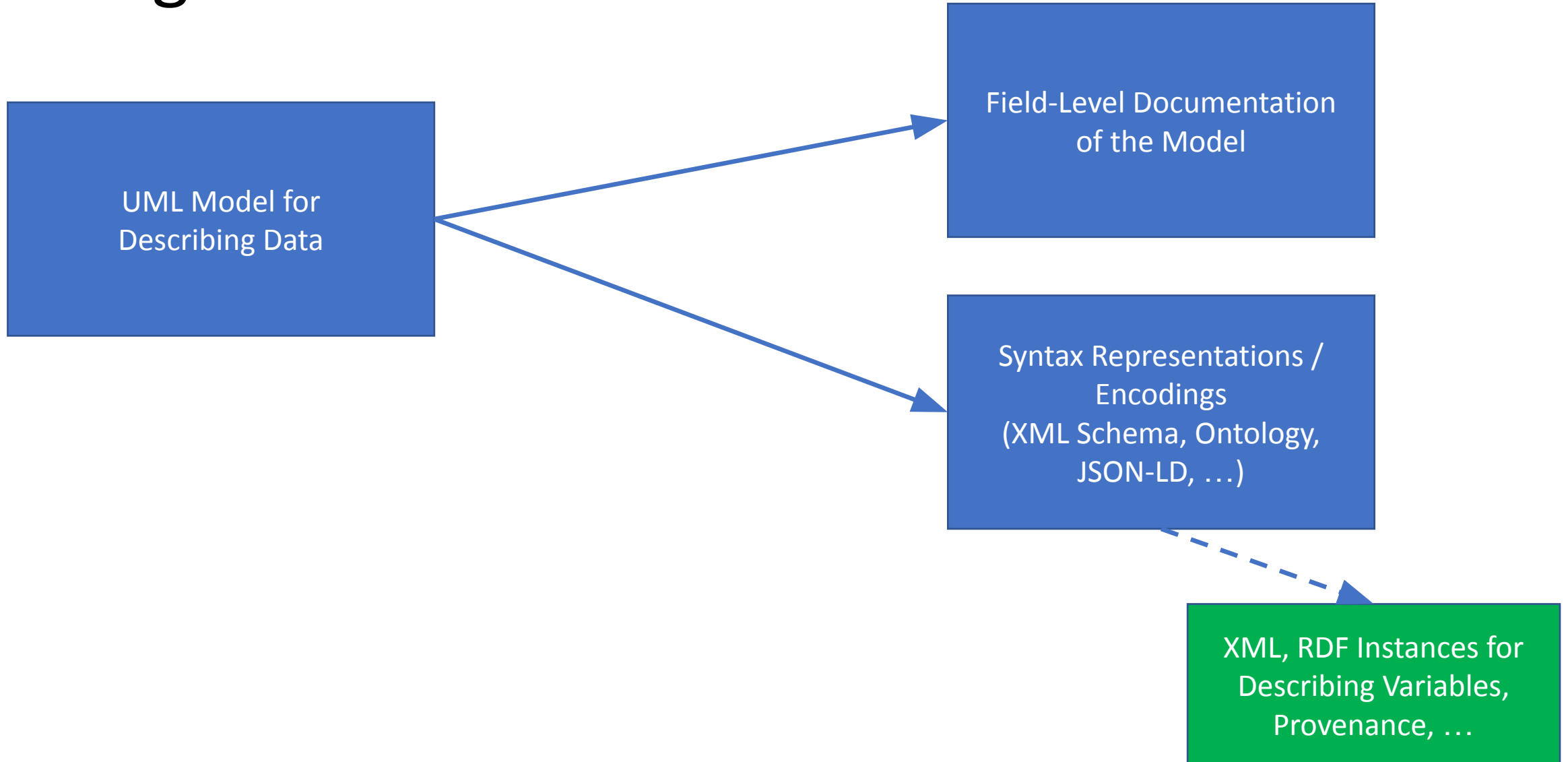


# DDI-CDI Specification

# Model-Driven Development

DDI Alliance

# High-Level View



# UML Class Model Interoperable Subset - UCMIS

- UCMIS - a subset of UML class diagram items
  - (UML - a graphical language for visualizing and specifying object systems)
- UCMIS is intended for modeling data descriptions
- The used UML subset focuses on items that describe classes, their relationships to each other, and their attributes
- Items have well-defined counterparts in visual UML class diagrams
- Provides robust models
- Interoperable

# Interoperability of UCMIS

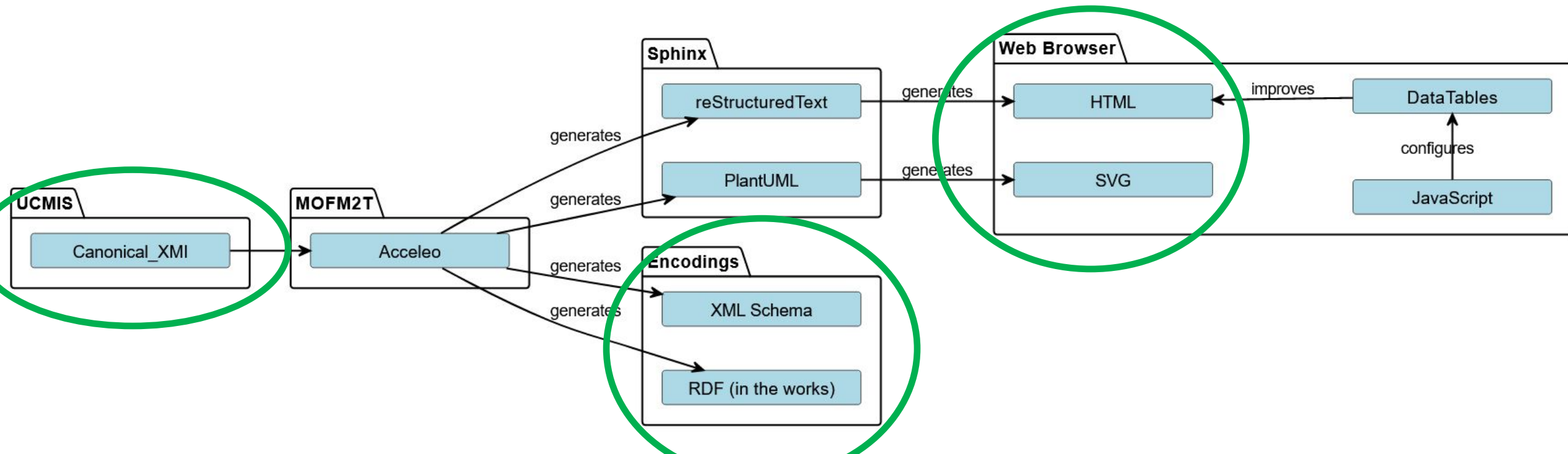
- UCMIS items are implemented in all UML tools
- UCMIS uses single inheritance only
- Only binary associations are used, i.e. two classes are related
- UCMIS items have counterparts in common object-oriented programming
- Can be represented as Canonical XMI (OMG)
  - This enables the import of the model into common UML tools
    - For analyzing the model, relating it to other UML models, and generating syntax representations which are provided by these tools
  - *“Canonical XMI: A specific constrained format of XMI that minimizes variability and provides predictable identification and ordering.”*

# UCMIS - List of Items

- Structural Items
  - Model
  - Package
  - Class
  - Property
- Relationships
  - Association
  - Generalization
  - Abstraction
    - «Derive», «Refine», «Trace»
- Data Type Definition
  - DataType
  - Enumeration
  - PrimitiveType
    - EnumerationLiteral
    - LiteralInteger
    - LiteralString
    - LiteralUnlimitedNatural
- Other
  - Comment

# Tool UCMIS Model to Text (M2T)


- UCMIS-M2T generated for a UML class model in a model-driven approach documentation and syntax representations (encodings)
- The tool uses [Eclipse Acceleo](#) which is an implementation of the OMG standard [MOF Model to Text Transformation Language](#) (MOFM2T™). This code generation language uses a template based approach.



# Generated Field-Level Documentation

UML Model: DDI Cross Domain Integration (DDI-CDI 1.0) » DDICDILibrary

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DDICDILibrary

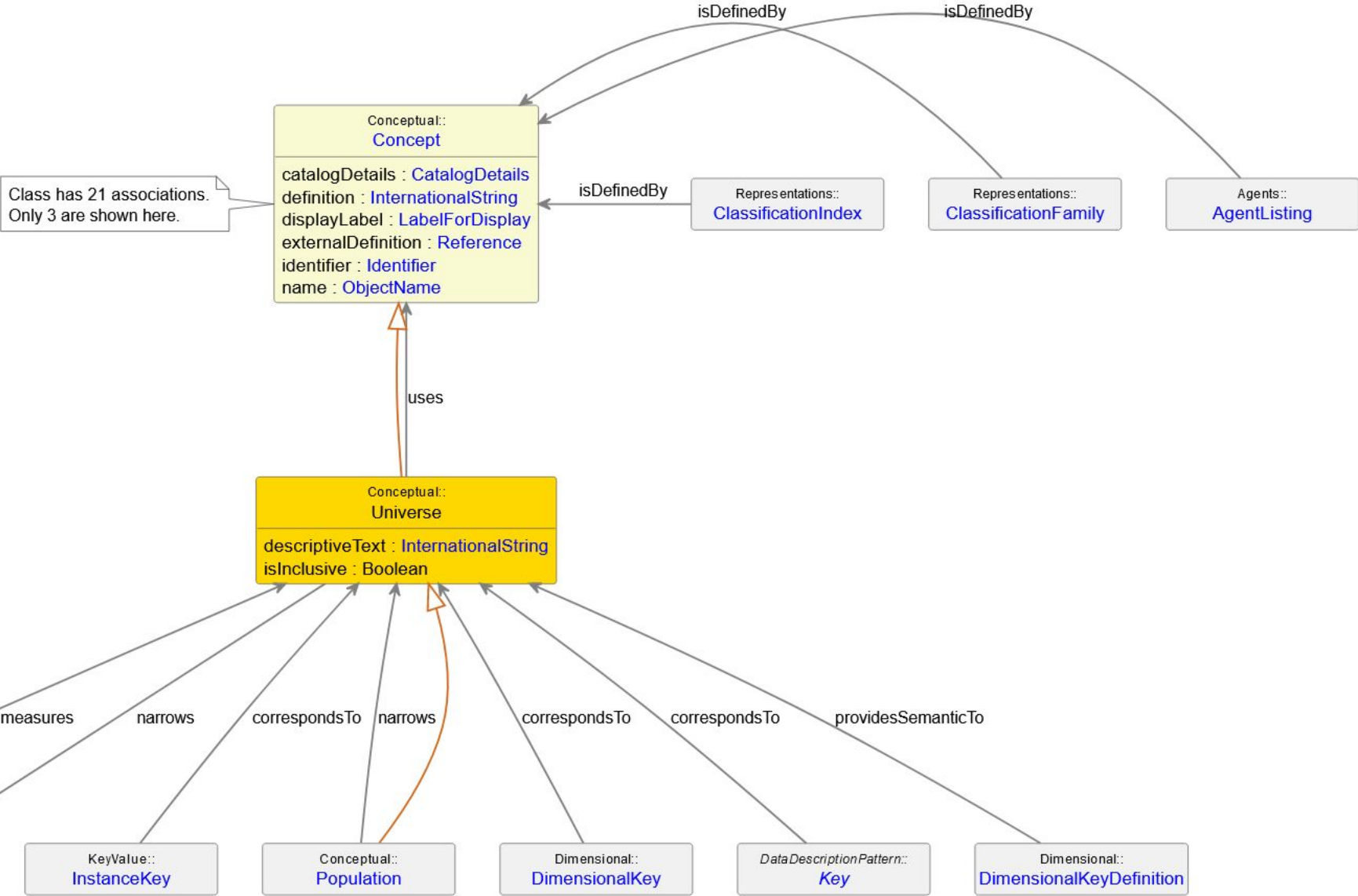
Fully qualified package name: DDICDIModels::DDICDILibrary

This package contains the classes, datatypes, and their definitions for all of the DDI-CDI model intended for direct use by implementers. It is organized into several sub-packages, as described below.

- [Classes](#)
  - [Agents](#)
    - [Agent](#)
    - [AgentListing](#)
    - [AgentPosition](#)
    - [AgentRelationship](#)
    - [AgentStructure](#)
    - [Individual](#)
    - [Machine](#)
    - [Organization](#)
  - [Conceptual](#)
    - [Category](#)
    - [CategoryPosition](#)
    - [CategoryRelationStructure](#)
    - [CategoryRelationship](#)

# UML Diagram: Class Universe in Context

- Hints
- Move the mouse cursor over a name to see more information.
  - Click on a name to go to the corresponding page.
  - The arrows of the inheritance tree are **colored**.



# Syntax Representations / Encodings

## XML Schema

```
1 <xs:complexType name="UniverseXsdType" xml:id="UniverseXsdType">
2   <xs:annotation>
3     <xs:documentation>Definition [...]</xs:documentation>
20  </xs:annotation>
21  <xs:complexContent>
22    <xs:extension base="ConceptXsdType">
23      <xs:sequence>
24        <xs:element name="descriptiveText" type="InternationalStringXsdType"
25          minOccurs="0" maxOccurs="1" xml:id="Universe-descriptiveText">
26          <xs:annotation> [...]</xs:annotation>
28        </xs:element>
29        <xs:element name="isInclusive" type="xs:boolean" minOccurs="0"
30          maxOccurs="1" xml:id="Universe-isInclusive">
31          <xs:annotation> [...]</xs:annotation>
33        </xs:element>
34        <xs:element name="Universe_narrows_UnitType-Target" minOccurs="0"
35          maxOccurs="1" xml:id="Universe_narrows_UnitType-Target">
36          <xs:annotation> [...]</xs:annotation>
38          <xs:complexType>
39            <xs:complexContent>
40              <xs:extension base="ReferenceXsdType">
41                <xs:sequence>
42                  <xs:element name="typeOfClass" minOccurs="0"
43                    maxOccurs="unbounded" xml:id="Universe_narrows_UnitType-Source">
44                    <xs:simpleType>
45                      <xs:restriction base="xs:NMTOKEN">
46                        <xs:enumeration value="UnitType"/>
47                      </xs:restriction>
48                    </xs:simpleType>
49                  </xs:element>
```

## Ontology (Turtle)

```
3 cdi:Universe
4 a rdfs:Class, owl:Class, ucmis:Class;
5 rdfs:label "Universe";
6 rdfs:comment "Definition\n=====\nSpecialized unit type, with the specialization b
7 rdfs:subClassOf cdi:Concept;
8 .
9
10 cdi:Universe-descriptiveText
11 a rdf:Property, owl:ObjectProperty, ucmis:Attribute;
12 rdfs:label "descriptiveText";
13 rdfs:comment "A short natural language account of the characteristics of the object."@en
14 rdfs:domain cdi:Universe;
15 rdfs:range cdi:InternationalString;
16 .
17
18 cdi:Universe-isInclusive
19 a rdf:Property, owl:DatatypeProperty, ucmis:Attribute;
20 rdfs:label "isInclusive";
21 rdfs:comment "Default value is True. The description statement of a universe is generally
22 rdfs:domain cdi:Universe;
23 rdfs:range xsd:boolean;
24 .
25
26
27 cdi:Universe_narrows_UnitType
28 a rdf:Property, owl:ObjectProperty, ucmis:Association;
29 # ASSOCIATION
30 rdfs:label "narrows";
31 skos:altLabel "Universe_narrows_UnitType";
32 rdfs:comment "Reference to the unit type that the universe definition narrows."@en;
33 rdfs:domain cdi:Universe;
34 rdfs:range cdi:UnitType;
```