



NEW WORK ITEM PROPOSAL	
Date of presentation May. 28, 2008	Reference number (to be given by the Secretariat)
Proposer KATS	ISO/TC / SC 32 N
Secretariat SN	

A proposal for a new work item within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and, in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, or organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

See overleaf for guidance on when to use this form.

IMPORTANT NOTE: Proposals without adequate justification risk rejection or referral to originator.

Guidelines for proposing and justifying a new work item are given overleaf.

Proposal (to be completed by the proposer)

Title of proposal (in the case of an amendment, revision or a new part of an existing document, show the reference number and current title)	
English title	SQL/MM Metadata Registry (SQL/MM MDR)
French title (if available)	
Scope of proposed project	
The scope of proposed NWIP covers an access method for consistent exchanging and sharing of metadata in various application fields. This NWIP is also proposed to support easier building and using of registries by users. The method will enable valid and precise registries building and management in accordance with the ISO/IEC 11179 standard, and facilitates usage of the standard. This NWIP includes the specifications for management of metadata registries, and the specifications are defined in the same way with SQL packages such as SQL/MM Spatial, SQL/MM Mining, SQL/MM Still Image, and so on. The NWIP covers the definition of operational architectures and processes for the consistent access that should support transparency regardless of registries with different database structures. This NWIP covers specifications for retrieval, update, delete, insert of metadata including creation of schema structures for registries.	
Concerns known patented items (see ISO/IEC Directives Part 1 for important guidance)	
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If "Yes", provide full information as annex	
Envisaged publication type (indicate one of the following, if possible)	
<input checked="" type="checkbox"/> International Standard	<input type="checkbox"/> Technical Specification
<input type="checkbox"/> Publicly Available Specification	<input type="checkbox"/> Technical Report

Purpose and justification (attach a separate page as annex, if necessary)	
<p>1. The specific aims and reasons for the standardization activity: Registries have been used for systematic management of metadata describing data. A variety of registry frameworks has been developed for applications fields, and many registries have been built for management of metadata. For valid and exact registry building, exchanging, and sharing, the following problems should be resolved: (1) No consistent access method; (2) Invalid registries; (3) Difficulty of registry management system development. This NWIP therefore aims to provide a consistent access method for building of valid registries.</p> <p>2. The main interests that might benefit from or be affected by the activity</p> <p>2-1. Industry: Since many registries have been developing in many applications fields related with bibliographic information, environmental data, transportation knowledge including e-Business field, most industrial sectors will benefit from this standard. Any application area where the management of registries is critical, will also be a beneficiary of this NWIP.</p> <p>2-2. Consumers: The consumers of this activity will include ordinary users of registry services to all companies and government agencies.</p> <p>2-3. Governments: The governments, who are in general the major producers and consumers of metadata, are trying to integrate relevant data and provide high-quality services. This standard will be used as a method to address their goal.</p> <p>3. Feasibility of the activity: Even though many registries and management systems have been developed for systematic management of metadata, no consistent and standardized access method has been provided to retrieve and update metadata in registries. There is also no policy to guarantee building of valid registries, and the development of registry management systems involves high cost. To resolve these issues and facilitate usability of the standard, a standardized and consistent access method should be developed.</p> <p>4. Timeliness of the standard to be produced: Since many registries have been built and also now new registries are being constructed, the standardization project of this proposal is very timely.</p> <p>5. Urgency of the activity: Valid building of metadata registries is the most important issue. Also a method to transparently access heterogeneous MDRs is one of the key issues. Since the proposed approach is a proved solution for the aforementioned issues, the standardization effort is required urgently.</p> <p>6. The benefits to be gained by the implementation of the proposed standard: We expect many benefits from the implementation of this standard and a summary of major benefits is as follows: First, the proposed standard will guarantee creation of valid registries and allows easy registry building. Second, it will support a consistent and standardized access protocol to registries regardless of their physical store structure. Third, it will facilitate development of high-quality systems, applications, and services.</p> <p>7. Subject of regulation or harmonization of the existing regulations: Not Available.</p>	
Target date for availability (date by which publication is considered to be necessary) December 2011	
Proposed development track <input type="checkbox"/> 1 (24 months) <input type="checkbox"/> 2 (36 months - default) <input checked="" type="checkbox"/> 3 (48 months)	
Relevant documents to be considered None	
Relationship of project to activities of other international bodies None	
Liaison organizations	Need for coordination with: <input checked="" type="checkbox"/> IEC <input type="checkbox"/> CEN <input type="checkbox"/> Other (please specify)

New work item proposal

<p>Preparatory work (at a minimum an outline should be included with the proposal)</p> <p><input type="checkbox"/> A draft is attached <input checked="" type="checkbox"/> An outline is attached. It is possible to supply a draft by 30 November 2008</p> <p>The proposer or the proposer's organization is prepared to undertake the preparatory work required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>		
<p>Proposed Project Leader (name and address)</p> <p>Name : Dr. Dongwon Jeong</p> <p>Address : San 68, Miryong-dong, Gunsan, Jeollabuk-do, 573-701 Korea</p> <p>Contact Information : Korea</p> <p>Tel : +82-63-469-4617</p> <p>Fax : +82-63-469-4611</p> <p>eMail : djeong@kunsan.ac.kr)</p>		<p>Name and signature of the Proposer (include contact information)</p> <p>Kaphong CHOI, KATS</p>
<p>Comments of the TC or SC Secretariat</p> <p>Supplementary information relating to the proposal</p> <p><input checked="" type="checkbox"/> This proposal relates to a new ISO document;</p> <p><input type="checkbox"/> This proposal relates to the amendment/revision of an existing ISO document;</p> <p><input type="checkbox"/> This proposal relates to the adoption as an active project of an item currently registered as a Preliminary Work Item;</p> <p><input type="checkbox"/> This proposal relates to the re-establishment of a cancelled project as an active project.</p> <p>Other:</p> <p>Voting information</p> <p>The ballot associated with this proposal comprises a vote on:</p> <p><input checked="" type="checkbox"/> Adoption of the proposal as a new project</p> <p><input type="checkbox"/> Adoption of the associated draft as a committee draft (CD) (see ISO Form 5, question 2.3.1)</p> <p><input type="checkbox"/> Adoption of the associated draft for submission for the enquiry vote (DIS or equivalent) (see ISO Form 5, question 2.3.2)</p> <p>Other:</p>		
<p>Annex(es) are included with this proposal (give details)</p> <p><input checked="" type="checkbox"/> Annex 1: An Elaborated Purpose and Justification of the NWIP</p>		
Date of circulation	Closing date for voting	Signature of the TC or SC Secretary

Use this form to propose:

- a) a new ISO document (including a new part to an existing document), or the amendment/revision of an existing ISO document;
- b) the establishment as an active project of a preliminary work item, or the re-establishment of a cancelled project;
- c) the change in the type of an existing document, e.g. conversion of a Technical Specification into an International Standard.

This form is not intended for use to propose an action following a systematic review - use ISO Form 21 for that purpose.

Proposals for correction (i.e. proposals for a Technical Corrigendum) should be submitted in writing directly to the secretariat concerned.

Guidelines on the completion of a proposal for a new work item

(see also the ISO/IEC Directives Part 1)

- a) **Title:** Indicate the subject of the proposed new work item.
- b) **Scope:** Give a clear indication of the coverage of the proposed new work item. Indicate, for example, if this is a proposal for a new document, or a proposed change (amendment/revision). It is often helpful to indicate what is not covered (exclusions).
- c) **Envisaged publication type:** Details of the types of ISO deliverable available are given in the ISO/IEC Directives, Part 1 and/or the associated ISO Supplement.
- d) **Purpose and justification:** Give details based on a critical study of the following elements wherever practicable. *Wherever possible reference should be made to information contained in the related TC Business Plan.*
- 1) The specific aims and reason for the standardization activity, with particular emphasis on the aspects of standardization to be covered, the problems it is expected to solve or the difficulties it is intended to overcome.
 - 2) The main interests that might benefit from or be affected by the activity, such as industry, consumers, trade, governments, distributors.
 - 3) Feasibility of the activity: Are there factors that could hinder the successful establishment or global application of the standard?
 - 4) Timeliness of the standard to be produced: Is the technology reasonably stabilized? If not, how much time is likely to be available before advances in technology may render the proposed standard outdated? Is the proposed standard required as a basis for the future development of the technology in question?

New work item proposal

5) Urgency of the activity, considering the needs of other fields or organizations. Indicate target date and, when a series of standards is proposed, suggest priorities.

6) The benefits to be gained by the implementation of the proposed standard; alternatively, the loss or disadvantage(s) if no standard is established within a reasonable time. Data such as product volume or value of trade should be included and quantified.

7) If the standardization activity is, or is likely to be, the subject of regulations or to require the harmonization of existing regulations, this should be indicated.

If a series of new work items is proposed having a common purpose and justification, a common proposal may be drafted including all elements to be clarified and enumerating the titles and scopes of each individual item.

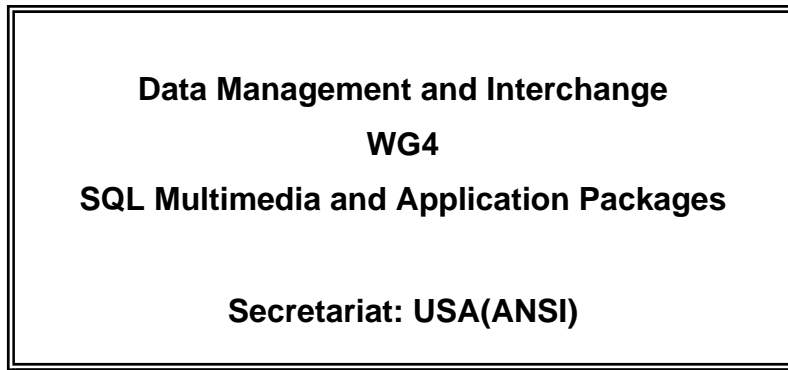
e) Relevant documents and their effects on global relevancy : List any known relevant documents (such as standards and regulations), regardless of their source. When the proposer considers that an existing well-established document may be acceptable as a standard (with or without amendment), indicate this with appropriate justification and attach a copy to the proposal.

f) Cooperation and liaison: List relevant organizations or bodies with which cooperation and liaison should exist.

ISO/IEC JTC 1/SC 32/WG 4 SQL/MM:BWU-018
May 27, 2008

ISO

International Organization for Standardization



Title: Progress Status Report on SQL/MM MDR Proposal

Source: Korea National Body

Status: SQL/MM MDR Change Proposal

Author: Dongwon Jeong and Doo-Kwon Baik

References:

- [1] STR015 Report to SC32/WG4 on Query Language for Consistent Exchanging and Sharing of Metadata
- [2] SC32N1656 Request for a New Study Period on Query Language for Consistent Exchanging and Sharing of Metadata
- [3] SC32N1637 Document from Database Study Group

1. Introduction

This paper addresses the following comments from the SC 32/WG 04 Interim meeting held in Germany, November 2007.

SEQ #	Comments	Reflection
1	Required more clear and additional definitions and descriptions (e.g., aims, reasons, and effects of this standardization activity)	Reflected. See 2.1
2	Required User-defined types and procedures	Reflected. See 2.2
3	View-based approach, i.e., results of queries should be obtained through access to Views)	Discussion required See 2.3
4	Do not use the term "extension", i.e., extension of SQL	Reflected.

2. Discussion

2.1 SEQ#1: Clear and additional definitions and descriptions

To clearly show the standardization need of our proposed item, the following definitions and description are modified and added:

2. Motivation and Background

3. Purpose and Justification

3.1. The specific aims and reasons for the standardization activity

3.2. The main interests that might benefit from or be affected by the activity

3.3. Feasibility of the activity

3.4. Timeliness of the standard to be produced

3.5. Urgency of the activity

3.6. The benefits to be gained by the implementation of the proposal

3.7. Subject of regulation or harmonization of the existing regulations

4. Scope

5. Terms and Definitions

6. Concepts

2.2 SEQ#2: Required User-defined types and procedures

This revision defines a part of user-defined types and procedures.

- See "Chapter 7. Procedures" and "Chapter 8. User-Defined Types" of the 2nd revision.

An example of the user-defined types in this revision is as follows:

8.1.3 Submission (of Administered item) Type

Purpose

Definition of the User Defined Type "Submission" is as shown below.

Definition

```
CREATE TYPE DE_Submission
```

```
As (
```

```
    Organization_name VARCHAR2(30),
```

```
    Organization_mail_address VARCHAR2(30),
```

```
    Submission_contact_name VARCHAR2(30),
```

```
    Submission_contact_information VARCHAR2(240),
```

```
    Submission_contact_title VARCHAR2(50),
```

```
);
```

2.3 SEQ#3: View-based approach, i.e., results of queries should be obtained through access to Views)

View-based approach has a limitation. In other words, we cannot support operations to insert, update, and delete of metadata because these operations to views cannot be implemented.

End of Paper.

**The 2nd Revision of SQL/MM MDR Proposal
ISO/IEC SC 32/WG 04 SQL/MM Meeting
26 May (Monday) ~ 30 May (Friday) 2008
Sydney, Australia**

Date: May 28, 2008

Source: Dongwon Jeong and Doo-Kwon Baik

References:

- STR015** Report to SC32/WG4 on Query Language for Consistent Exchanging and Sharing of Metadata
- SC32N1656** Request for a New Study Period on Query Language for Consistent Exchanging and Sharing of Metadata
- SC32N1637** Document from Database Study Group

1. Title

SQL/MM Metadata Registry (MDR)

2. Motivation and Background

Various metadata registries have been built for many fields such as health care, medical information, bibliography information, and so on. However, these metadata registries depend on their own specific application domain. ISO/IEC 11179 specifies metamodels to manage metadata registries, but it does not provide a standard access method for handling metadata registries. Therefore, the conventional metadata registry management systems have been developed to resolve the issues with different access methods. However, the approach using the different and inconsistent access methods causes several problems as follows:

- Inconsistent access methods
- Heterogeneity of access methods between metadata registry management systems
- Difficulty of realizing an integrated metadata registry system
- Incompatibility of defined metadata elements
- Need to harmonize various metadata registries

3. Purpose and Justification

3.1 The specific aims and reasons for the standardization activity

Registries have been used for systematic management of metadata describing data. A variety of registry frameworks has been developed for applications fields, and many registries have been building for management of metadata. For valid and exact registry building, exchanging, and sharing, the following problems should be resolved: (1) No consistent access method; (2) Invalid registries; (3) Difficulty of registry management system development. This NWIP therefore aims to provide a consistent access method for building of valid registries.

3.2 The main interests that might benefit from or be affected by the activity

3.2.1 Industry

Since many registries have been developing in many applications fields related with bibliographic information, environmental data, transportation knowledge including e-Business field, most industrial sectors will benefit from this standard. The application area where the management of registries is critical, will also be a beneficiary of this NWIP.

3.2.2 Consumers

The consumers of this activity will include from ordinary users of registry services to all companies and government agencies.

3.2.3 Governments

The governments, who are in general the major producers and consumers of metadata, are trying to integrate relevant data and provide high-quality services. This standard will be used as a method to address their goal.

3.3 Feasibility of the activity

Even though many registries and management systems have been developed for systematic management of metadata, none consistent and standardized access method has been provided to retrieve and update metadata in registries. There is also no policy to guarantee building of valid registries, and the development of registry management systems involves high cost. To resolve these issues and facilitate usability of the standard, a standardized and consistent access method should be developed.

3.4 Timeliness of the standard to be produced

Since many registries have been built and also now new registries have been constructing, the standardization project of this proposal is very timely.

3.5 Urgency of the activity

Valid building of metadata registries is the most important issue. Also a method to transparently access heterogeneous MDRs is one of the key issues. Since the proposed approach is a proved solution for the aforementioned issues, the standardization effort is required urgently.

3.6. The benefits to be gained by the implementation of the proposed standard

We expect many benefits from the implementation of this standard and a summary of major benefits is as follows: First, the proposed standard will guarantee creation of valid registries and allows easy registry building. Second, it will support a consistent and standardized access protocol to registries regardless of their physical store structure. Third, it will facilitate development of high-quality systems, applications, and services.

3.7 Subject of regulation or harmonization of the existing regulations

Not Available.

4. Scope

The scope of the proposal covers a consistent access method for management of registries in various application fields. This proposal is also proposed to support easier building and using of registries. The method will enable valid and precise building and management of registries, and facilitates usage of ISO/IEC 11179.

This proposal includes formal specifications for the management of registries, and SQL is adopted for the formal specifications in the same way with SQL/MM Spatial, SQL/MM Data Mining, SQL/MM Still Image, and so on.

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

This proposal covers specifications for retrieval, update, delete, insert of metadata including creation of schema structures for registries. The proposal covers Metadata Retrieval Language (MRL), Metadata Manipulation Language (MML), Metadata Definition Language (MDL), and Metadata Control Language (MCL) for metadata registries.

5. Terms and Definitions

5.1 Definitions

5.1.1 Metadata registry, registry

5.1.2 Data element

5.1.3 Metadata

5.1.4 Group element

5.1.5 Metadata retrieval language, MRL

5.1.6 Metadata manipulation language, MML

5.1.7 Metadata definition language, MDL

5.1.8 Metadata control language, MCL

5.2 Notations

*/** to be additional defined */*

6. Concepts

6.1 Overview

The goal of the proposal is to define and provide query languages for consistent access to metadata registries. To address the goal, SQL is adopted for the formal specifications. Fig. 1 illustrates the overall framework for our proposal. It consists of user-defined types, procedures, methods, operators, and tables.

6.1.1 User-defined types

6.1.2 Procedures

6.1.3 Methods

6.1.4 Operators

6.1.5 Tables

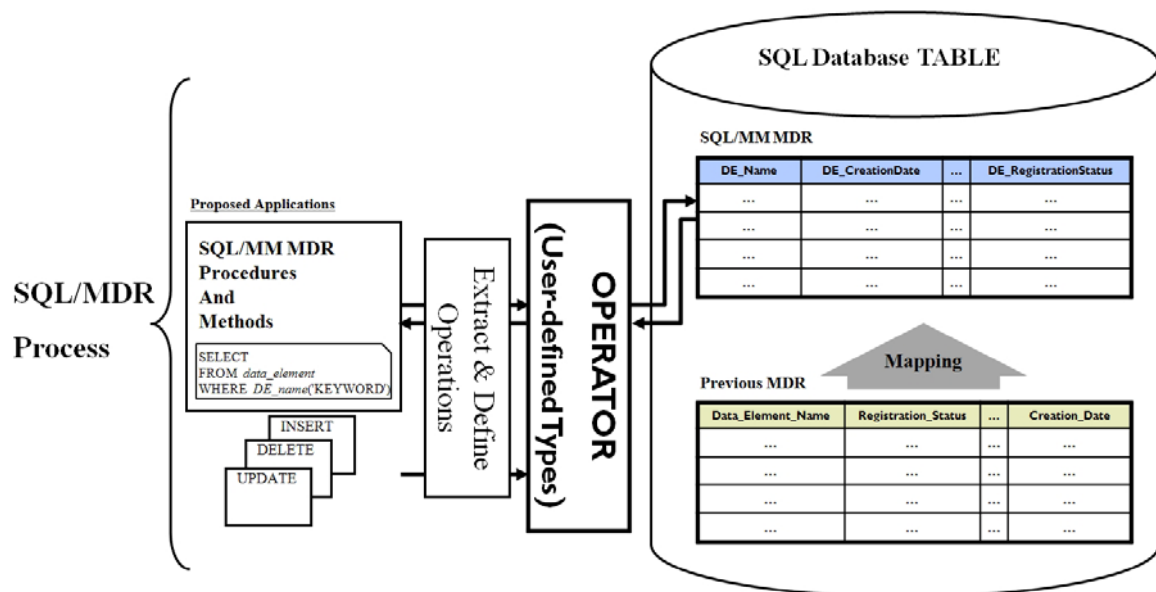


Fig. 1. Overall framework

6.2 Types of SQL/MM MDR Operators

SQL/MM MDR consists of four types: Metadata Retrieval Language (MRL), Metadata Manipulation Language (MML), Metadata Definition Language (MDL), and Metadata Control Language (MCL).

6.2.1 Metadata Retrieval Language (MRL)

To retrieve metadata from metadata registries

6.2.2 Metadata Manipulation Language (MML)

To insert, delete, and update metadata in metadata registries

6.2.3 Metadata Definition Language (MDL)

To define a persistent model for a metadata registry

6.2.4 Metadata Control Language (MCL)

To control access to metadata registries

7. Procedure

The procedures in this section provide for Data Element to search rows and Group Element to store rows.

7.1 Data Element Search Procedure

7.1.1 DE_Name

Purpose:

An operator returning all of elements in data element when value of name element in data element is same as String s

Definition:

```
BEGIN
DECLARE SET_QUANTIFIER : distinct | all
DECLARE SELECT_LIST : ASTERISK | user_defined_column_name(COMMA
user_defined_column_name)?
DECLARE TABLE_CLAUSE : table_name | table_name (COMMA table_name)?
      (where_clause)?
      (group_by_clause)?
      (having_clause)?
DECLARE DE_NAME : "DE_Name"
DECLARE KEYWORD_FORM: LEFT_PAREN QUOTE ('a'..'z'|'A'..'Z')* QUOTE
RIGHT_PAREN

SET SQL_STMT ="select" (SET_QUANTIFIER)? SELECT_LIST "from" TABLE_CLAUSE
"where" DE_NAME KEYWORD_FORM
END
```

Usage:

DE_Name(String s)

Definitional Rules:

If error occurred in one of sub-procedures called in the DE_Name operator, rollback of all operation should be executed.

Description:

The DE_Name takes the following input parameters:

String value s of name element in data element

SQL/MM MDR Example: Data_Element Table

```
SELECT DET.DE_Administration_record.Administered_item_identifier
FROM Data_Element DET
WHERE DE_Name("Keyword")
```

Answer:

DET.DE_Administration_record.Administered_item_identifier

7.1.2 DE_Administrative_note

Definition:

```
BEGIN
DECLARE SET_QUANTIFIER : distinct | all
DECLARE SELECT_LIST : ASTERISK | user_defined_column_name(COMMA
user_defined_column_name)?
DECLARE TABLE_CLAUSE : table_name | table_name (COMMA table_name)?
    (where_clause)?
    (group_by_clause)?
    (having_clause)?
DECLARE DE_ADMINISTRATIVE_NOTE : "DE Administrative_note"
DECLARE KEYWORD_FORM: LEFT_PAREN QUOTE ('a'..'z'|'A'..'Z') * QUOTE
RIGHT_PAREN

SET SQL_STMT ="select" (SET_QUANTIFIER)? SELECT_LIST "from" TABLE_CLAUSE
"where" DE_Administrative_note KEYWORD_FORM
END
```

Usage :

DE_Administrative_note(String s)

Purpose:

An operator returning all of elements in data element when value of name element in data element is same as String s

Definitional Rules:

If error occurred in one of sub-procedures called in the DE_Administrative_note operator, rollback of all operation should be executed.

Description:

The DE_Administrative_note takes the following input parameters:

String value s of name element in data element

SQL/MM MDR Example: Group_Element Table

```
SELECT DET.DE_Administration_Record.Administered_item_identifier,
DET.DE_Stewardship.Organization_name
```

```
FROM Data_Element DET
WHERE DE_Administrative_note("Keyword")
```

Answer:

DET.Administration_record.Administered_item_identifier	DET.Stewardship.Organization_name
--	-----------------------------------

8. User-Defined Types**8.1 User-Defined Types of Data Element****8.1.1 Administration_record Type****Purpose**

Definition of the User Defined Type “Administration_record” is as shown below.

Definition

```
CREATE TYPE DE_Administration_record
  As (
    Administered_item_identifier NUMBER,
    Item_registration_authority_identifier NUMBER,
    International_code_designator VARYING(2000),
    Organization_identifier NUMBER,
    Organization_part_identifier NUMBER,
    OPI_source VARYING(2000),
    DATA_identifier NUMBER,
    Version VARYING(10),
    Registration_status VARYING(240),
    Administrative_status VARYING(240),
    Creation_date DATE,
    Effective_date DATE,
    Last_change_date DATE,
    Until_date DATE,
    Administrative_note VARYING(2000),
    Change_description VARYING(2000),
    Explanatory_comment VARYING(2000),
    Origin VARYING(10),
    Unresolved_issue VARYING(240),
  );
```

8.1.2 Registration_authority Type**Purpose**

Definition of the User Defined Type “Registration_authority” is as shown below.

Definition

```
CREATE TYPE DE_Registration_authority
  As (
    Registration_authority_identifier NUMBER,
    International_code_designator VARYING(2000),
    Organization_identifier NUMBER,
    Organization_part_identifier NUMBER,
    Organization_part_identifier_source VARYING(2000),
    Organization_name VARYING(30),
    Organization_mail_address VARYING(30),
    registrar_identifier NUMBER,
    Registrar_contact_name VARYING(30),
  );
```

```

Registrar_information VARYING(240),
Registrar_title VARYING(30),
Documentation_language_identifier NUMBER,
Documentation_country_identifier NUMBER,
Organization_mail_address VARYING(30),
);

```

8.1.3 Submission (of Administered item) Type

Purpose

Definition of the User Defined Type “Submission” is as shown below.

Definition

```

CREATE TYPE DE_Submission
As (
    Organization_name VARYING(30),
    Organization_mail_address VARYING(30),
    Submission_contact_name VARYING(30),
    Submission_contact_information VARYING(240),
    Submission_contact_title VARYING(50),
);

```

8.1.4 Stewardship (of Administered item) Type

Purpose

Definition of the User Defined Type “Stewardship” is as shown below.

Definition

```

CREATE TYPE DE_Stewardship
As (
    Organization_name VARYING(30),
    Organization_mail_address VARYING(30),
    Stewardship_contact_name VARYING(30),
    Stewardship_contact_information VARYING(240),
    Stewardship_contact_title VARYING(50),
);

```

8.1.5 Context (for Administered item) Type

Purpose

Definition of the User Defined Type “Context” is as shown below.

Definition

```

CREATE TYPE DE_Context
As (
    Context_administration_record VARYING(240),
    Context_description VARYING(240),
    Context_description_language_identifier NUMBER,
    Context_language_identifier NUMBER,
    Context_country_identifier NUMBER,
    Context_terminological_entry_language_section_language_identifier
        NUMBER,
    Context_terminological_entry_language_section_country_identifier
        NUMBER,
    Context_terminological_entry_language_section_designation_name
        VARYING(30),
    Context_terminological_entry_language_section_designation_preferred
        designation VARYING(240),
    Context_terminological_entry_language_section_designation_term_defi
        nition_pairing VARYING(50),
);

```

```

Context_terminological_entry_language_section_definition_text
    VARYING(30),
Context_terminological_entry_language_section_preferred_definiti
on VARYING(50),
Context_terminological_entry_language_section_definition_source_ref
erence VARYING(50),
Context_terminological_entry_language_section_definition_source_ref
erence_reference_document_identifier NUMBER,
Context_terminological_entry_language_section_definition_source_ref
erence_reference_organization_name VARYING(30),
Context_terminological_entry_language_section_definition_source_ref
erence_reference_organization_mail_address VARYING(30),
Context_terminological_entry_language_section_definition_source_ref
erence_reference_document_language_identifier NUMBER,
Context_terminological_entry_language_section_definition_source_ref
erence_reference_document_country_identifier NUMBER,
Context_terminological_entry_language_section_definition_source_ref
erence_reference_document_title VARYING(50),
Context_terminological_entry_language_section_definition_source_ref
erence_reference_document_type_description VARYING(2000),
);

```

8.1.6 Reference_document (for Administered item) Type

Purpose

Definition of the User Defined Type “Reference_document” is as shown below.

Definition

```

CREATE TYPE DE_Reference_document
As (
    Reference_document_identifier NUMBER,
    Reference_organization_name VARYING(30),
    Reference_organization_mail_address VARYING(30),
    Reference_document_language_identifier NUMBER,
    Reference_document_country_identifier NUMBER,
    Reference_document_title VARYING(50),
    Reference_document_type_descrption VARYING(2000),
);

```

8.2 User Defined Types of Group Element

8.2.1 Conceptual_Domain Type

Purpose

Definition of the User Defined Type “Conceptual_Domain” is as shown below.

Definition

```

CREATE TYPE Conceptual_Domain
As (
    Reg_auth_identifier NUMBER,
    Data_identifier NUMBER,
    Version NUMBER,
    Responsibility_name VARYING(30),
    Creation_date Date,
    Creation_user VARYING(30),
    Dimensionality_identifier NUMBER,
    Admin_status_identifier NUMBER,
    Reg_status_identifier NUMBER,
    Origin VARYING(2000),
    Unresolved_issue VARYING(240),
    Change_description VARYING(240),
    Explanatory_comment VARYING(2000),
);

```

```

Effective_date DATE,
Until_date DATE,
Last_change_date DATE,
Last_change_user VARYING(30),
Administrative_note VARYING(2000),
Non_enumerated_desc VARYING(240),
);

```

8.2.2 Data_Element_Concept Type

Purpose

Definition of the User Defined Type “Data_Element_Concept” is as shown below.

Definition

```

CREATE TYPE Data_Element_Concept
As (
    Reg_auth_identifier NUMBER,
    Data_identifier NUMBER,
    Version NUMBER,
    Responsibility_name VARYING(30),
    Creation_date DATE,
    Creation_user VARYING(30),
    Cd_reg_auth_identifier NUMBER,
    Cd_data_identifier NUMBER,
    Cd_version NUMBER,
    Oc_reg_auth_identifier NUMBER,
    Oc_data_identifier NUMBER,
    Oc_version NUMBER,
    Oc_qual_identifier NUMBER,
    Admin_status_identifier NUMBER,
    Reg_status_identifier NUMBER,
    Origin VARYING(2000),
    Unresolved_issue VARYING(240),
    Change_description VARYING(240),
    Explanatory_comment VARYING(2000),
    Effective_date DATE,
    Until_date DATE,
    Last_change_date DATE,
    Last_change_user VARYING(30),
    Administrative_note VARYING(2000),
);

```

8.2.3 Value_Domain Type

Purpose

Definition of the User Defined Type “Value_Domain” is as shown below.

Definition

```

CREATE TYPE Value_Domain
As (
    Reg_auth_identifier NUMBER,
    Data_identifier NUMBER,
    Version NUMBER,
    Responsibility_name VARYING(30),
    Creation_date DATE,
    Creation_user VARYING(30),
    Max_character_quantity NUMBER,
    Min_character_quantity NUMBER,
    Max_range_quantity NUMBER,
    Min_range_quantity NUMBER,
    Format_identifier NUMBER,
    Datatype_identifier NUMBER,
);

```

```

Unit_of_measure_identifier NUMBER,
Cd_reg_auth_identifier NUMBER,
Cd_data_identifier NUMBER,
Cd_version NUMBER,
Admin_status_identifier NUMBER,
Reg_status_identifier NUMBER,
Rc_reg_auth_identifier NUMBER,
Rc_data_identifier NUMBER,
Rc_version NUMBER,
Rep_class_qual_identifier NUMBER,
Non_enumerated_desc VARYING(240),
Origin VARYING(2000),
Unresolved_issue VARYING(240),
Change_description VARYING(240),
Explanatory_comment VARYING(2000),
Effective_date DATE,
Until_date DATE,
Last_change_date DATE,
Last_change_user VARYING(30),
Administrative_not VARYING(2000),
);

```

8.2.4 Object_Class Type

Purpose

Definition of the User Defined Type “Object_Class” is as shown below.

Definition

```

CREATE TYPE Object_Class
As (
    Reg_auth_identifier NUMBER,
    Data_identifier NUMBER,
    Version NUMBER,
    Responsibility_name VARYING(30),
    Creation_date DATE,
    Creation_user VARYING(30),
    Admin_status_identifier NUMBER,
    Reg_status_identifier NUMBER,
    Origin VARYING(2000),
    Unresolved_issue VARYING(240),
    Change_description VARYING(240),
    Explanatory_comment VARYING(2000),
    Effective_date DATE,
    Until_date DATE,
    Last_change_date DATE,
    Last_change_user VARYING(30),
    Administrative_note VARYING(2000)
);

```

8.2.5 Representation_Class Type

Purpose

Definition of the User Defined Type “Representation_Class” is as shown below.

Definition

```

CREATE TYPE Representation_Class
As (
    Reg_auth_identifier NUMBER,
    Data_identifier NUMBER,
    Version NUMBER,
    Responsibility_name VARYING(30),
    Creation_date DATE,
    Creation_user VARYING(30),

```

```

Admin_status_identifier NUMBER,
Reg_status_identifier NUMBER,
Origin VARYING(2000),
Unresolved_issue VARYING(240),
Change_description VARYING(240),
Explanatory_comment VARYING(2000),
Effective_date DATE,
Until_date DATE,
Last_change_date DATE,
Last_change_user VARYING(30),
Administrative_note VARYING(2000)
);

```

8.3 Searching for Data_Element Table

The Data_Element table consists of DE_Administration_Record, DE_Registration_Authority, DE_Submission, DE_Stewardship, DE_Context, and DE_Reference_Document. Each of user defined types has columns that are predefined by metadata attributes in ISO/IEC 11179. The second table is shown the detailed DE_Submission of user-defined types that includes columns.

DE_Administration_Record			DE_Registration_Authority			DE_Submission (of Administered item)			DE_Stewardship (of Administered item)			DE_Context (for Administered item)			DE_Reference_Document		
...
...
...
...
...

DE_Submission (of Administered item)				
Organization_name	Organization_mail_address	Contact_name	Contact_information	Contact_title
...
...
...
...
...

8.3.1 Attribute of DE_Administration_record

Description

A collection of administrative information for an Administerd Item

- Administered_item_identifier: an identifier for an administered item.
- Item_regeistration_authority_identifier: the identifier of the registration authority registering the item.
- International_code_designator: the identifier of an organization identification scheme.
- Organization_identifier: the identifier assigned to an organization within an organization identification scheme, and unique within that scheme.
- Organization_part_identifier: an identifier allocated to a particular organization part.
- OPI_source: the source for the organization part identifier.
- Data_identifier: the unique identifier for an administered item within a registration authority.
- Version: the unique version identifier of the administered item.
- Registration_status: a designation of the status in the registration life-cycle of an administered item.
- Administrative_status: a designation of the status in the administrative process of a registration authority for handing registration requests.
- Creation_date: a date an administered item was created.
- Effective_date: a date an administered item became/becomes available to registry users.
- Last_change_date: a date an administered item was last changed.
- Until_date: a date an administered item is no longer effective in the registry.

- **Administrative_note**: any general note about an administered item.
- **Change_description**: a description of what has changed in an administered item since the prior version of an administered item.
- **Explanatory_comment**: descriptive comments about an administered item.
- **Origin**: [administered item] the source (document, project, discipline or model) for the administered item.
- **Unresolved_issue**: any problem that remains unresolved regarding proper documentation of an administered item.

8.3.2 Attribute of DE_Registration_authority

Description

An Organization responsible for maintaining a register

- **Registration_authority_identifier**: an identifier assigned to a registration authority.
- **International_code_designator**: an identifier if an organization identification scheme.
- **Organization_identifier**: the identifier assigned to an organization within an organization identification scheme, and unique within that scheme.
- **Organization_part_identifier**: an identifier allocated to a particular organization part
- **Organization_part_identifier_source**
- **Organization_name**: a designation for the organization.
- **Organization_mail_address**: the physical, postal or delivery address of the organization.
- **Registrar_identifier**: an identifier for the registrar.
- **Registrar_contact_name**: a name of the contact associated with a registrar.
- **Registrar_contact_information**: information associated with a registrar to enable a contact to be located or communicated with.
- **Registrar_contact_title**: a name of the position held by the contact that associated with a registrar.
- **Documentation_language_identifier**: the identifier of the language used for documentation by the registration authority.
- **Documentation_country_identifier**: [Language Identification] a country identifier further specifying the geopolitical area associated with the language.
- **Organization_mail_address**: a physical, postal or delivery address of the organization that involved in registration authority.

8.3.3 Attribute of DE_Submission

Description

The relationship of an Administered Item, a Contact, and an Organization involved in a submission of metadata

- **Organization_name**: a designation for the organization that involved in a submission.
- **Organization_mail_address**: a physical, postal or delivery address of the organization that involved in a submission.
- **Submission_contact_name**: a name of the contact associated with a submission.
- **Submission_contact_information**: information associated with a submission to enable a contact to be located or communicated with.
- **Submission_contact_title**: a name of the position held by the contact that associated with a submission.

8.3.4 Attribute of DE_Stewardship

Description

The relationship of an Administered Item, a Contact, and an Organization involved in a stewardship of metadata

- **Organization_name**: a designation for the organization that involved in a stewardship.
- **Organization_mail_address**: a physical, postal or delivery address of the organization that involved in a stewardship.

- Stewardship_contact_name: a name of the contact associated with a stewardship.
- Stewardship_contact_information: information associated with a stewardship to enable a contact to be located or communicated with.
- Stewardship_contact_title: a name of the position held by the contact that associated with a submission.

8.3.5 Attribute of DE_Context

Description

A universe of discourse in which a name or definition is used

- Context_administration_record: a administration record for a context.
- Context_description: the textual description of the context.
- Context_description_language_identifier: an identifier of the language used in the context description.
- Context_language_identifier: information in a terminological entry which indicates the name of a language that used in the context.
- Context_country_identifier: [language identification] a country identifier further specifying the geopolitical area associated with the language that used in the context.
- Context_terminological_entry_language_section_language_identifier: an identifier of the language used to group a set of designation and definitions.
- Context_terminological_entry_language_section_country_identifier: [language identification] a country identifier further specifying the geopolitical area associated with the language that used in the language section of context.
- Context_terminological_entry_language_section_designation_name: a name by which an administered item is designated within a specific context.
- Context_terminological_entry_language_section_designation_preferred_designation: an indicator that the name is a preferred term for an administered item within a language.
- Context_terminological_entry_language_section_designation_term_definition_pairing
- Context_terminological_entry_language_section_definition_text: the text of the definition about language section of context.
- Context_terminological_entry_language_section_preferred_definition: an indicator that the definition text is a preferred definition for an administered item within a language.
- Context_terminological_entry_language_section_definition_source_reference: a reference to the source from which the definition is taken.
- Context_terminological_entry_language_section_definition_source_reference_reference_document_identifier: an identifier for the reference document.
- Context_terminological_entry_language_section_definition_source_reference_reference_organization_name: a designation for the organization that involved in a reference.
- Context_terminological_entry_language_section_definition_source_reference_reference_organization_mail_address: a physical, postal or delivery address of the organization that involved in reference.
- Context_terminological_entry_language_section_definition_source_reference_reference_document_language_identifier: an identifier of the natural or special language used in the reference document.
- Context_terminological_entry_language_section_definition_source_reference_reference_document_country_identifier
- Context_terminological_entry_language_section_definition_source_reference_reference_document_title: a title of the reference document.
- Context_terminological_entry_language_section_definition_source_reference_reference_document_type_description: a description of the type of reference document.

8.3.6 Attribute of DE_Reference_document

Description

A document that provides pertinent details for consultation about a subject

- Reference_document_identifier: an identifier for the reference document.
- Reference_organization_name: a designation for the organization that involved in a reference.
- Reference_organization_mail_address: a physical, postal or delivery address of the organization that

- involved in a reference.
- Reference_document_language_identifier: an identifier of the natural or special language used in the reference document.
- Reference_document_country_identifier: [language identification] a country identifier further specifying the geopolitical area associated with the language that used in the reference document.
- Reference_document_title: a title of the reference document.
- Reference_document_type_description: a description of the type of reference document.

8.4 Searching for Group_Element Table

The following Group_Element table is generated by the based ISO/IEC 11179. Each of user-defined types has columns that are predefined by metadata attributes in ISO/IEC 11179. The second table is shown the detailed Conceptual_Domain of user-defined types.

Data_Element			Conceptual_Domain			Data_Element_concept			Value_Domain			Object_Class			Representation_Class		
...	
...	
...	
...	
...	
...	
...	

Conceptual_Domain							
Reg_auth_identifier	Data_identifier	Version	Origin	...	Last_change_user	Administrative_note	Non_enumerated_desc
...
...
...
...
...
...

8.4.1 Attribute of Conceptual_Domain

Description

A document that provides pertinent details for consultation about a subject

- Reg_auth_identifier : an identifier assigned to a registration authority
- Data_identifier : unique identifier for an administered item within a registration authority
- Version : unique version identifier of the administered item
- Responsibility_name :
- Creation_date : the date the administered Item was created
- Creation_user :
- Dimensionality_identifier :
- Admin_status_identifier :
- Reg_status_identifier :
- Origin : the source (document, project, discipline or model) for the administered item
- Unresolved_issue : any problem that remains unresolved regarding proper documentation of the administered item
- Change_description : the description of what has changed in the administered item since the prior version of the administered item
- Explanatory_comment : descriptive comments about the administered Item
- Effective_date : the date an administered item became/becomes available to registry users
- Until_date : the date an administered item is no longer effective in the registry
- Last_change_date : the date the administered Item was last changed
- Last_change_user :
- Administrative_note : any general note about the administered item
- Non_enumerated_desc :

8.4.2 Attribute of Data_Element_Concept

Description

A document that provides pertinent details for consultation about a subject

- Reg_auth_identifier : an identifier assigned to a registration authority
- Data_identifier : unique identifier for an administered item within a registration authority
- Version : unique version identifier of the administered item
- Responsibility_name :
- Creation_date : the date the administered item was created
- Creation_user :
- Cd_reg_auth_identifier :
- Cd_data_identifier :
- Cd_version :
- Oc_reg_auth_identifier :
- Oc_data_identifier :
- Oc_version :
- Oc_qual_identifier :
- Admin_status_identifier :
- Reg_status_identifier :
- Origin : [administered item] the source (document, project, discipline or model) for the administered item
- Unresolved_issue : any problem that remains unresolved regarding proper documentation of the administered item
- Change_description : the description of what has changed in the administered item since the prior version of the administered item
- Explanatory_comment : descriptive comments about the administered item
- Effective_date : the date an administered item became/becomes available to registry users
- Until_date : the date an administered item is no longer effective in the registry
- Last_change_date : the date the administered item was last changed
- Last_change_user :
- Administrative_note : any general note about the administered item

8.4.3 Attribute of Value_Domain

Description

A set of permissible values

- Reg_auth_identifier : an identifier assigned to a registration authority
- Data_identifier : unique identifier for an administered item within a registration authority
- Version : unique version identifier of the administered item
- Responsibility_name :
- Creation_date : the date the administered item was created
- Creation_user :
- Max_character_quantity :
- Min_character_quantity :
- Max_range_quantity :
- Min_range_quantity :
- Format_identifier :
- Datatype_identifier :
- Unit_of_measure_identifier :
- Cd_reg_auth_identifier :
- Cd_data_identifier :
- Cd_version :
- Admin_status_identifier :
- Reg_status_identifier :

- Rc_reg_auth_identifier :
- Rc_data_identifier :
- Rc_version :
- Rep_class_qual_identifier :
- Non_enumerated_desc :
- Origin : [administered item] the source (document, project, discipline or model) for the administered item
- Unresolved_issue : any problem that remains unresolved regarding proper documentation of the administered item
- Change_description : the description of what has changed in the administered item since the prior version of the administered item
- Explanatory_comment : descriptive comments about the administered item
- Effective_date : the date an administered item became/becomes available to registry users
- Until_date : the date an administered item is no longer effective in the registry
- Last_change_date : the date the administered item was last changed
- Last_change_user :
- Administrative_note : any general note about the administered item

8.4.4 Attribute of Object_Class

Description

A set of ideas, abstractions, or things in the real world that are identified with explicit boundaries and meaning and whose properties and behavior follow the same rules

- Reg_auth_identifier : an identifier assigned to a registration authority
- Data_identifier : unique identifier for an administered item within a registration authority
- Version : unique version identifier of the administered item
- Responsibility_name :
- Creation_date : the date the administered item was created
- Creation_user :
- Admin_status_identifier :
- Reg_status_identifier :
- Origin : [administered item] the source (document, project, discipline or model) for the administered item
- Unresolved_issue : any problem that remains unresolved regarding proper documentation of the administered item
- Change_description : the description of what has changed in the Administered item since the prior version of the administered item
- Explanatory_comment : descriptive comments about the administered item
- Effective_date : the date an administered item became/becomes available to registry users
- Until_date : the date an administered item is no longer effective in the registry
- Last_change_date : the date the administered item was last changed
- Last_change_user :
- Administrative_note : any general note about the administered item

8.4.5 Attribute of Representation_Class

Description

A classification of types of representations

- Reg_auth_identifier : an identifier assigned to a registration authority
- Data_identifier : unique identifier for an administered item within a registration authority
- Version : unique version identifier of the administered item
- Responsibility_name :
- Creation_date : the date the administered item was created
- Creation_user :

- Admin_status_identifier :
- Reg_status_identifier :
- Origin : [administered item] the source (document, project, discipline or model) for the administered item
- Unresolved_issue : any problem that remains unresolved regarding proper documentation of the administered item
- Change_description : the description of what has changed in the administered item since the prior version of the Administered item
- Explanatory_comment : descriptive comments about the administered item
- Effective_date : the date an administered item became/becomes available to registry users
- Until_date : the date an administered item is no longer effective in the registry
- Last_change_date : the date the administered item was last changed
- Last_change_user :
- Administrative_note : any general note about the administered item

9. Creating Tables

9.1 Creating Data Element table

Purpose

Definition of the create table of data element “Date_Element” is as shown below.

Definition

```
CREATE TABLE Data_Element
(
  DE_Administration_record Administration_record ,
  DE_Registration_authority egistration_authority,
  DE_Submission Submission,
  DE_Stewardship Stewardship,
  DE_Context Context,
  DE_Reference_document Reference_document,
);
```

9.2 Creating Group Element table

Purpose

Definition of the create table of group element “Group_Element” is as shown below.

Definition

```
CREATE TABLE Group_Element
(
  CM_Conceptual_Domain Conceptual_Domain,
  CM_Data_Element_Concept Data_Eelement_Concept,
  CM_Value_Domain Value_Domain,
  CM_Object_Class Object_Class,
  CM_Representation_Class Representation_Class,
);
```