

ISO/IEC 11179-3:2023-01 (E)

Information technology - Metadata registries (MDR) - Part 3: Metamodel for registry common facilities

Contents		Page
Foreword		x
Introduction		xii
1	Scope	1
1.1	Structure of a metadata registry.....	1
1.2	Model extensions.....	1
2	Normative references	1
3	Terms, definitions and abbreviated terms	2
3.1	Terms related to metamodel constructs.....	2
3.2	Terms related to concepts.....	5
3.3	Abbreviated terms.....	17
4	Conformance	17
4.1	Overview of conformance.....	17
4.2	Degree of conformance.....	18
4.2.1	General.....	18
4.2.2	Strictly conforming implementations.....	18
4.2.3	Conforming implementations.....	18
4.3	Conformance by feature.....	19
4.4	Registry conformance.....	19
4.4.1	Overview.....	19
4.4.2	Standard profiles for registries.....	19
4.4.3	Conformance labels.....	19
4.5	Obligation.....	20
4.6	Implementation conformance statement (ICS).....	20
4.7	Roles and responsibilities for registration.....	20
5	Approach to modelling a metadata registry	20
5.1	Metamodel for a metadata registry.....	20
5.2	Application of the metamodel.....	21
5.3	Specification of the metamodel.....	21
5.3.1	Terminology used in specifying the metamodel.....	21
5.3.2	Choice of fonts.....	22
5.3.3	Use of UML Packages.....	22
5.3.4	Package dependencies.....	23
5.3.5	Use of UML Class diagrams and textual description.....	23
5.3.6	Use of dot notation.....	24
5.4	Types, instances and values.....	24
5.5	Extensibility.....	24
5.6	Date references.....	24
6	Basic_and_Core package	25
6.1	Overview of Basic_and_Core package.....	25
6.2	Predefined types metamodel region.....	25
6.2.1	Overview of predefined types.....	25
6.2.2	Boolean.....	25
6.2.3	Datetime.....	25
6.2.4	Date.....	25
6.2.5	Integer.....	26
6.2.6	Natural_Range.....	26
6.2.7	Notation.....	26
6.2.8	Phone_Number.....	26
6.2.9	Postal_Address.....	26
6.2.10	Sign.....	26
6.2.11	String.....	26
6.2.12	Text.....	27

6.2.13	Value.....	27
6.3	Basic classes metamodel region.....	27
6.3.1	Overview of basic classes.....	27
6.3.2	Individual class.....	28
6.3.3	Organization class.....	28
6.3.4	Role class.....	28
6.3.5	Contact class.....	29
6.3.6	Document_Type class.....	29
6.3.7	Language_Identification class.....	30
6.3.8	Reference_Document class.....	32
6.3.9	Registration_Authority_Identifier class.....	32
6.3.10	Datetime_Period class.....	33
6.4	Core metamodel region.....	33
6.4.1	Overview of Core metamodel region.....	33
6.4.2	Classes in the Core metamodel region.....	34
6.4.3	Associations in the Core metamodel region.....	36
7	Identification package.....	37
7.1	Overview of Identification metamodel region.....	37
7.2	Classes referenced from the Basic_and_Core package.....	37
7.2.1	Item class.....	37
7.3	Classes in the Identification metamodel region.....	38
7.3.1	Identified_Item class.....	38
7.3.2	Scoped_Identifier class.....	38
7.3.3	Namespace class.....	39
7.4	Associations in the Identification metamodel region.....	41
7.4.1	item_identification association.....	41
7.4.2	identification association.....	42
7.4.3	identifier_scope association.....	42
8	Designation_and_Definition package.....	42
8.1	Overview of Designation and Definition metamodel region.....	42
8.2	Classes referenced from the Basic_and_Core package.....	43
8.2.1	Item class.....	43
8.2.2	Context class.....	43
8.3	Classes referenced from the Identification package.....	44
8.3.1	Namespace class.....	44
8.4	Classes in the Designation and Definition metamodel region.....	46
8.4.1	Designation class.....	46
8.4.2	Definition class.....	47
8.4.3	Designation_Definition_Pairing class.....	48
8.4.4	Naming_Convention class.....	49
8.5	Association classes in the Designation and Definition metamodel region.....	50
8.5.1	Definition_Context association class.....	50
8.5.2	Designation_Context association class.....	51
8.6	Associations in the Designation and Definition metamodel region.....	51
8.6.1	context_for_pairing association.....	51
8.6.2	designation_namespace association.....	51
8.6.3	item_definition association.....	51
8.6.4	item_designation association.....	52
8.6.5	naming_convention_conformance association.....	52
8.6.6	naming_convention_utilization association.....	52
8.6.7	paired_definition association.....	52
8.6.8	paired_designation association.....	52
8.7	Datatypes in the Designation and Definition metamodel region.....	52
8.7.1	Acceptability enumeration.....	52
9	Registration package.....	53
9.1	Overview of Registration metamodel region.....	53
9.2	Classes referenced from the Basic and core package.....	54

9.2.1	Contact class.....	54
9.2.2	Organization class.....	54
9.2.3	Reference_Document class.....	55
9.3	Classes referenced from the Identification package.....	55
9.3.1	Identified_Item.....	55
9.3.2	Namespace class.....	55
9.4	Classes in the Registration region.....	55
9.4.1	Registered_Item class.....	55
9.4.2	Administered_Item class.....	56
9.4.3	Attached_Item class.....	57
9.4.4	Registration_State class.....	58
9.4.5	Constraint_Set class.....	59
9.4.6	Registration_Authority class.....	60
9.4.7	Registrar class.....	61
9.4.8	Stewardship_Record class.....	61
9.4.9	Submission_Record class.....	62
9.4.10	Registry_Specification class.....	63
9.5	Associations in the Registration region.....	66
9.5.1	attachment association.....	66
9.5.2	reference association.....	66
9.5.3	registered_item_constraint_set association.....	66
9.5.4	registration association.....	66
9.5.5	registration_authority_namespace association.....	67
9.5.6	registration_authority_registrar association.....	67
9.5.7	stewardship association.....	67
9.5.8	submission association.....	67
9.6	Datatypes in the Registration metamodel region.....	67
9.6.1	Degree_of_Conformance enumeration.....	67
9.6.2	Registration_Status enumeration.....	68
10	Classification package.....	69
10.1	Overview of Classification metamodel region.....	69
10.2	Classes referenced from the Basic and core package.....	70
10.2.1	Item class.....	70
10.3	Classes in the Classification metamodel region.....	70
10.3.1	Classification_Scheme class.....	70
10.3.2	Classification_Scheme_Item class.....	71
10.3.3	Classification_Scheme_Item_Relationship class.....	72
10.3.4	Classification_Scheme_Item_Relationship_Type class.....	72
10.4	Associations in the Classification metamodel region.....	73
10.4.1	item_classification association.....	73
10.4.2	classification_scheme_membership association.....	73
10.4.3	subject_classification_scheme_item association.....	73
10.4.4	object_classification_scheme_item association.....	73
10.4.5	classification_scheme_item_relationship_categorization association.....	73
11	Item_Mapping package.....	74
11.1	Overview of the Item_Mapping metamodel region.....	74
11.2	Classes referenced from the Basic and core package.....	74
11.2.1	Item class.....	74
11.3	Classes in the Mapping metamodel region.....	75
11.3.1	Item_Mapping class.....	75
11.4	Association Classes in the Mapping metamodel region.....	76
11.4.1	Subject_Mapping association class.....	76
11.4.2	Object_Mapping association class.....	76
11.5	Associations in the Item Mapping metamodel region.....	77
11.5.1	mapping_hierarchy association.....	77
11.6	Datatypes in the Mapping metamodel region.....	77
11.6.1	Item_Mapping_Degree enumeration.....	77

Annex A (informative) Consolidated class hierarchy	79
Annex B (informative) Illustrations of Item_Mapping	80
Annex C (informative) Example of Registering a simple Conceptual Domain	91
Bibliography	96

List of Figures

Figure 1 — Package dependencies	23
Figure 2 — Predefined types metamodel region	25
Figure 3 — Basic classes metamodel region	27
Figure 4 — Core metamodel region	34
Figure 5 — Identification metamodel region	37
Figure 6 — Designation and Definition metamodel region	42
Figure 7 — Registration metamodel region	54
Figure 8 — Classification metamodel region	69
Figure 9 — Item mapping	74
Figure A.1 — Consolidated class hierarchy	79
Figure B.1 — Object Diagram for the ‘same as’ mapping example	81
Figure B.2 — Object Diagram for the ‘derived from’ mapping example	82
Figure B.3 — Example UML Class Diagram for the Product Supplier concept (as used by System A)	84
Figure B.4 — Example IDEF1X Model for the Product Supplier concept (as used by System B)	84
Figure B.5 — Object Diagram for the ‘semantically equivalent’ mapping example	85
Figure B.6 — Object Diagram for the ‘semantically similar’ mapping example	89
Figure C.1 — Example object model of Conceptual Domain registration	92

List of Tables

Table 1 — Attributes of Individual class.....	28
Table 2 — Attributes of Organization class.....	28
Table 3 — Attributes of Role class.....	29
Table 4 — Attributes of Contact class.....	29
Table 5 — Attributes of Document_Type class.....	30
Table 6 — Attributes of Language_Identification class.....	30
Table 7 — Attributes of Reference_Document class.....	32
Table 8 — Attributes of Registration_Authority_Identifier class.....	33
Table 9 — Attributes of Datetime_Period class.....	33
Table 10 — Attributes of Concept class.....	35
Table 11 — Attributes of Slot class.....	36
Table 12 — Attributes of Scoped_Identifier class.....	38
Table 13 — Attributes of Namespace class.....	40
Table 14 — Attributes of Designation class.....	46
Table 15 — Attributes of Definition class.....	48
Table 16 — Attributes of <i>Designation_Definition_Pairing</i> class.....	49
Table 17 — Attributes of Naming_Convention class.....	49
Table 18 — Attributes of Definition_Context association class.....	51
Table 19 — Attributes of Designation_Context association class.....	51
Table 20 — Enumeration of Acceptability ratings.....	53
Table 21 — Attributes of Administered_Item class.....	56
Table 22 — Attributes of Registration_State class.....	58
Table 23 — Attributes of Constraint_Set class.....	60
Table 24 — Attributes of Registration_Authority class.....	61
Table 25 — Attributes of Registrar class.....	61
Table 26 — Attributes of Stewardship_Record class.....	62
Table 27 — Attributes of Submission_Record class.....	63
Table 28 — Attributes of Registry_Specification class.....	63
Table 29 — Enumeration of Degree_of_Conformance.....	68
Table 30 — Enumeration of Registration Statuses.....	68
Table 31 — Attributes of Classification_Scheme_Item class.....	71
Table 32 — Attributes of <i>Item_Mapping</i> class.....	75
Table 33 — Attributes of Subject_Mapping association class.....	76
Table 34 — Attributes of Object_Mapping association class.....	77
Table 35 — Enumeration of Item_Mapping_Degree values.....	77
Table B.1 — Examples of Mapping Degree usage.....	80
Table B.2 — Table of Items used in 'same as' example.....	81
Table B.3 — Item_Mapping for 'Birth Date_Mapping'.....	81

Table B.4 — Table of Items used in ‘derived_from’ example	81
Table B.5 — Item_Mapping class 'isodate_mapping1'	82
Table B.6 — Table of Subject_Mappings for isodate_mapping1	83
Table B.7 — Table of Object_Mappings for isodate_mapping1	83
Table B.8 — Item_Mapping class 'isodate_mapping2'	83
Table B.9 — Table of Subject_Mappings for isodate_mapping2	83
Table B.10 — Table of Object_Mappings for isodate_mapping2	83
Table B.11 — Table of Items used in this example	84
Table B.12 — Table of Item_Mappings for this example	86
Table B.13 — Table of Mapping_Hierarchy associations	86
Table B.14 — Table of Items used in this example	87
Table B.15 — Table of Item_Mappings for this example	90
Table B.16 — Table of Mapping_Hierarchy association	90