

ELIS v1.0.1



Specification

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1. INTRODUCTION

This document consists of the EIRA Library of Interoperability Specifications (ELIS) version 1.0.1 expressed using DCAT-AP, as well as a narrative explaining the changes made to the ELIS BETA to reach v1.0.1 and the specifications added to the ELIS.

It contains the following elements:

- A description of the context in which the EIRA Library of Interoperability Specifications (ELIS) has been developed.
- A description of the analysis performed prior to the population of the ELIS.
- A description of the process for the expression of the ELIS using the Data Catalogue Vocabulary Application Profile (DCAT-AP).
- The Microsoft Excel and DCAT-AP versions of the ELIS.

The ELIS is a library containing the standards and specifications defining the interoperability aspects of the architectural building blocks (ABBs) contained in the European Interoperability Reference Architecture (EIRA). The aim of this library is supporting solutions architects when modelling using EIRA.

“The ELIS is a modelling tool-agnostic but not architecture-agnostic library of interoperability specifications”

In the following sections, the context in which the ELIS has been developed is explained, as well as the criteria and methodology followed for the inclusion of specifications in it, and the way it will be expressed using DCAT-AP.

2. CONTEXT

The ISA² programme of the European Commission supports the development of solutions that enable the cross-border delivery of interoperable public services in Europe. In order to ensure the interoperability of those services, the EIA action works as an integrator between the Member States and other departments of the European Commission for the development of a joint interoperability architecture for public services. The main output of this action is the European Interoperability Reference Architecture (EIRA®), which implements the European Interoperability Framework (EIF) in the Legal, Organisational, Semantic and Technical (LOST) views of interoperability.

EIRA introduces the concept of “interoperability specification” and defines it as “a document containing agreed normative statements for Solution Building Blocks used in an information exchange context. They

can refer to existing standards or specifications”¹. Additionally, interoperability specifications cover the four levels of interoperability defined in EIRA.

The following table defines the interoperability specifications used in [EIRA](#) per view:

Interoperability specification	Description
Legal interoperability specifications	Legal interoperability covers the broader environment of laws, policies, procedures and cooperation agreements needed to allow the seamless exchange of information between different organizations, regions and countries. Legal interoperability specifications support interoperability by addressing the core legal interoperability background for solutions
Organisational interoperability specifications	<p>This aspect of interoperability is concerned with how organisations, such as public administrations in different Member States, cooperate to achieve their mutually agreed goals. In practice, organisational interoperability implies integrating business processes and related data exchange. Organisational interoperability also aims to meet the requirements of the user community by making services available, easily identifiable, accessible and user-focused.</p> <p>Organisation interoperability specifications support organisational interoperability by addressing the core organizational interoperability background for solutions.</p>
Semantic interoperability specification	<p>Semantic interoperability enables organizations to process information from external sources in a meaningful manner. It ensures that the precise meaning of exchanged information is understood and preserved throughout exchanges between parties. In the context of the EIF, semantic interoperability encompasses the following aspects:</p> <ul style="list-style-type: none">- Semantic interoperability which is about the meaning of data elements and the relationship between them. It includes developing vocabulary to describe data exchanges, and ensures that data elements are understood in the same way by communicating parties- Syntactic interoperability which is about describing the exact format of the information to be exchanged in terms of grammar, format and schemas
Technical interoperability specification	Technical interoperability specifications support technical interoperability, at the infrastructure level, by addressing the core technical infrastructure interoperability background for solutions

Table 1 EIRA interoperability specifications per view

¹https://joinup.ec.europa.eu/sites/default/files/document/2017-01/how_does_eira_support_interoperability_v1_0_0.pdf

As an element of the EIRA©, the ELIS provides a set of interoperability specifications that can be used to define the different interoperability aspects of European public services. The ELIS will constitute a tool for supporting architects on the process of modelling public services using EIRA, as it defines the interoperability aspects of the ABBs contained in it.

Additionally, it will also allow them, once implemented in a modelling tool, to work simultaneously with other local libraries, allowing the description of the interoperability of the building blocks of any other architecture with the specifications contained in the ELIS.

3. UPDATE OF THE ELIS AND RELEASE OF v1.0.1

The European Library of Interoperability Specification is the digital library of specifications defining interoperability aspects of the European Interoperability Reference Architecture (EIRA) architectural building blocks (ABBs) and Solution building blocks (SBBs). It is used by solutions architects when modelling Detailed Level Solution Architecture Templates (DL SAT).

This section aims to explain how the new release of the ELIS has been performed. ELIS connects each EIRA ABB to one or more specifications and some specifications to one or more existing CAMSS assessments.

For this purpose, two other developments have been done and promoted:

- The Core Specifications and Standards Vocabulary (CSSV), and
- The Core Assessment Vocabulary (CAV).

Also, it is important to remark that the ELIS expression is based on DCAT-AP.

3.1. The DCAT-AP expression of the ELIS Catalogue

The fact that the catalogue is electronic means that it can be processed by a software application. Thus ELIS is expressed as an electronic catalogue so it can be consumed by software applications like Archi® and other architecture modelling and development tools. For its expression as a machine-readable artefact, the ELIS uses the DCAT-AP specification.

The DCAT Application profile for data portals in Europe (DCAT-AP²) is a specification based on W3C's Data Catalogue vocabulary (DCAT³) for describing public sector datasets in Europe. DCAT, in turn, was developed as an application profile of the ADMS vocabulary for the description of assets. Hence, DCAT-AP can be used to describe any type of asset (treated as a dataset, especially if you consider that metadata are also data).

The figure below shows the DCAT-AP classes and properties:

² <https://joinup.ec.europa.eu/solution/dcat-application-profile-data-portals-europe/release/200>

³ <https://www.w3.org/TR/vocab-dcat/>

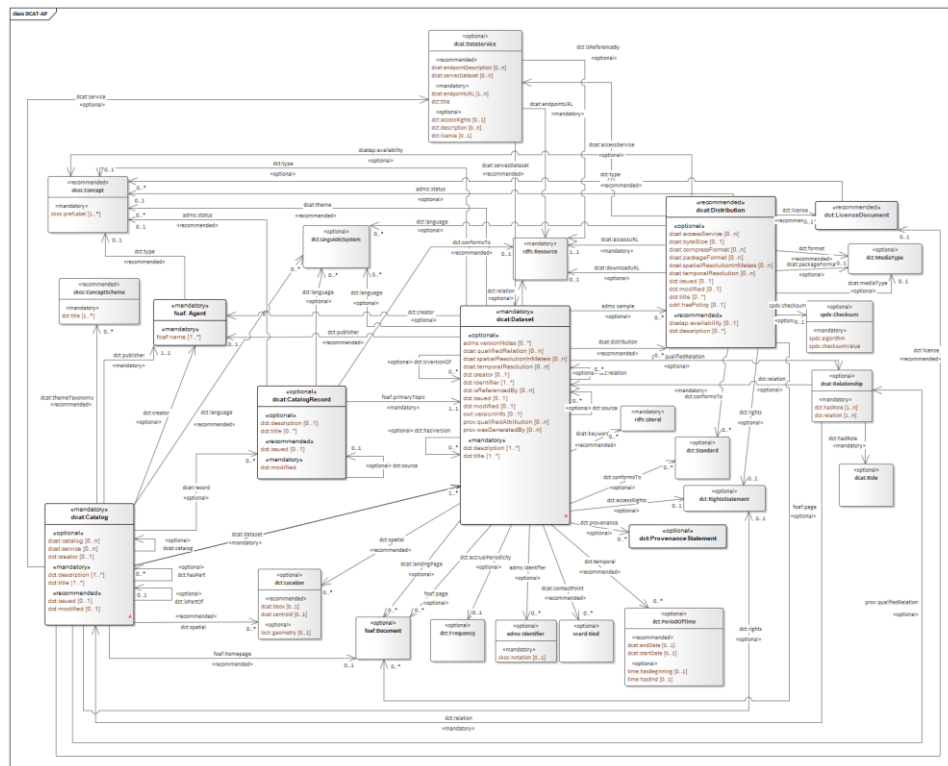


Figure 1 DCAT-AP classes and properties

The figure below shows how ADMS defines the concept Asset, based on DCAT:

The CSSV is based on a preliminary Core Interoperability Standards and Specifications Vocabulary (CISSV) and EIRA CISSV-AP model, which was used for the development of the BETA version of the ELIS in 2018. The CSSV thus replaces that other preliminary model.

The following figure shows the classes and properties that are used or defined in the CSSV and which are part of the new release of the ELIS:

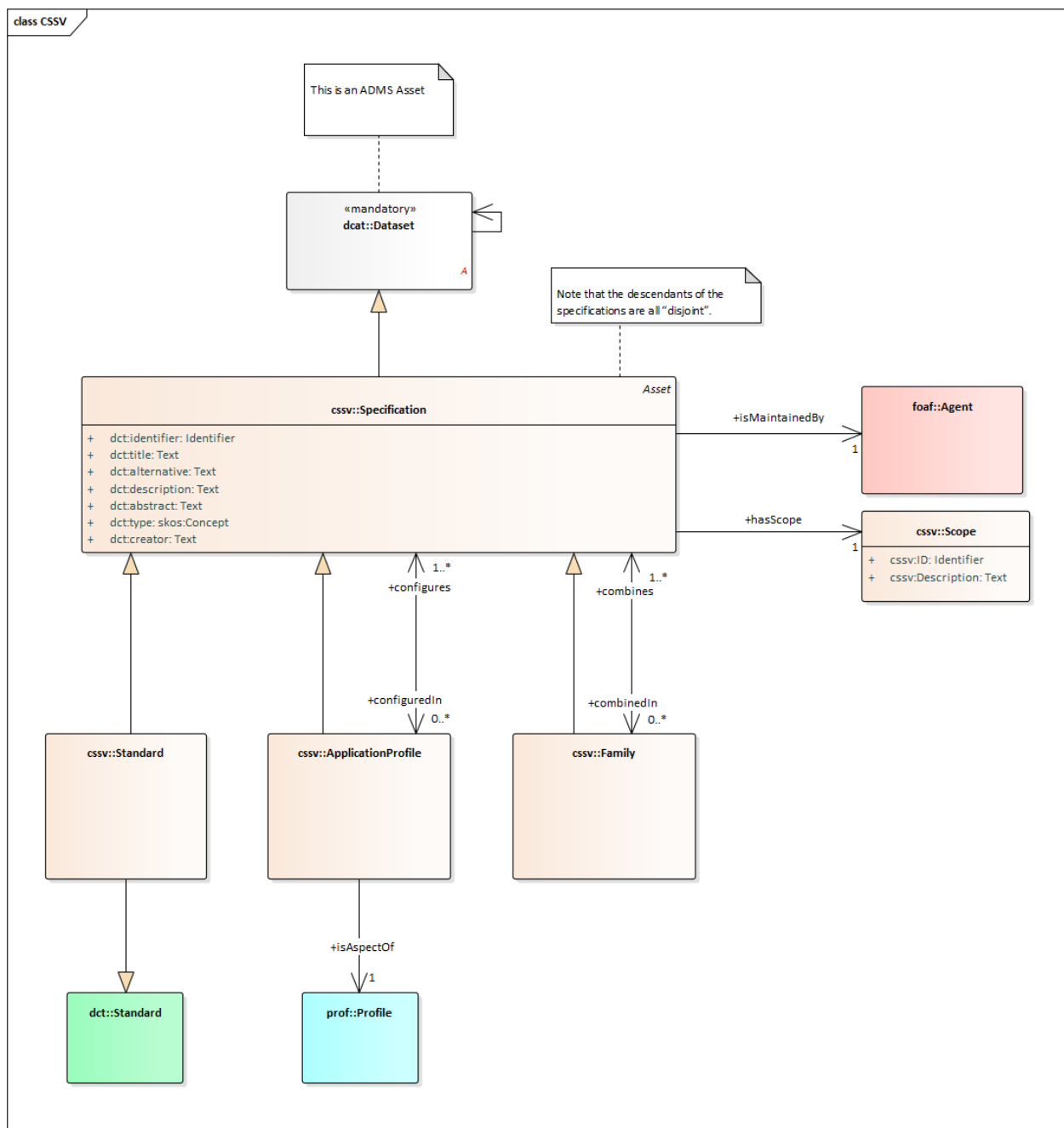


Figure 3 CSSV Data model

The main class of the CSSV model is the “Specification”. A Specification is an asset, as it inherits from the dcat:Dataset, which is the representative of an ADMS Asset.

A Specification, additionally, can be a Standard, an ApplicationProfile and or a Family or a collection of other specifications. The CSSV model defines:

- A **Specification** as a set of agreed, descriptive and normative statements about how a specification should be designed or made.
- A **Standard** as a specification that is largely adopted and possibly endorsed.
- An **ApplicationProfile** as customisation of one or more existing specifications potentially for a given use case or a policy domain adding an end-to-end narrative describing and ensuring the interoperability of its underlying specification(s). By customisation, we understand the “addition of more specificity by identifying mandatory, recommended and optional elements, as well as by defining controlled vocabularies to be employed”.
- A **Family** as a collection of interrelated and/or complementary specifications, standards or application profiles and the explanation of how they are combined, used or both.

3.3. The Core Assessment Vocabulary (CAV)⁶

The Core Assessment Vocabulary represents and defines what an “Assessment” of an “Asset” is and how to perform the Assessment using scenario-based “Criteria”. It is a domain-agnostic vocabulary, meaning that it can be used to assess any type of asset.

The following figure shows the classes and properties that are used or defined in the vocabulary:

⁶ CAV: <https://joinup.ec.europa.eu/solution/core-assessment-vocabulary-cav>

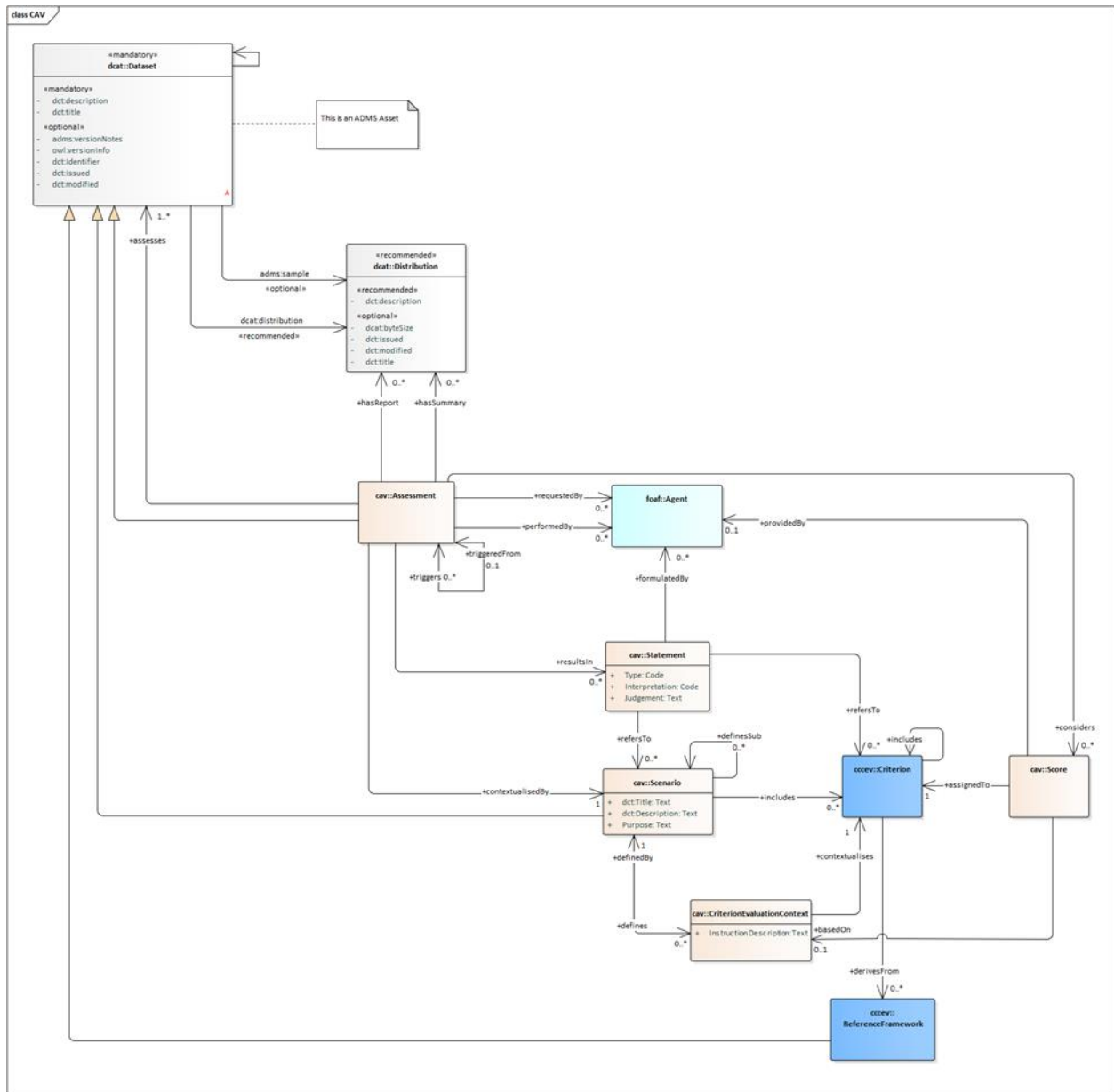


Figure 4 The Core Assessment Vocabulary

3.4. ELIS Overview

This section explains how ELIS is connected with DCAT-AP, the CSSV, and the CAV. The figure below shows a conceptual overview of how the ELIS is connected:

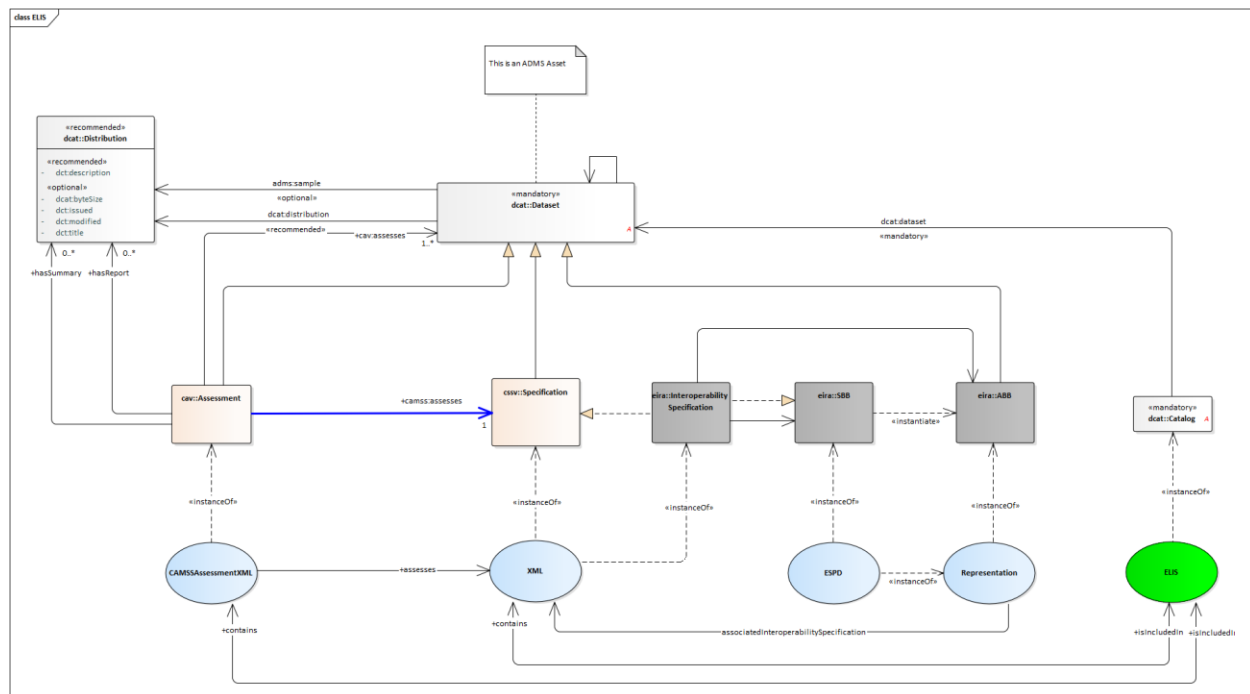


Figure 5 ELIS conceptual overview

Beware of the following:

- The ELIS Catalogue is instantiated using the DCAT-AP class Catalog;
- The ELIS Catalogue has as many entries as instances of DCAT-AP CatalogRecord(s). One CatalogRecord is composed of metadata about each entry in the ELIS Catalogue representing one CSSV Specification;
- The Primary Topic of an ELIS Catalogue Record is always a Specification, a Standard, an Application Profile or a Family, which are implemented as a DCAT-AP DataSet.
- The Primary Topic always has a Distribution which points to the web page where the specification is available.
- Some Specifications have associated Assessments that also have Distributions that point to the Joinup page where can be downloaded.
- Notice that some entities are associated with code lists ([Interoperability Specification Domain](#), and the [ELIS Entity Type](#)). Additionally, each EIRA Interoperability Specification can express its interoperability aspects via the association to one or other EIRA ABB as defined in the [EIRA Ontology](#) (expressed as SKOS Concepts).

The language chosen to represent the ELIS is the Terse RDF Triple Language (Turtle)⁷. Turtle is a textual syntax for Resource Description Framework (RDF) that allows an RDF graph to be completely written in a compact and natural text form, with abbreviations for common usage patterns and data types. Turtle provides levels of compatibility with the N-Triples [N-TRIPLES] format as well as the triple pattern syntax of the SPARQL W3C Recommendation.

4. ELIS v1.0.1

4.1. Excel version



4.2. DCAT-AP version



5. ELIS FACTSHEET



This sections contains the ELIS factsheets which shows in a visual format the overvier of the ELIS metrics and characteristics regarding its population.

6. ACRONYMS

Acronym	Description
ABB	Architecture Building Block
CSSV	Core Standards and Specifications Vocabulary

⁷ <https://www.w3.org/TR/turtle/>

DCAT-AP	Data Catalog Vocabulary Application Profile
EIF	European Interoperability Framework
EIRA	European Interoperability Reference Architecture
ELIS	EIRA Library of Interoperability Specifications
RDF	Resource Description Framework
SKOS	Simple Knowledge Organisation System
SPARQL	SPARQL Protocol and RDF Query Language
Turtle	Terse RDF Triple Language

7. REFERENCES

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8. ANNEX I - CODE LIST “ELIS ENTITY TYPE”



ELIS_EntityType_v1.0.1.ttl

9. ANNEX II - CODE LIST “INTEROPERABILITY SPECIFICATION DOMAIN TYPE”



ELIS_InteroperabilitySpecificationDomainType_v1.0.1.ttl

10. ANNEX III – EIRA v4.0.0



EIRA_SKOS.rdf