



Title: SQL/MM - Part 8: MDR Working Draft for 2th Edition

Author: Dongwon Jeong

Status: WD

Source: Editor's contribution

Abstract: This includes Working Draft.

References:

WG4: cju005r1, 1WD-08-MDR-2009-07, June 2009.

**Information technology — Database languages —
SQL Multimedia and Application Packages —
Part 8: MDR**

Blank page

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 Administered_Item type.....	5
4.2.2 Administration_Record type	5
4.2.3 Contact type	5
4.2.4 Item_Identifier type.....	6
4.2.5 Language_Identification type.....	6
4.2.6 Organization type	7
4.2.7 Reference_Document type	7
4.2.8 Registrar type	7
4.2.9 Registration_Authority type	8
4.2.10 Registration_Authority_Identifier type.....	8
4.2.11 Stewardship type.....	8
4.2.12 Submission type.....	9
4.2.13 Context (for Administered Item) type	9
4.2.14 Terminological_Entry type	9
4.2.15 Language_Section type	9
4.2.16 Definition (of Administered Item) type	10
4.2.17 Designation (of Administered Item) type	10
4.2.18 Classification_Scheme type.....	10
4.2.19 Classification_Scheme_Item type	11
4.2.20 Classification_Scheme_Item_Relationship type.....	11
4.2.21 Object_Class type	11
4.2.22 Property type	12
4.2.23 Data_Element_Concept type.....	12
4.2.24 Conceptual_Domain type	12
4.2.25 Enumerated_Conceptual_Domain type	13
4.2.26 Value_Meaning type	13
4.2.27 Non_enumerated_Conceptual_Domain type.....	13
4.2.28 Value_Domain type	14
4.2.29 Enumerated_Value_Domain type	14
4.2.30 Permissible_Value type	14
4.2.31 Value type.....	15
4.2.32 Non_enumerated_Value_Domain type.....	15
4.2.33 Datatype type	15
4.2.34 Unit_of_Measure type	16
4.2.35 Data_Element type	16

4.2.36	Representation_Class type.....	16
4.2.37	Data_Element_Example type.....	16
4.2.38	Derivation_Rule type.....	17
4.2.39	Data_Element_Derivation type.....	17
4.2.40	Concept type.....	17
4.2.41	Data_Element_Concept_Relationship type.....	18
4.2.42	Concept_Relationship type.....	18
4.2.43	Value_Domain_Relationship type.....	18
4.2.44	Conceptual_Domain_Relationship type.....	19
5	Conformance.....	20
5.1	Requirements for conformance.....	20
5.2	Claims of conformance.....	20

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: MDR*

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: MDR

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.
- 5) Clause 5, "Metadata Registry Types ", defines user-defined types for metamodel of metadata registry.
- 6) Clause 6, "Conformance", defines the criteria for conformance to this part of ISO/IEC 13249.

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

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 and associated routines,
- f) covers specifications for retrieval of metadata in a registry,
- g) does not cover specifications to insert, delete, and modify metadata in a registry

— User-defined types of metadata registry are generic to metadata registry handling. It addresses the need to retrieve metadata based on metamodel of ISO/IEC 11179 such as data element, conceptual domain, value domain, data element concept, and so on.

— User-defined types reflect attributes of classes of metamodel of ISO/IEC 11179.

— A MDR user-defined type does not redefine the database language SQL directly.

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 terms 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 terms 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 terms 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 advantage for data management, there still remain several problems. For facilitating usability of MDR, the following problems should be resolved for facilitating its usability:

- 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.

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 covers the definition of operational architectures and processes for the consistent access that should support transparency regardless of registries with different database structures.

This part specifies user-defined types for the ISO/IEC 11179 standard. In this part, a user can create user-defined types which are based on MDR schema. We can guarantee the valid access method to retrieve metadata because the user-defined types reflect all information of the ISO/IEC 11179 standard.

4.2 MDR Types

Classes of Metadata Registry specification are an abstraction for attributes of metamodel of ISO/IEC 11179, using the following attributes:

- Each class has several attributes to represent its properties
- Attributes correspond to columns of a table;

The following MDR types are defined: Administered_Item, Administration_Record, Contact, Item_Identifier, Language_Identification, Organization, Reference_Document, Registrar, Registration_Authority, Registration_Authority_Identifier, Stewardship, Submission, Context, Terminological_Entry, Language_Section, Definition, Designation, Classification_Scheme, Classification_Scheme_Item, Classification_Scheme_Item_Relationship, Object_Class, Property, Data_Element_Concept, Conceptual_Domain, Enumerated_Conceptual_Domain, Value_Meaning, Non_enumerated_Conceptual_Domain, Value_Domain, Enumerated_Value_Domain, Permissible_Value, Value, Non_enumerated_Value_Domain, Datatype, Unit_of_Measure, Data_Element, Representation_Class, Data_Element_Example, Derivation_Rule, Data_Element_Derivation, Concept, Data_Element_Concept_Relationship, Concept_Relationship, Value_Domain_Relationship, and, Conceptual_Domain_Relationship.

4.2.1 Administered_Item type

Purpose

Provide the definition of a structured data type for the Administered Item class in ISO/IEC 11179.

Definition

```
CREATE TYPE Administered_Item AS  
(  
    administered_item_administration_record Administration_Record  
)
```

4.2.2 Administration_Record type

Purpose

Provide the definition of a structured data type for the Administered Record class in ISO/IEC 11179.

Definition

```
CREATE TYPE Administration_Record AS  
(  
    administered_item_identifier Item_Identifier,  
    administrative_note CHARACTER VARYING,  
    administrative_status CHARACTER VARYING,  
    change_description CHARACTER VARYING,  
    creation_date Date,  
    effective_date Date,  
    explanatory_comment CHARACTER VARYING,  
    last_change_date Date,  
    origin CHARACTER VARYING,  
    registration_status CHARACTER VARYING,  
    unresolved_issue CHARACTER VARYING,  
    until_date Date  
)
```

4.2.3 Contact type

Purpose

Provide the definition of a structured data type for the Contact class in ISO/IEC 11179.

Definition

```
CREATE TYPE Contact AS  
  
(  
    contact_name CHARACTER VARYING,  
    contact_title CHARACTER VARYING,  
    contact_information CHARACTER VARYING  
)
```

4.2.4 Item_Identifier type

Purpose

Provide the definition of a structured data type for the Item Identifier class in ISO/IEC 11179.

Definition

```
CREATE TYPE Item_identifier AS  
  
(  
    item_registration_authority_identifier Registration_Authority_Identifier,  
    data_identifier CHARACTER VARYING,  
    version CHARACTER VARYING  
)
```

4.2.5 Language_Identification type

Purpose

Provide the definition of a structured data type for the Language Identification class in ISO/IEC 11179.

Definition

```
CREATE TYPE Language_Identification AS  
  
(  
    language_identifier CHARACTER VARYING,  
    country_identifier CHARACTER VARYING  
)
```

4.2.6 Organization type

Purpose

Provide the definition of a structured data type for the Organization class in ISO/IEC 11179.

Definition

```
CREATE TYPE Organization AS
(
  organization_name CHARACTER VARYING,
  organization_mail_address CHARACTER VARYING
)
```

4.2.7 Reference_Document type

Purpose

Provide the definition of a structured data type for the Reference Document class in ISO/IEC 11179.

Definition

```
CREATE TYPE Reference_Document AS
(
  reference_document_identifier CHARACTER VARYING,
  reference_document_language_identifier Language_Identification,
  reference_document_title CHARACTER VARYING,
  reference_document_type_description CHARACTER VARYING
)
```

4.2.8 Registrar type

Purpose

Provide the definition of a structured data type for the Registrar class in ISO/IEC 11179.

Definition

```
CREATE TYPE Registrar AS
(
  registrar_identifier CHARACTER VARYING,
  registrar_contact Contact
)
```

4.2.9 Registration_Authority type

Purpose

Provide the definition of a structured data type for the Registration Authority class in ISO/IEC 11179.

Definition

```
CREATE TYPE Registration_Authority UNDER Organization AS
(
  registration_authority_identifier Registration_Authority_Identifier,
  documentation_language_identifier Language_Identification
)
```

4.2.10 Registration_Authority_Identifier type

Purpose

Provide the definition of a structured data type for the Registration Authority Identifier class in ISO/IEC 11179.

Definition

```
CREATE TYPE Registration_Authority_Identifier AS
(
  international_code_designator CHARACTER VARYING,
  organization_identifier CHARACTER VARYING,
  organization_part_identifier CHARACTER VARYING,
  OPI_source CHARACTER VARYING
)
```

4.2.11 Stewardship type

Purpose

Provide the definition of a structured data type for the Stewardship class in ISO/IEC 11179.

Definition

```
CREATE TYPE Stewardship AS
(
  stewardship_contact Contact
)
```

4.2.12 Submission type

Purpose

Provide the definition of a structured data type for the Submission class in ISO/IEC 11179.

Definition

```
CREATE TYPE Submission AS
(
    submission_contact Contact
)
```

4.2.13 Context (for Administered Item) type

Purpose

Provide the definition of a structured data type for the Context class in ISO/IEC 11179.

Definition

```
CREATE TYPE Context UNDER Administered_Item AS
(
    context_description CHARACTER VARYING,
    context_description_language_identifier Language_Identification
)
```

4.2.14 Terminological_Entry type

Purpose

Provide the definition of a structured data type for the Terminological Entry class in ISO/IEC 11179.

Definition

```
CREATE TYPE Terminological_Entry AS
(
)
```

4.2.15 Language_Section type

Purpose

Provide the definition of a structured data type for the Language Section class in ISO/IEC 11179.

Definition

```
CREATE TYPE Language_Section AS  
(  
    language_section_language_identifier Language_Identification  
)
```

4.2.16 Definition (of Administered Item) type

Purpose

Provide the definition of a structured data type for the Definition class in ISO/IEC 11179.

Definition

```
CREATE TYPE Definition AS  
(  
    definition_text CHARACTER VARYING,  
    definition_source_reference Reference_Document,  
    preferred_definition BOOLEAN  
)
```

4.2.17 Designation (of Administered Item) type

Purpose

Provide the definition of a structured data type for the Designation class in ISO/IEC 11179.

Definition

```
CREATE TYPE Designation AS  
(  
    name CHARACTER VARYING,  
    preferred_designation BOOLEAN  
)
```

4.2.18 Classification_Scheme type

Purpose

Provide the definition of a structured data type for the Classification Scheme class in ISO/IEC 11179.

Definition

```
CREATE TYPE Classification_Scheme UNDER Administered_Item AS  
  
(  
    classification_scheme_type_name CHARACTER VARYING  
  
)
```

4.2.19 Classification_Scheme_Item type

Purpose

Provide the definition of a structured data type for the Classification Scheme Item class in ISO/IEC 11179.

Definition

```
CREATE TYPE Classification_Scheme_Item AS  
  
(  
    classification_scheme_item_type_name CHARACTER VARYING,  
    classification_scheme_item_value CHARACTER VARYING  
  
)
```

4.2.20 Classification_Scheme_Item_Relationship type

Purpose

Provide the definition of a structured data type for the Classification Scheme Item Relationship class in ISO/IEC 11179.

Definition

```
CREATE TYPE Classification_Scheme_Item_Relationship AS  
  
(  
    classification_scheme_item_relationship_type_description CHARACTER VARYING  
  
)
```

4.2.21 Object_Class type

Purpose

Provide the definition of a structured data type for the Object Class class in ISO/IEC 11179.

Definition

```
CREATE TYPE Object_Class UNDER Administered_Item AS  
  
(
```

)

4.2.22 Property type

Purpose

Provide the definition of a structured data type for the Property class in ISO/IEC 11179.

Definition

```
CREATE TYPE Property UNDER Administered_Item AS
```

```
(
```

```
)
```

4.2.23 Data_Element_Concept type

Purpose

Provide the definition of a structured data type for the Data Element Concept class in ISO/IEC 11179.

Definition

```
CREATE TYPE Data_Element_Concept UNDER Administered_Item AS
```

```
(
```

```
data_element_concept_object_class Object_Class,
```

```
data_element_concept_property Property,
```

```
object_class_qualifier CHARACTER VARYING,
```

```
property_qualifier CHARACTER VARYING
```

```
)
```

4.2.24 Conceptual_Domain type

Purpose

Provide the definition of a structured data type for the Conceptual Domain class in ISO/IEC 11179.

Definition

```
CREATE TYPE Conceptual_Domain UNDER Administered_Item AS
```

```
(
```

```
dimensionality CHARACTER VARYING
```

```
)
```

4.2.25 Enumerated_Conceptual_Domain type

Purpose

Provide the definition of a structured data type for the Enumerated Conceptual Domain class in ISO/IEC 11179.

Definition

```
CREATE TYPE Enumerated_Conceptual_Domain UNDER Conceptual_Domain AS  
  
(  
  
)
```

4.2.26 Value_Meaning type

Purpose

Provide the definition of a structured data type for the Value Meanings class in ISO/IEC 11179.

Definition

```
CREATE TYPE Value_Meaning AS  
  
(  
  
value_meaning_identifier CHARACTER VARYING,  
value_meaning_begin_date Date,  
value_meaning_description CHARACTER VARYING,  
value_meaning_end_date Date  
  
)
```

4.2.27 Non_enumerated_Conceptual_Domain type

Purpose

Provide the definition of a structured data type for the Non enumerated Conceptual Domain in ISO/IEC 11179

Definition

```
CREATE TYPE Non_enumerated_Conceptual_Domain UNDER Conceptual_Domain AS  
  
(  
  
non_enumerated_conceptual_domain_description CHARACTER VARYING  
  
)
```

4.2.28 Value_Domain type

Purpose

Provide the definition of a structured data type for the Value Domain in ISO/IEC 11179.

Definition

```
CREATE TYPE Value_Domain UNDER Administered_Item AS
(
  value_domain_datatype Datatype,
  value_domain_format CHARACTER VARYING,
  value_domain_maximum_character_quantity Integer,
  value_domain_unit_of_measure Unit_of_Measure
)
```

4.2.29 Enumerated_Value_Domain type

Purpose

Provide the definition of a structured data type for the Enumerated Value Domain in ISO/IEC 11179.

Definition

```
CREATE TYPE Enumerated_Value_Domain UNDER Value_Domain AS
(
)
```

4.2.30 Permissible_Value type

Purpose

Provide the definition of a structured data type for the Permissible Value in ISO/IEC 11179.

Definition

```
CREATE TYPE Permissible_Value AS
(
  permissible_value_begin_date Date,
  permissible_value_end_date Date
)
```

4.2.31 Value type

Purpose

Provide the definition of a structured data type for the Value in ISO/IEC 11179.

Definition

```
CREATE TYPE Value AS  
(  
    value_item CHARACTER VARYING  
)
```

4.2.32 Non_enumerated_Value_Domain type

Purpose

Provide the definition of a structured data type for the Non enumerated Value Domain in ISO/IEC 11179.

Definition

```
CREATE TYPE Non_enumerated_Value_Domain UNDER Value_Domain AS  
(  
    non_enumerated_value_domain_description CHARACTER VARYING  
)
```

4.2.33 Datatype type

Purpose

Provide the definition of a structured data type for the Datatype class in ISO/IEC 11179

Definition

```
CREATE TYPE Datatype AS  
(  
    datatype_name CHARACTER VARYING,  
    datatype_description CHARACTER VARYING,  
    datatype_schema_reference CHARACTER VARYING,  
    datatype_annotation CHARACTER VARYING  
)
```

4.2.34 Unit_of_Measure type

Purpose

Provide the definition of a structured data type for the Unit of Measure class in ISO/IEC 11179.

Definition

```
CREATE TYPE Unit_of_Measure AS
(
    unit_of_measure_name CHARACTER VARYING,
    unit_of_measure_precision Integer
)
```

4.2.35 Data_Element type

Purpose

Provide the definition of a structured data type for the Data Element class in ISO/IEC 11179.

Definition

```
CREATE TYPE Data_Element UNDER Administered_Item AS
(
    representation_class_qualifier CHARACTER VARYING,
    data_element_precision Integer
)
```

4.2.36 Representation_Class type

Purpose

Provide the definition of a structured data type for the Representation Class in ISO/IEC 11179.

Definition

```
CREATE TYPE Representation_Class UNDER Administered_Item AS
(
)
```

4.2.37 Data_Element_Example type

Purpose

Provide the definition of a structured data type for the Data Element Example class in ISO/IEC 11179.

Definition

```
CREATE TYPE Data_Element_Example AS
(
    data_element_example_item CHARACTER VARYING
)
```

4.2.38 Derivation_Rule type

Purpose

Provide the definition of a structured data type for the Derivation Rule class in ISO/IEC 11179.

Definition

```
CREATE TYPE Derivation_Rule AS
(
    derivation_rule_administration_record Administration_Record,
    derivation_rule_specification CHARACTER VARYING
)
```

4.2.39 Data_Element_Derivation type

Purpose

Provide the definition of a structured data type for the Data Element Derivation class in ISO/IEC 11179.

Definition

```
CREATE TYPE Data_Element_Derivation AS
(
)
```

4.2.40 Concept type

Purpose

Provide the definition of a structured data type for the Concept class in ISO/IEC 11179.

Definition

```
CREATE TYPE Concept UNDER Object_Class AS
(
```

)

4.2.41 Data_Element_Concept_Relationship type

Purpose

Provide the definition of a structured data type for the Data Element Concept Relationship class in ISO/IEC 11179.

Definition

```
CREATE TYPE Data_Element_Concept_Relationship AS
(
  data_element_concept_relationship_type_description CHARACTER VARYING
)
```

4.2.42 Concept_Relationship type

Purpose

Provide the definition of a structured data type for the Concept Relationship class in ISO/IEC 11179.

Definition

```
CREATE TYPE Concept_Relationship UNDER Object_Class AS
(
  concept_relationship_type_description CHARACTER VARYING
)
```

4.2.43 Value_Domain_Relationship type

Purpose

Provide the definition of a structured data type for the Value Domain Relationship class in ISO/IEC 11179.

Definition

```
CREATE TYPE Value_Domain_Relationship AS
(
  value_domain_relationship_type_description CHARACTER VARYING
)
```

4.2.44 Conceptual_Domain_Relationship type

Purpose

Provide the definition of a structured data type for the Conceptual Domain Relationship class in ISO/IEC 11179.

Definition

```
CREATE TYPE Conceptual_Domain_Relationship AS  
(  
    conceptual_domain_relationship_type_description CHARACTER VARYING  
)
```

5 Conformance

5.1 Requirements for conformance

A conforming implementation supports a user-defined type by:

- 1) providing a user-defined type with the name as specified by this part of ISO/IEC 13249,
- 2) A conforming implementation does not need to support any of the attributes of user-defined types.

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.