A-1 shows the hierarchy of metamodel defined in ISO 11179-3.

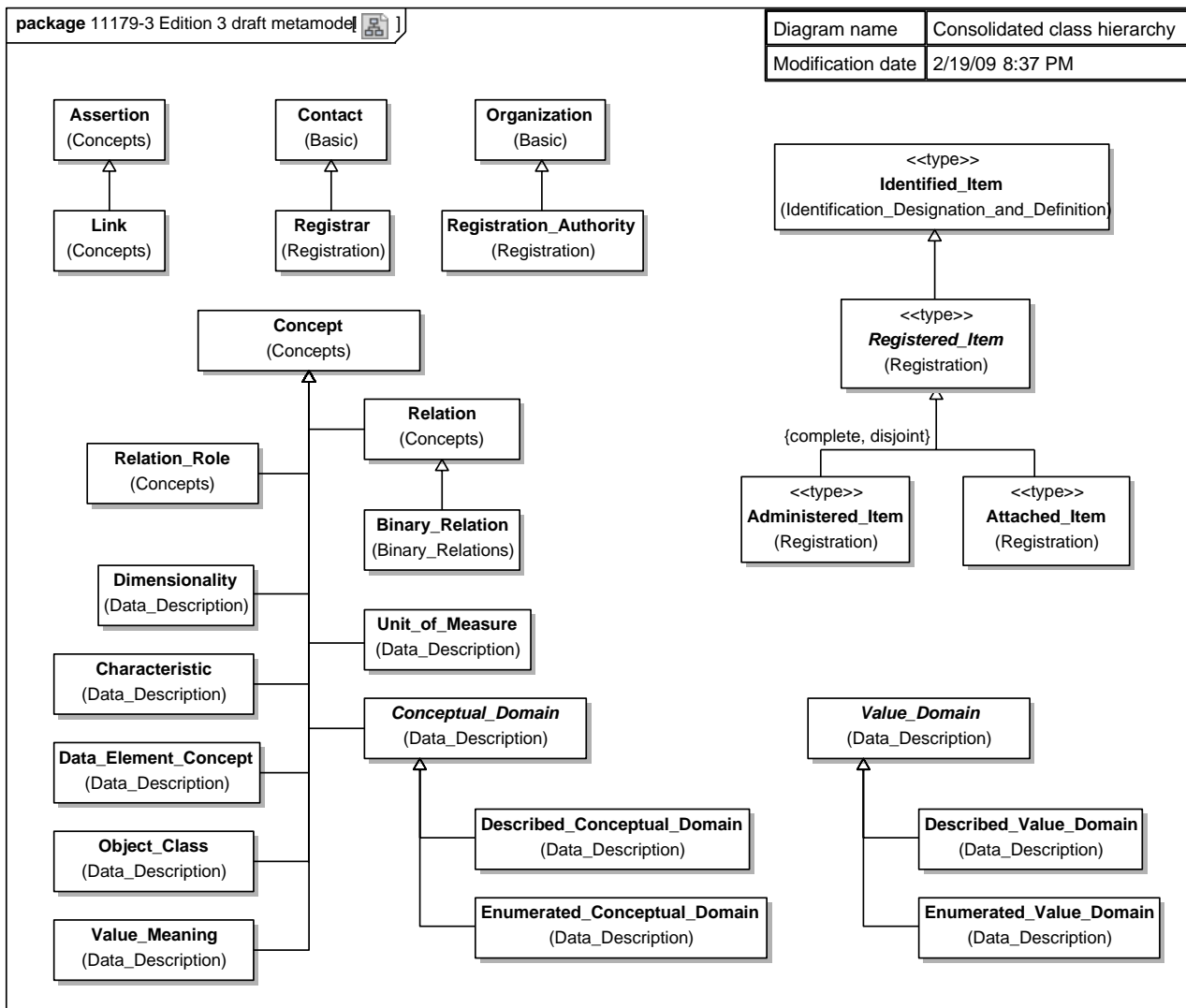


Figure A-1: Consolidated Class Hierarchy

In Figure A, each class corresponds to each user-defined type that is defined in this part of ISO 13249.

## Annex B

(Informative)

### Relationships and Relevant Classes of ISO/IEC 11179

A metamodel is a model that describes other models. A metamodel provides a mechanism for understanding the precise structure and components of the specified models. The metamodel for ISO/IEC 11179-3 describes the information model of a Metadata Registry. As a conceptual data model, there may be more than one field per attribute and some entities and relationships may be implemented as fields. There is no intent that an implementation should have a table for each relationship or class. Therefore, the conceptual model may be represented on the different ways according to implementation fields such as relational database, XML database, object-oriented system, triple storage system, and so on.

The following table include class names that have the special relationships (e.g., aggregation and composition) between classes, which are defined in ISO/IEC 11179-3. The relationships can be realized in many different ways depending on physical environment or the intention of designers, developers, and so on. Therefore, this part does not contain how to handle the relationships.

Class Name \ Relationship	Composition(C)	Aggregation(A)	Target Class Name
Namespace	C		Scoped_Identifier
Namespace		A	Designation
Designatable_Item	C		Designation
Designatable_Item	C		Definition
Administrered_Item	C		Attached_Item
Concept System	C	A	Concept
Relation	C		Relation_Role
Concept System		A	Assertion
Enumerated_Value_Domain		A	Permissible_Value
Enumerated_Conceptual_Domain		A	Value_Meaning
Dimensionality		A	Unit_of_Measure

**Table B-1: Relationships and Relevant Classes of ISO/IEC 11179**