

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

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

| Contents | | Page |
|--------------------|---|-------------|
| 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 |