

ISO/IEC 11179-3:2013-02 (E)

Information technology - Metadata registries (MDR) - Part 3: Registry metamodel and basic attributes

Contents		Page
Foreword		xiii
Introduction		xv
1	Scope	1
1.1	Scope - Structure of a metadata registry	1
1.2	Scope - Basic attributes of metadata items	1
2	Normative references	1
3	Terms, definitions and abbreviated terms	1
3.3	Abbreviated terms	20
4	Conformance	21
4.1	Overview of conformance	21
4.2	Degree of conformance	21
4.2.1	General	21
4.2.2	Strictly conforming implementations	22
4.2.3	Conforming implementations	22
4.3	Conformance by clause	22
4.4	Registry conformance	23
4.4.1	Overview	23
4.4.2	Standard profiles for edition 3 registries	23
4.5	Obligation	23
4.6	Implementation conformance statement (ICS)	23
4.7	Roles and responsibilities for registration	24
5	Structure of a metadata registry	24
5.1	Metamodel for a metadata registry	24
5.2	Application of the metamodel	24
5.3	Specification of the metamodel	25
5.3.1	Terminology used in specifying the metamodel	25
5.3.2	Choice of fonts	25
5.3.3	Use of UML Packages	25
5.3.4	Package dependencies	26
5.3.5	Use of UML Class diagrams and textual description	27
5.4	Types, instances and values	27
5.5.1	Overview of types of items	28
5.5.2	Rules for types of items	29
5.6	Extensibility	31
5.7	Date references	31
6	Basic package	31
6.1	Overview of Basic package	31
6.2	Basic Types metamodel region	31
6.2.1	Overview of Basic Types	31
6.2.2	Boolean datatype	31
6.2.3	Date datatype	32
6.2.4	Datetime datatype	32
6.2.5	Integer datatype	32
6.2.6	Natural_Range datatype	32

6.2.7	Notation datatype	32
6.2.8	Phone_Number datatype	32
6.2.9	Postal_Address datatype	32
6.2.10	Sign datatype	33
6.2.11	String datatype	33
6.2.12	Text datatype	33
6.2.13	Value datatype	33
6.3	Basic Classes metamodel region	33
6.3.1	Overview of Basic Classes	33
6.3.2	Contact class	34
6.3.3	Document_Type class	35
6.3.4	Individual class	35
6.3.5	Language_Identification class	37
6.3.6	Organization class	39
6.3.7	Reference_Document class	40
6.3.8	Registration_Authority_Identifier class	42
6.3.9	Role class	43
7	Identification, Designation and Definition package	45
7.1	Overview of this package	45
7.2	Identification metamodel region	45
7.2.1	Overview	45
7.2.2	Classes in the Identification metamodel region	46
7.2.3	Associations in the Identification metamodel region	51
7.3	Designation and Definition metamodel region	52
7.3.1	Overview	52
7.3.2	Classes in the Designation and Definition metamodel region	53
7.3.3	Association Classes in the Designation and Definition metamodel region	59
7.3.4	Associations in the Designation and Definition metamodel region	60
8	Registration package	62
8.1	Registration metamodel region	62
8.1.1	Overview	62
8.1.2	Classes in the Registration region	62
8.1.3	Classes referenced from the Basic package	75
8.1.4	Classes referenced from the Identification, Designation and Definition package	75
8.1.5	Association Classes in the Registration region	76
8.1.6	Associations in the Registration region	76
9	Concepts package	78
9.1	Concepts metamodel region	78
9.1.1	Overview	78
9.1.2	Classes in the Concepts metamodel region	79
9.1.3	Associations of the Concepts metamodel region	84
9.2	Classification metamodel region	87
9.2.1	Overview	87
9.2.2	Classes in the Classification metamodel region	88
9.2.3	Associations Classes in the Classification metamodel region	89
9.2.4	Associations in the Classification metamodel region	89
10	Binary Relations package	90
10.1	Binary Relations metamodel region	90
10.1.1	Overview	90
10.1.2	Classes in the Binary_Relations metamodel region	90
11	Data Description package	93
11.1	High-level Data Description metamodel region	93
11.1.1	Overview	93
11.1.2	Classes of High-level Data Description metamodel	93
11.1.3	Associations of the High Level Data Description metamodel	96
11.1.4	Constraints of the High Level Metamodel	97
11.2	Data Element Concept metamodel region	97

11.2.1	Overview	97
11.2.2	Classes in the Data_Element_Concept region	98
11.2.3	Associations in the Data_Element_Concept region	99
11.3	Conceptual and Value_Domain metamodel region	100
11.3.1	Overview	100
11.3.2	Classes in the Conceptual and Value_Domain region	102
11.3.3	Associations in the Conceptual and Value_Domain region	110
11.3.4	Additional Constraints of the Conceptual and Value_Domain region	112
11.4	Measurement metamodel region	114
11.4.1	Overview	114
11.4.2	Classes in the Measurement region	114
11.4.3	Associations in the Measurement region	117
11.5	Data_Element metamodel region	118
11.5.1	Overview	118
11.5.2	Classes in the Data_Element Region	118
11.5.3	Associations in the Data_Element region	121
11.6	Consolidated Data Description Metamodel	123
11.7	Types of Concepts in the Data Description Metamodel	124
12	Basic attributes	124
12.1	Use of basic attributes	124
12.2	Common attributes	125
12.2.1	Identifying	125
12.2.2	Naming	125
12.2.3	Definitional	126
12.2.4	Administrative	126
12.2.5	Relational	126
12.3	Attributes specific to Data_Element_Concepts	127
12.4	Attributes specific to Data_Elements	127
12.5	Attributes specific to Conceptual_Domains	127
12.6	Attributes specific to Value_Domains	127
12.7	Attributes specific to Permissible_Values	128
12.8	Attributes specific to Value_Meanings	128
Annex A (normative)	Alphabetical list of terms and designations	129
Annex B (normative)	Consolidated Class Hierarchy	137
3:2011	metamodel and basic attributes	138
C.1	Introduction	138
C.1.2	Description of Table Structures in this Annex	139
C.2	Mapping the Basic Attributes	141
C.2.1	Common Identifying attributes	141
C.2.2	Common Naming attributes	143
C.2.3	Common Definitional attributes	147
C.2.4	Common Administrative attributes	148
C.2.5	Common Relational attributes	150
C.2.6	Attributes specific to Data_Element_Concepts	154
C.2.7	Attributes specific to Data_Elements	157
C.2.8	Attributes specific to Conceptual_Domains	164
C.2.9	Attributes specific to Value_Domains	165
C.2.10	Attributes specific to Permissible_Values	166
C.2.11	Attributes specific to Value_Meanings	167
metamodel	169
D.1	Introduction	169
D.2	Mapping the Edition 2 Administration and Identification Region	169
D.2.1	Administered_Item	169
D.2.2	Administration_Record	169
D.2.3	Contact	170

D.2.4	Item_Identifier	170
D.2.5	Language_Identification	170
D.2.6	Organization	171
D.2.7	Reference_Document	171
D.2.8	Registrar	171
D.2.9	Registration_Authority	171
D.2.10	Registration_Authority_Identifier	172
D.2.11	Stewardship	172
D.2.12	Submission	172
D.3	Mapping the Edition 2 Naming and Definition Region	173
D.3.1	Context (for Administered_Item)	173
D.3.2	Terminological_Entry	173
D.3.3	Language_Section	173
D.3.4	Definition (of Administered_Item)	174
D.3.5	Designation (of Administered_Item)	174
D.4	Mapping the Edition 2 Classification Region	174
D.4.1	Classification_Scheme	174
D.4.2	Classification_Scheme_Item	175
D.4.3	Classification_Scheme_Item_Relationship	175
D.5	Mapping the Edition 2 Data_Element_Concept Region	175
D.5.1	Object_Class	175
D.5.2	Property	175
D.5.3	Data_Element_Concept	176
D.5.4	Concept_Relationship	176
D.6	Mapping the Edition 2 Conceptual and Value Domain Region	176
D.6.1	Conceptual_Domain	176
D.6.2	Enumerated_Conceptual_Domain	177
D.6.3	Value_Meaning	177
D.6.4	Non-enumerated_Conceptual_Domain	177
D.6.5	Value_Domain	178
D.6.6	Enumerated_Value_Domain	178
D.6.7	Permissible_Value	178
D.6.8	Value	179
D.6.9	Non-enumerated_Value_Domain	179
D.6.10	Datatype	179
D.6.11	Unit_of_Measure	179
D.7	Mapping the Edition 2 Data_Element Region	180
D.7.1	Data_Element	180
D.7.2	Representation_Class	180
D.7.3	Data_Element_Example	181
D.7.4	Derivation_Rule	181
D.7.5	Data_Element_Derivation	181
Annex E (informative) Concept System Examples		182
E.1	Concept System Metamodels	182
E.2	SKOS Example	183
E.2.1	SKOS Metamodel	183
E.2.2	SKOS Example Thesaurus	184
E.2.3	Example Value Domain References	185
E.3	ORM Example	187
E.3.1	ORM Metamodel	187
E.3.2	Car Registration Model	189
E.4	OWL Example	194
E.4.1	OWL Metamodel	194
E.4.2	Car Registration Ontology	202
E.5	CLIF Example	216
E.5.1	CL Metamodel	216
Annex F (informative) Representation Class as a Concept System		221
F.1	Introduction	221

F.2	Description of Representation Class	221
F.3	Implementation of Representation Class as a Concept_System	222
Annex G (informative) Comparison for Conformance Levels across Editions of this part of G.1		
	Introduction	223
G.2	Conformance Levels for Edition 2 Level 2	223
G.3	Conformance Levels for Edition 2 Level 1 and Edition 1	223
H.1	Introduction	224
H.2	Profile for Concept Systems Registry	224
H.3	Profile for Extended Concept Systems Registry	224
H.4	Profile for Metadata Registry	224
H.5	Profile for Extended Metadata Registry	224
	Bibliography	225
	Table of Figures Figure 1 -- Package dependencies	26
	Figure 2 -- Types of items	28
	Figure 3 -- Basic types metamodel region	31
	Figure 4 -- Basic classes metamodel region	33
	Figure 5 -- Identification metamodel region	45
	Figure 6 -- Designation and Definition metamodel region	53
	Figure 7 -- Registration metamodel region	64
	Figure 8 -- Concepts metamodel region	78
	Figure 9 -- Classification metamodel region	88
	Figure 10 -- Binary Relations metamodel region	90
	Figure 11 -- High-level Data Description metamodel	93
	Figure 12 -- Data_Element_Concept metamodel region	98
	Figure 13 -- Conceptual and value domain metamodel region	101
	Figure 14 -- Measurement metamodel region	114
	Figure 15 -- Data_Element metamodel region	118
	Figure 16 -- Consolidated Data Description metamodel	123
	Figure 17 -- Types of Concepts in the Data Description package	124
	Figure 18 -- Consolidated Class Hierarchy	137
	Figure 19 -- Basic Attributes of Data elements	138
	Figure 20-- Car Registration Model in ORM	189
	Figure 21 -- Car Registration Ontology	202
	Table of Tables Table 1 - Rules for Types of Items	29
	Table 2 - Rules for Types of Items as a Decision Table	30

Table 3 - Comparison of Designation to Scoped_Identifier	45
Table 4 - Examples of binary relations and their characterization	90
Table 5 - Template for attribute mapping	139
Table 6 - Attribute mapping for `identifier'	141
Table 7 - Attribute mapping for `Registration Authority'	142
Table 8 - Attribute mapping for `Version'	142
Table 9 - Attribute mapping for `Name'	143
Table 10 - Attribute mapping for `Synonymous name'	143
Table 11 - Attribute mapping for `designation language'	144
Table 12 - Attribute mapping for `Context name'	144
Table 13 - Attribute mapping for `Context identifier'	145
Table 14 - Attribute mapping for `Context description'	146
Table 15 - Attribute mapping for `Definition'	147
Table 16 - Attribute mapping for `Definition language'	147
Table 17 - Attribute mapping for `Definition source reference'	148
Table 18 - Attribute mapping for `Comments'	148
Table 19 - Attribute mapping for `Registration status'	148
Table 20 - Attribute mapping for `Responsible organization'	149
Table 21 - Attribute mapping for `Submitting organization'	150
Table 22 - Attribute mapping for `Classification scheme name'	150
Table 23 - Attribute mapping for `Classification scheme identifier'	151
Table 24 - Attribute mapping for `Classification scheme item value'	152
Table 25 - Attribute mapping for `Related metadata reference'	153
Table 26 - Attribute mapping for `Type of relationship'	154
Table 27 - Attribute mapping for `Object class name'	154
Table 28 - Attribute mapping for `Object class identifier'	155
Table 29 - Attribute mapping for `Property name'	156
Table 30 - Attribute mapping for `Property identifier'	156
Table 31 - Attribute mapping for `Representation category'	157
Table 32 - Attribute mapping for `Representation class'	157
Table 33 - Attribute mapping for `Value domain name'	158

Table 34 - Attribute mapping for `Value domain identifier`	159
Table 35 - Attribute mapping for `Datatype name`	159
Table 36 - Attribute mapping for `Datatype scheme reference`	160
Table 37 - Attribute mapping for `Maximum size`	161
Table 38 - Attribute mapping for `Minimum size`	162
Table 39 - Attribute mapping for `Layout of representation`	163
Table 40 - Attribute mapping for `Permissible data element values`	164
Table 41 - Attribute mapping for `Dimensionality`	164
Table 42 - Attribute mapping for `Datatype name`	165
Table 43 - Attribute mapping for `Datatype scheme reference`	165
Table 44 - Attribute mapping for `Unit of measure name`	166
Table 45 - Attribute mapping for `Value`	166
Table 46 - Attribute mapping for `Permissible value begin date`	167
Table 47 - Attribute mapping for `Permissible value end date`	167
Table 48 - Attribute mapping for `Value meaning description`	167
Table 49 - Attribute mapping for `Value meaning identifier`	168
Table 50 - Attribute mapping for `Value meaning begin date`	168
Table 51 - Attribute mapping for `Value meaning end date`	168
Table 52 - Mapping Edition 2 Administered_Item to Edition 3	169
Table 53 - Mapping Edition 2 Administration_Record to Edition 3	169
Table 54 - Mapping Edition 2 Contact to Edition 3	170
Table 55 - Mapping Edition 2 Item_Identifier to Edition 3	170
Table 56 - Mapping Edition 2 Language_Identification to Edition 3	170
Table 57 - Mapping Edition 2 Organization to Edition 3	171
Table 58 - Mapping Edition 2 Reference_Document to Edition 3	171
Table 59 - Mapping Edition 2 Registrar to Edition 3	171
Table 60 - Mapping Edition 2 Registration_Authority to Edition 3	171
Table 61 - Mapping Edition 2 Registration_Authority_Identifier to Edition 3	172
Table 62 - Mapping Edition 2 Stewardship to Edition 3	172
Table 63 - Mapping Edition 2 Submission to Edition 3	172
Table 64 - Mapping Edition 2 Context to Edition 3	173

Table 65 - Mapping Edition 2 Terminological_Entry to Edition 3	173
Table 66 - Mapping Edition 2 Language_Section to Edition 3	173
Table 67 - Mapping Edition 2 Definition (of Administered_Item) to Edition 3	174
Table 68 - Mapping Edition 2 Designation (of Administered_Item) to Edition 3	174
Table 69 - Mapping Edition 2 Classification_Scheme to Edition 3	174
Table 70 - Mapping Edition 2 Classification_Scheme_Item to Edition 3	175
Table 71 - Mapping Edition 2 Classification_Scheme_Item_Relationship to Edition 3	175
Table 72 - Mapping Edition 2 Object_Class to Edition 3	175
Table 73 - Mapping Edition 2 Property to Edition 3	175
Table 74 - Mapping Edition 2 Property to Edition 3	176
Table 75 - Mapping Edition 2 Property to Edition 3	176
Table 76 - Mapping Edition 2 Conceptual_Domain to Edition 3	176
Table 77 - Mapping Edition 2 Enumerated_Conceptual_Domain to Edition 3	177
Table 78 - Mapping Edition 2 Value_Meaning to Edition 3	177
Table 79 - Mapping Edition 2 Non-enumerated_Conceptual_Domain to Edition 3	177
Table 80 - Mapping Edition 2 Value_Domain to Edition 3	178
Table 81 - Mapping Edition 2 Enumerated_Value_Domain to Edition 3	178
Table 82 - Mapping Edition 2 Permissible_Value to Edition 3	178
Table 83 - Mapping Edition 2 Value to Edition 3	179
Table 84 - Mapping Edition 2 Non-enumerated_Value_Domain to Edition 3	179
Table 85 - Mapping Edition 2 Datatype to Edition 3	179
Table 86 - Mapping Edition 2 Unit_of_Measure to Edition 3	179
Table 87 - Mapping Edition 2 Data_Element to Edition 3	180
Table 88 - Mapping Edition 2 Representation_Class to Edition 3	180
Table 89 - Mapping Edition 2 Data_Element_Example to Edition 3	181
Table 90 - Mapping Edition 2 Derivation_Rule to Edition 3	181
Table 91 - Mapping Edition 2 Data_Element_Derivation to Edition 3	181
Table 108 - OWL built-in constructs described in OWL metamodel	195