

# ISO/IEC 11179-31:2023-01 (E)

## Information technology - Metadata registries (MDR) - Part 31: Metamodel for data specification registration

---

<b>Contents</b>		<b>Page</b>
Foreword .....		vii
Introduction .....		viii
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Abbreviated terms .....	6
5	Conformance .....	6
5.1	Overview of conformance .....	6
5.2	Degree of conformance .....	6
5.2.1	General .....	6
5.2.2	Strictly conforming implementations .....	7
5.2.3	Conforming implementations .....	7
5.3	Conformance by feature .....	7
5.4	Registry conformance .....	8
5.4.1	Standard profiles for edition 4 registries .....	8
5.4.2	Conformance labels .....	8
5.5	Implementation conformance statement (ICS) .....	8
5.6	Obligation .....	8
6	Relationship to ISO/IEC 11179-3 .....	9
6.1	Metamodel for a metadata registry .....	9
6.2	Specification of the metamodel .....	9
6.3	Use of UML Class diagrams and textual description .....	9
6.4	Package dependencies .....	10
6.5	Subclassing the Constraint_Set class .....	10
7	Data_Specification package .....	11
7.1	Overview of the Data_Specification package .....	11
7.2	High-level Data Specification metamodel region .....	12
7.2.1	Overview of the high-level metamodel region .....	12
7.2.2	Classes in the High-level Data Specification metamodel region .....	13
7.2.3	Associations of the High-Level Data Specification metamodel region .....	16
7.2.4	Constraints of the High Level metamodel region .....	17
7.3	Data Element Concept metamodel region .....	18
7.3.1	Overview of the Data Element Concept metamodel region .....	18
7.3.2	Classes in the Data Element Concept metamodel region .....	19
7.3.3	Associations in the Data Element Concept metamodel region .....	22
7.4	Conceptual Domain and Value Domain metamodel region .....	22
7.4.1	Overview of the Conceptual Domain and Value Domain metamodel region .....	22
7.4.2	Classes in the Conceptual Domain and Value Domain metamodel region .....	24
7.4.3	Association Classes in the Conceptual Domain and Value Domain metamodel region .....	41
7.4.4	Associations in the Conceptual Domain and Value Domain metamodel region .....	44
7.4.5	Additional Constraints of the Conceptual Domain and Value Domain metamodel region .....	45
7.5	Measurement metamodel region .....	46
7.5.1	Overview of the Measurement metamodel region .....	46

7.5.2	Classes in the Measurement metamodel region .....	47
7.5.3	Associations in the Measurement metamodel region .....	50
7.6	Data Element metamodel region .....	51
7.6.1	Overview of the Data Element metamodel region .....	51
7.6.2	Classes in the Data Element metamodel region .....	52
7.6.3	Associations in the Data Element metamodel region .....	56
7.7	Value Domain Subset metamodel region .....	57
7.7.1	Overview of the Value Domain Subset metamodel region .....	57
7.7.2	Classes in the Value Domain Subset metamodel region .....	57
7.7.3	Association classes in the Value Domain Subset metamodel region .....	61
7.7.4	Associations in the Value Domain Subset metamodel region .....	62
7.7.5	Constraints in the Value Domain Subset metamodel region .....	63
7.8	Conceptual Domain Subset metamodel region .....	63
7.8.1	Overview of the Conceptual Domain Subset metamodel region .....	63
7.8.2	Classes in the Conceptual Domain Subset metamodel region .....	64
7.8.3	Association classes in the Conceptual Domain Subset metamodel region .....	66
7.8.4	Associations in the Conceptual Domain Subset metamodel region .....	67
7.8.5	Constraints in the Conceptual Domain Subset metamodel region .....	68
7.9	Composite Data Elements and Datatypes metamodel region .....	68
7.9.1	Overview of the Composite Data Elements and Datatypes metamodel region .....	68
7.9.2	Classes in the Composite Data Elements and Datatypes metamodel region .....	69
7.9.3	Association Class in the Composite Data Elements and Datatypes metamodel region .....	71
7.9.4	Associations in the Composite Data Elements and Datatypes metamodel region .....	72
Annex A (informative) Consolidated class hierarchy .....		73
Annex B (informative) Example of Address as Composite Data Element and Datatype .....		74
Annex C (informative) Partial consolidated data specification metamodel .....		75
Bibliography .....		76

## List of Figures

Figure 1 — Package dependencies .....	10
Figure 2 — Subclasses of Constraint_Set .....	11
Figure 3 — High-level Data Specification metamodel .....	12
Figure 4 — Data Element Concept metamodel region .....	18
Figure 5 — Conceptual Domain and Value Domain metamodel region .....	23
Figure 6 — Measurement metamodel region .....	46
Figure 7 — Data Element metamodel region .....	51
Figure 8 — Value Domain Subset metamodel region .....	57
Figure 9 — Conceptual Domain Subset metamodel region .....	63
Figure 10 — Composite Data Elements and Datatypes metamodel region .....	69
Figure A.1 — Consolidated Class Hierarchy .....	73
Figure B.1 — Object diagram of Address as Composite Datatype and Data Element .....	74
Figure C.1 — Partial Consolidated Data Specification metamodel .....	75

## List of Tables

Table 1 — Attributes of Data_Element_Constraint_Set class .....	21
Table 2 — Attributes of Conceptual_Domain class .....	24
Table 3 — Attributes of Enumerated_Conceptual_Domain class .....	26
Table 4 — Attributes of Enumerated_Conceptual_Domain_Definition class .....	29
Table 5 — Attributes of Value_Domain class .....	30
Table 6 — Attributes of Permissible_Value class .....	33
Table 7 — Attributes of Reference_Enumerated_Value_Domain class .....	34
Table 8 — Attributes of Datatype class .....	35
Table 9 — Example 1 of Datatype class .....	35
Table 10 — Example 2 of Datatype class .....	35
Table 11 — Attributes of Datatype_Scheme class .....	36
Table 12 — Attributes of Reference_Enumerated_CD_Constraint_Set class .....	37
Table 13 — Attributes of Local_Enumerated_CD_Constraint_Set class .....	38
Table 14 — Attributes of Value_Domain_Constraint_Set class .....	38
Table 15 — Attributes of Described_Value_Domain_Constraint_Set class .....	39
Table 16 — Attributes of Reference_Enumerated_VD_Constraint_Set class .....	40
Table 17 — Attributes of Local_Enumerated_VD_Constraint_Set class .....	40
Table 18 — Attributes of Permissible_Value_Constraint_Set class .....	41
Table 19 — Attributes of Value_Meaning_Set association class .....	42
Table 20 — Attributes of Permissible_Value_Meaning association class .....	43
Table 21 — Attributes of Permissible_Value_Set association class .....	44
Table 22 — Attributes of Dimensionality class .....	50
Table 23 — Attributes of Data_Element class .....	52
Table 24 — Attributes of Data_Element_Example class .....	53
Table 25 — Attributes of Data_Element_Derivation_Rule class .....	54
Table 26 — Attributes of Data_Element_Constraint_Set class .....	55
Table 27 — Attributes of Local_Enumerated_Value_Domain_Subset class .....	60
Table 28 — Attributes of Local_Enumerated_VD_Subset_Constraint_Set class .....	61
Table 29 — Attributes of Subset_Values association class .....	62
Table 30 — Attributes of Local_Enumerated_Conceptual_Domain_Subset class .....	65
Table 31 — Attributes of Local_Enumerated_CD_Subset_Constraint_Set class .....	66
Table 32 — Attributes of Subset_Value_Meanings association class .....	67
Table 33 — Attributes of Data_Element_Collection class .....	70
Table 34 — Attributes of Data_Element_Sequence association class .....	71