

ISO/IEC 11179-32:2023-01 (E)

Information technology - Metadata registries (MDR) - Part 32: Metamodel for concept system registration

| Contents | | Page |
|---|--|-------------|
| Foreword..... | | vii |
| Introduction..... | | viii |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 1 |
| 4 | Abbreviated terms | 4 |
| 5 | Conformance | 5 |
| 5.1 | Overview of conformance..... | 5 |
| 5.2 | Degree of conformance..... | 5 |
| 5.2.1 | General..... | 5 |
| 5.2.2 | Strictly conforming implementations..... | 5 |
| 5.2.3 | Conforming implementations..... | 6 |
| 5.3 | Conformance by feature..... | 6 |
| 5.4 | Registry conformance..... | 6 |
| 5.4.1 | Standard registry profiles..... | 6 |
| 5.4.2 | Conformance labels..... | 6 |
| 5.5 | Implementation conformance statement (ICS)..... | 7 |
| 5.6 | Obligation..... | 7 |
| 6 | Relationship to ISO/IEC 11179-3 | 7 |
| 6.1 | Metamodel for a metadata registry..... | 7 |
| 6.2 | Specification of the metamodel..... | 7 |
| 6.3 | Use of UML Class diagrams and textual description..... | 8 |
| 6.4 | Package dependencies..... | 8 |
| 6.5 | Subclassing the Constraint_Set class..... | 9 |
| 6.6 | Relationship to Classification region in ISO/IEC 11179-3:2023..... | 9 |
| 7 | Concept_System package | 9 |
| 7.1 | Overview of the Concept_System package..... | 9 |
| 7.2 | Concept System metamodel region..... | 9 |
| 7.2.1 | Overview..... | 9 |
| 7.2.2 | Classes in the Concept System metamodel region..... | 10 |
| 7.2.3 | Associations of the Concept System metamodel region..... | 18 |
| 8 | Binary_Relations package | 21 |
| 8.1 | Overview of Binary_Relations package..... | 21 |
| 8.2 | Binary Relations metamodel region..... | 21 |
| 8.2.1 | Overview..... | 21 |
| 8.2.2 | Classes in the Binary Relations metamodel region..... | 21 |
| 8.2.3 | Datatypes in the Binary_Relation metamodel region..... | 22 |
| Annex A (informative) Consolidated Class Hierarchy | | 24 |
| Annex B (informative) Concept System Examples | | 25 |
| Annex C (informative) Mapping ISO/IEC 11179-3:2023 Classification_Scheme to ISO/IEC 11179-32:2023 Concept_System | | 54 |
| Bibliography | | 55 |

List of Figures

| | |
|--|----|
| Figure 1 — Package dependencies..... | 8 |
| Figure 2 — Subclassing Constraint_Set..... | 9 |
| Figure 3 — Concept system metamodel region..... | 10 |
| Figure 4 — Binary Relations metamodel region..... | 21 |
| Figure A.1 — Consolidated Class Hierarchy..... | 24 |
| Figure B.1 — Car Registration Model in ORM..... | 30 |
| Figure B.2 — Car Registration Ontology in OWL..... | 39 |

List of Tables

| | |
|---|----|
| Table 1 — Attributes of Concept_System..... | 12 |
| Table 2 — Attributes of Relation..... | 13 |
| Table 3 — Attributes of Relation_Role..... | 13 |
| Table 4 — Attributes of Assertion..... | 14 |
| Table 5 — Attributes of Concept_Constraint_Set..... | 16 |
| Table 6 — Attributes of Relation_Constraint_Set..... | 17 |
| Table 7 — Examples of binary relations and their characterization..... | 22 |
| Table 8 — Attributes of Binary_Relation..... | 22 |
| Table 9 — Values of Reflexivity enumeration..... | 22 |
| Table 10 — Values of Symmetry enumeration..... | 23 |
| Table 11 — Values of Reflexivity enumeration..... | 23 |
| Table B.1 — Correspondences of ISO/IEC 11179-32 concept system metamodel to selected notations..... | 25 |
| Table B.2 — SKOS-CORE as an ISO/IEC 11179-32 Concept System..... | 26 |
| Table B.3 — SKOS relations as ISO/IEC 11179-32 Binary Relations..... | 26 |
| Table B.4 — SKOS Thesaurus example — ISO/IEC 11179-32 Concept System..... | 27 |
| Table B.5 — SKOS Thesaurus Example — ISO/IEC 11179-32 Concepts..... | 27 |
| Table B.6 — SKOS Thesaurus Example — ISO/IEC 11179-32 Links..... | 27 |
| Table B.7 — SKOS Thesaurus Example — ISO/IEC 11179-31 Conceptual Domains..... | 28 |
| Table B.8 — SKOS Thesaurus Example — ISO/IEC 11179-31 Value Domains..... | 28 |
| Table B.9 — ORM as an ISO/IEC 11179-32 Concept System..... | 29 |
| Table B.10 — ORM Relations as ISO/IEC 11179-32 Binary Relations..... | 29 |
| Table B.11 — ORM Roles as ISO/IEC 11179-32 Relation Roles..... | 29 |
| Table B.12 — Car Registration Model in ORM — ISO/IEC 11179-32 Concept System..... | 32 |
| Table B.13 — Car Registration Model in ORM — ISO/IEC 11179-32 Concepts..... | 32 |
| Table B.14 — Car Registration Model in ORM — ISO/IEC 11179-32 Binary Relations..... | 32 |
| Table B.15 — Car Registration Model in ORM — ISO/IEC 11179-32 Links..... | 33 |
| Table B.16 — OWL constructs with directly corresponding ISO/IEC 11179-32 metamodel elements..... | 34 |

| | |
|---|-----------|
| Table B.17 — OWL built-in constructs described in OWL metamodel | 34 |
| Table B.18 — OWL as an ISO/IEC 11179-32 Concept System | 35 |
| Table B.19 — OWL Concepts as ISO/IEC 11179-32 Concepts | 35 |
| Table B.20 — OWL Binary Relations as ISO/IEC 11179-32 Binary Relations | 35 |
| Table B.21 — OWL Relations (except Binary Relations) as ISO/IEC 11179-32 Relations | 36 |
| Table B.22 — OWL Constructs as ISO/IEC 11179-32 Relation Roles | 36 |
| Table B.23 — OWL Constructs as ISO/IEC 11179-32 Links | 37 |
| Table B.24 — Car Registration Model in OWL — ISO/IEC 11179-32 Concept System | 43 |
| Table B.25 — Car Registration Model in OWL — ISO/IEC 11179-32 Concepts | 43 |
| Table B.26 — Car Registration Model in OWL — ISO/IEC 11179-32 Binary Relations | 43 |
| Table B.27 — Car Registration Model in OWL — ISO/IEC 11179-32 Relation Roles | 44 |
| Table B.28 — Car Registration Model in OWL — ISO/IEC 11179-32 Links | 44 |
| Table B.29 — Car Registration Model in OWL — ISO/IEC 11179-32 Assertions | 48 |
| Table B.30 — CL Metamodel - ISO/IEC 11179-32 Concept System | 51 |
| Table B.31 — CL Metamodel - ISO/IEC 11179-32 Binary Relations | 51 |
| Table B.32 — CLIF Units Example — ISO/IEC 11179-32 Concept System | 51 |
| Table B.33 — CLIF Units Example — ISO/IEC 11179-32 Concepts | 52 |
| Table B.34 — CLIF Units Example — ISO/IEC 11179-32 Binary Relations | 52 |
| Table B.35 — CLIF Units Example — ISO/IEC 11179-32 Relations Roles | 52 |
| Table B.36 — CLIF Units Example — ISO/IEC 11179-32 Links | 52 |
| Table B.37 — CLIF Units Example — ISO/IEC 11179-32 Assertions | 53 |
| Table C.1 — Summary view of the mapping of Classification_Scheme to Concept_System | 54 |