

DG DIGIT

Unit D.2

Note that this is MAJOR version of the ELIS but it is v5.0.1 and not v2.0.0 as reflected in the title of this deliverable. This logic of versioning is due to the fact that the ELIS MUST be aligned to the major/minor version of EIRA (not to bug fixes-the third level). So, if a release of EIRA is aligned with EIRA x.y.0 The version of ELIS will be x.y.0. If there are more than one version of ELIS supporting the same version of EIRA, ELIS will reflect this in the third level of the version number (i.e. ELIS x.y.0, ELIS x.y.1,..ELIS x.y.n).

The current version of EIRA is v5.0.0

D04.01 Major release of ELIS v5.0.1

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1. INTRODUCTION

This document represents the deliverable requested within Task 04 of the current contract. It consists of the EIRA Library of Interoperability Specifications (ELIS¹) version 5.0.1 expressed using DCAT², as well as a narrative explaining the changes made to the ELIS v5.0.0 to reach v5.0.1 and the specifications added to the ELIS during this project.

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 (DCAT).
- The Microsoft Excel and DCAT 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 (EIRA³). The aim of this library is supporting solution architects when modelling using EIRA.

“ELIS is a modelling tool-agnostic library of interoperability specifications. ELIS is not an architecture-agnostic library of interoperability specifications. ELIS is the EIRA 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 is expressed using DCAT.

¹ EIRA Library of Interoperability Specifications <https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/elis>

² DCAT: <https://www.w3.org/TR/vocab-dcat-3/>

³ EIRA: <https://joinup.ec.europa.eu/collection/european-interoperability-reference-architecture-eira/about>

1.1. Context

The DEP programme (Digital Europe 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 European Interoperability Action (EIA) 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 “solution specification” and defines it as ‘of the highest possible level of granularity on a Solution Building Block, formulated as an agreed normative statement in the design of a European Public Service’⁴. Additionally, interoperability specifications cover the four levels of interoperability defined in EIRA.

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 in 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.

1.2. Structure of the document

This document consists of the following sections:

- Section 2 describes the main requirements for the population of the ELIS.
- Section 3 includes the mechanism used for the maintenance of the ELIS, where the main steps and tools are described.
- Section 4 includes the update of the ELIS according to the reused vocabularies.
- Section 5 presents the ELIS 5.0.1 release and the release components.
- Section 6 describes the ELIS online Dashboard to reflect the evolution of the ELIS and its maintenance.

⁴ EIRA v5.0.0 Solution Specification:

https://joinup.ec.europa.eu/taxonomy/term/http_e_f_data_ceuropa_ceu_fdr8_fSolutionSpecification

2. POPULATION PROCESS

2.1. Requirements for the population of the ELIS

This section lists the main requirements for the population of the ELIS:

Requirement	Description
<u>Requirement 1:</u> The sources of specifications used to populate the ELIS shall be reliable.	<p>The specifications included in the library should be sufficiently mature to be included in the European Library of Interoperability Specifications. Certain sources of specifications have been identified as trusted sources of information. They are therefore considered reusable for the population of the ELIS.</p>
<u>Requirement 2:</u> Legal and Organisational Interoperability Specifications shall be policy domain agnostic.	<p>The interoperability specifications contained in the ELIS should be generic enough to define requirements for national solutions or domain-specific solutions. In order to do so, the ELIS should be populated with organisational and legal specifications that are:</p> <ul style="list-style-type: none">• Applicable at the European level.• Policy domain agnostic. <p>Examples of these specifications are:</p> <ul style="list-style-type: none">• Legal view:<ul style="list-style-type: none">- Legal Act, Binding Instrument, Non-Binding Instrument ABBs: COMMISSION IMPLEMENTING REGULATION (EU) 2015/1501 on the interoperability framework pursuant to Article 12(8) of Regulation (EU) No 910/2014• Organisational view:<ul style="list-style-type: none">- Interoperability Framework ABB: European Interoperability Framework (EIF) <p>For more details, the whole explanation of the requirement can be found here.</p>

Requirement 3.1: A technical interoperability specification associated with a component shall always be associated with the realised service.

The realisation relationship from components to services suggests that an interoperability specification defining requirements for a component transitively define requirements for the service as well. As a matter of fact, application and infrastructure services are exclusively used to expose functionalities to their environment. Thus, the requirements are always defined at the level of the components performing the functions. However, when modelling, a solution architect usually associates the specifications to the service offering functionalities. In this case, the ELIS should allow the association of the interoperability specifications to the service.

Requirement 3.2: A technical interoperability specification associated with a realised service shall always be associated with the component.

The realisation relationship from components to services suggests that an interoperability specification defining requirements for a component transitively define requirements for the service as well. As a matter of fact, application and infrastructure services are exclusively used to expose functionalities to their environment. Thus, the requirements are always defined at the level of the components performing the functions. However, when modelling, a solution architect usually associates the specifications to the service offering functionalities. In this case, the ELIS should allow the association of the interoperability specifications to the service.

Requirement 4: The ELIS shall not contain specifications that are associated to abstract ABBs.

Associating specifications to some abstract ABBs is not sensible for solution architects. A solution architect will tend to associate specification to “leaf” ABBs.

Requirement 5: The ELIS shall only contain specifications that are associated to ABBs, for which requirements are defined.

Associating a specification to certain ABBs would not provide enough value when modelling a Solution Architecture or a DL SAT. In fact, specifications defining requirements for these ABBs may not exist.

Requirement 6: The ELIS shall include in its specification of an ABB, references to this ABB, including as a minimum its version number and location.	Version controls are crucial for maintaining x-references, allowing for proper information life cycle management. As a version control, details on the version of the referenced EIRA are sufficient, if the ABB in itself is a valid element (i.e. conforming to all requirements in this context) inside that version.
Requirement 7: The specifications included in the ELIS shall have a minimum assessment score average and assessment score average strength to ensure its fit for purpose	To consider an assessed specification sufficiently fit for purpose, it shall have a minimum of Assessment Score average and of Strength of Assessment Score average in the EIF scenario. Not assessed specifications in ELIS shall potentially reach this threshold in the EIF scenario. Both thresholds must be equal or higher than 75%.

Table 1 Requirements for the population of the ELIS

2.2. Conclusion and additional considerations from the population process

The main findings of the activities aiming to determine if 100% of the EIRA ABBs can have a specification associated are the following:

In total, 94% of the total number of ABBs (258 ABBs in total) are at least covered by one specification, whereas 6% ABBs are currently not in the scope of the ELIS. Compared to the last release, the percentage of ABBs not being in the scope has decreased from 8% to 6%.

The total number of ABBs covered by at least one specification has significantly increased: from 46% to 89%, compared to the previous version of the ELIS (v5.0.0). This trend is clear in all views, especially the Technical View. Whereas the Technical view has increased to 154 covered ABBs (previously 67), the Organisational has increased by 20 (previously 14), the Semantic by 28 (previously 21) and the Legal by 12 (previously 9).

It is worth noting that the total number of ABBs has not changed with regard to the previous ELIS release, as both, ELIS v5.0.0 and ELIS 5.0.1 relies on EIRA (v5.0.0), but the number of ABBs in scope did in compliance with Requirement 4 (cf. Requirements for the population of the ELIS): from 240 (v5.0.0) to 241 (v5.0.1).

To see the ABBs that do not have associated specifications, please open the ELIS Catalogue.xlsx (see Annex II) and filter the column “Associated Interoperability Specification” by “N/A”.

See more details of the coverage of the ELIS in the following section “**6 ELIS Factsheets Online Dashboard**”.

3. MECHANISM FOR THE MAINTENANCE OF THE ELIS

This section describes the analysis of the different phases of the procedure and the different tools identified to ensure and enhance the quality and consistency of ELIS maintenance.

3.1. Process steps

This section depicts the process and steps included in the mechanism for the maintenance of the ELIS. The objective of atomising the process is the identification of the main elements and improvements on each one.

The process is composed of four main steps:

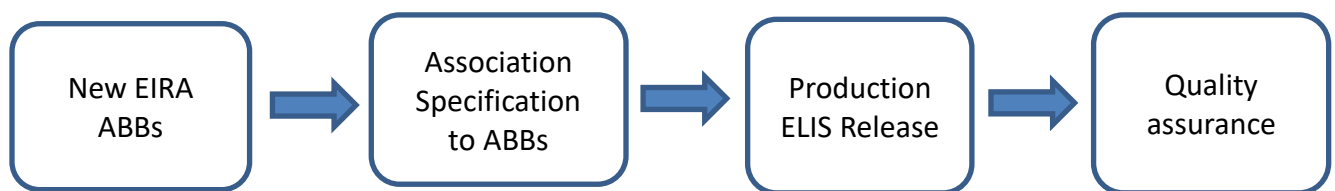


Figure 1 ELIS Maintenance mechanism steps

- **Analysis of new EIRA ABBs:** in this step new versions of EIRA are checked to identify changes in the different views. Meaning that here it is identified when new ABBs have been added, removed, or modified.

This step allows the automation of the comparison process between versions of the EIRA.

- **Association of specifications to ABBs:** after the identification of the new ABBs, technical specifications have to be linked (covering) to the different ABBs, following the requirements defined in the previous section “2.1 Requirements for the population of the ELIS”.

In this phase, the analysis is carried out manually considering the main requirements previously established. This process ensures the coverage of the maximum ABBs by a related specification. Even though this process is done mainly manually, a useful tool has been identified for a specific area, the Interoperability governance viewpoint⁵.

- **Population:** the last step in the process implies the population of the ELIS and the creation of the .ttl file using VocBench as a tool.

⁵ EIRA Online documentation; Interoperability Governance Viewpoint:

https://joinup.ec.europa.eu/taxonomy/term/http_e_f_data_ceuropa_ceu_fdr8_finteroperabilityGovernance

- **Quality assurance:** after populating the ELIS with the new specifications and production of machine-readable format (TTL file), it must be validated to ensure quality.

3.2. Tools per step

This section presents the different tools/methods used in each of the steps mentioned above:

3.2.1. New EIRA ABBs: tools for the difference between files.

The following table contains the tools that can be used between previous and new versions of EIRA to identify which are the differences between versions (e.g., new ABBs, deprecated ABBs, other):

Tool	Description
MELD ⁶	Meld is an Open-Source software that allows the comparison of files, showing the changes, and a detailed view of the scope of the changes. This detailed view includes when lines have been included, deleted, or if there are variations on similar structures. The information provided for this tool is a step ahead of NotePad ++, even though it can be used for this purpose with no information loss.
NotePad ++ ⁷	As a common source code editor, NotePad ++ also includes a plugin that allows the differentiation between files.

In the current release of the ELIS, NotePad ++ has been used to identify the differences between EIRA v4.1.0 and EIRA v.5.0.0.

3.2.2. Association of specifications to ABBs:

Tool	Description
Joinup Licensing Assistant ⁸ (JLA)	JLA allows to compare and select open licenses based on their content.

In this phase, since the tool is aimed to help solutions owners and creators to select the licence fitting better to the purpose of the solution, it can help in the process of identification of specifications (licenses), which are already considered in some cases for the coverage of certain Governance ABBs.

⁶ Meld: <https://meldmerge.org/>

⁷ Notepad ++: <https://notepad-plus-plus.org/>

⁸ JLA: <https://joinup.ec.europa.eu/collection/eupl/solution/joinup-licensing-assistant>

3.2.3. Population

Tool	Description
VocBench	VocBench is an open-source platform to help to manage and publish multilingual controlled vocabularies in an open and interoperable way.

In the population process, as analysed and decided for the current ELIS release, the VocBench is a useful tool provided by the European Commission that helps the process of generating the ELIS in .ttl format. It includes a user-friendly interface that eases the process of populating the Library. The user guide on how to set up the environment is available in Confluence⁹.

3.2.4. Quality Assurance

Tool	Description
Protégé	Protégé is an open-source ontology editor and framework for building intelligent systems

After populating the ELIS it is necessary to validate the ttl file in terms of conformance. It is done with Protégé, which validates the syntax and allows to active the *reasoner* in order to detect any possible inconsistency. Moreover, once the document is validated it is necessary to run SPARQL queries against the ELIS to ensure that information can be retrieved from it.

It is worth noting that this process is documented in Confluence¹⁰ as part of the Quality review process for CAMSS semantics assets.

4. UPDATE OF THE ELIS AND RELEASE OF V5.0.1

The European Library of Interoperability Specifications 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 solution 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.

⁹ VocBench user guide: <https://citnet.tech.ec.europa.eu/CITnet/confluence/display/CAMSS/Guidelines#Guidelines-VocBenchUserGuide>

¹⁰ Quality review process guidelines:

[https://citnet.tech.ec.europa.eu/CITnet/confluence/display/CAMSS/Guidelines#Guidelines-In-depthreview\(internalreview\)](https://citnet.tech.ec.europa.eu/CITnet/confluence/display/CAMSS/Guidelines#Guidelines-In-depthreview(internalreview))

For this purpose, the two CAMSS vocabularies are used:

- The Core Standards and Specifications Vocabulary (CSSV)¹¹, and
- The Core Assessment Vocabulary (CAV)¹².

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

Additionally, the ELIS will be available through the OP's CELLAR SPARQL endpoint: <http://publications.europa.eu/webapi/rdf/sparql>. A set of SPARQL queries can be found in Annex I. These queries can be executed in the endpoint to retrieve data from the ELIS.

4.1. Alignment with the TOGAF® domains

ELIS v5.0.1 provides a reinterpretation of the ELIS domains according to TOGAF®¹³.

Domains (previously known as Interoperability Specification Domains) were a feature aiming to support architects by contextualising the area of knowledge that specifications were addressing. One of the salient challenges of this feature was that specifications could be associated with multi-domain or cross-domain since a given specification could be linked to one or more ABBs in different EIRA views. ELIS domains evolved based on the premise of including meaningful associations that help software architects.

The current release of the ELIS updates the domains feature in an attempt to provide additional information and value to architects when modelling. Domains are provided at the specification level. Four domains have been identified, which are intended to be extended in subsequent releases:

- **Business:** refers to the ability to engage in the organisational aspects for the development and delivery of solutions. It is based on the Business Architecture category from TOGAF® and is also supported by the EIRA approach to views.
- **Strategy:** refers to the influence or instruments needed to coordinate the accomplishment of public policy objectives to support the end-to-end design of interoperable digital public services. It is based on the Implementation Governance model from TOGAF® and is also supported by the EIRA approach to views.
- **Application:** refers to the specifications used by a solution that is not directly related to the infrastructure but is in its application layer. It is based on the 'Technical Architecture' from TOGAF® ADM and is also supported by the EIRA approach to views.

¹¹ CSSV Solution <https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/core-standards-and-specifications-vocabulary-cssv>

¹² CAV Solution <https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/core-assessment-vocabulary-cav>

¹³ TOGAF: <https://pubs.opengroup.org/architecture/togaf9-doc/arch/index.html>

- **Technology & Physical:** refers to specifications that focus on the technical implementation of the infrastructure layer. It is based on TOGAF® ADM Technical Architecture and is also supported by the EIRA approach to views.

This approach has been implemented during the current contract and as with other maintenance aspects, it is subject to the Configuration Checklist and the continuous improvement approach.

4.2. The DCAT 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 specification.

The Data Catalogue Vocabulary (DCAT) is used to describe public sector datasets in Europe. This vocabulary has been developed by the W3C. DCAT can be used to describe any type of asset (treated as a dataset, especially if you consider that metadata is also data).

The figure below shows the summary DCAT classes and properties¹⁴:

¹⁴ DCAT <https://www.w3.org/TR/vocab-dcat-3/>

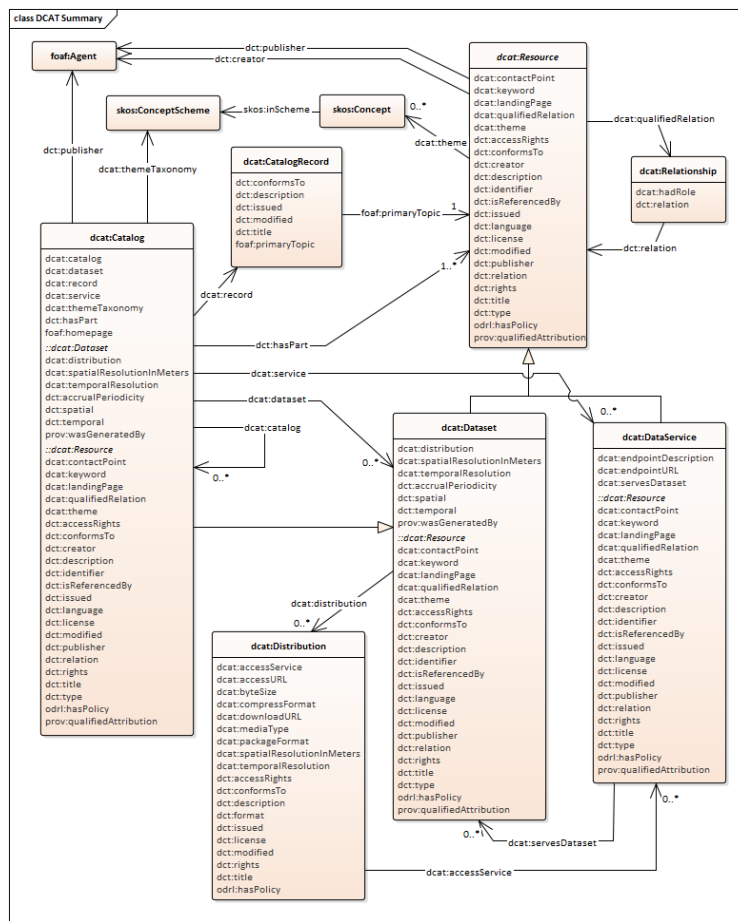


Figure 2 DCAT classes and properties

4.3. The Core Standards and Specifications Vocabulary (CSSV)

The CSSV is the vocabulary used for the information exchange related to standards and specifications amongst software solutions, as well as it is the key element for the development of the new release of the EIRA Library of Interoperability Specifications (ELIS).

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:

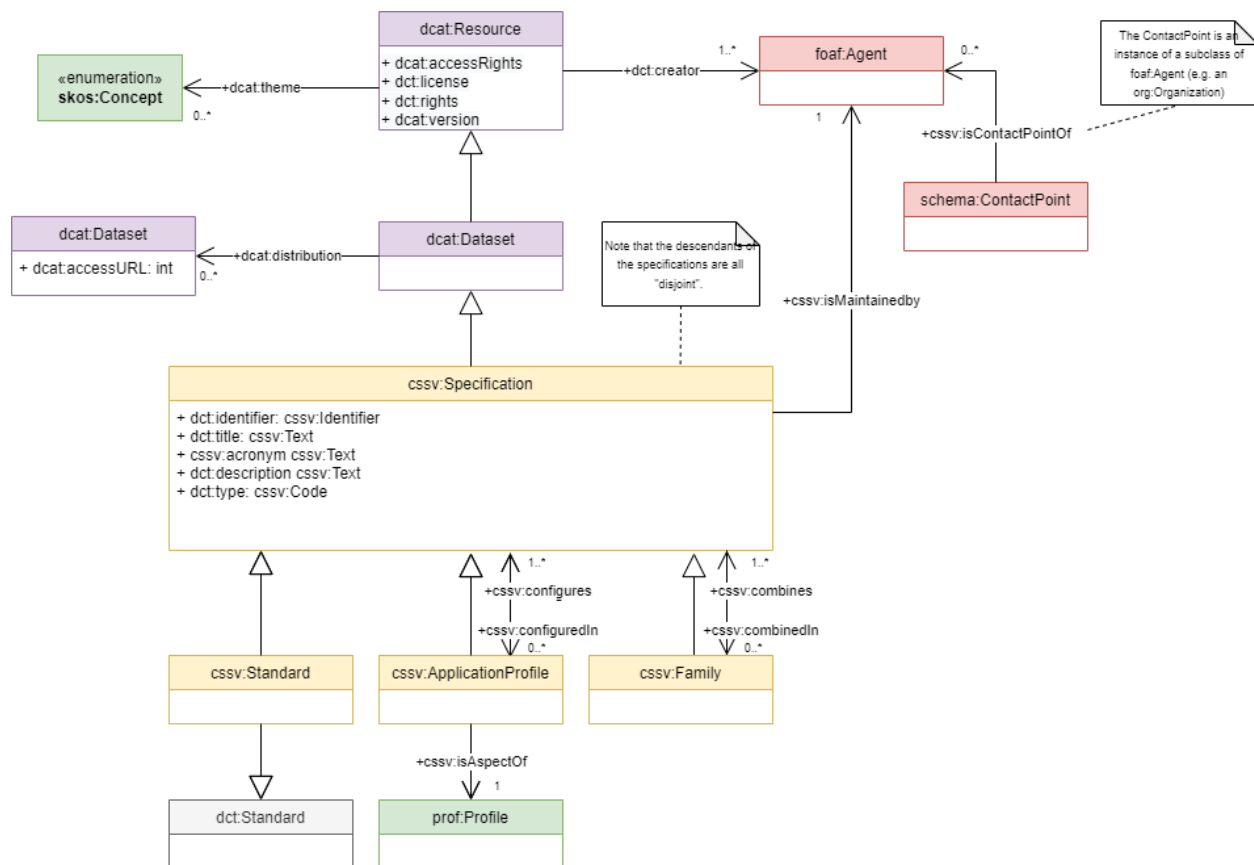


Figure 3 CSSV Data model

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

A Specification, additionally, can be a Standard, an ApplicationProfile, 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.

A collection of Specifications differs from a Family of Specifications in the fact that the relationship amongst themselves is not explicit. In the CSSV model, a collection of Specifications is an Asset that is

related to other Assets and that is realised as an individual of a Specification. In other words, a Specification that reuses the *dct:relation* property of its base class *dcat:Dataset*.

There are occasions where collections of Specifications are applied to a context or a domain in a specific “configuration”. Thus, application profiles may conform sets of “themed” specifications. For this, the CSSV model uses the property “configures/includedIn” and the *dcat:theme* property pointing at a *skos:Concept* (i.e. a code, see the DCAT model above).

It is important to note that the descendants of the specifications are all “disjoint”. Thus, ApplicationProfiles and Families are Specifications that refer to or are put together with other Specifications and/or Standards but cannot themselves be considered Standards.

One Specification, in time, may become a Standard. In these cases, the authority (author) that defined the Specification may be different from the one that creates and maintains artefacts out of the Standard. Think for example of the artefacts produced, maintained, and distributed by the Publications Office of the European Union (OP) in its site EU Vocabularies¹⁵: all these artefacts are defined by other authorities (e.g. the ISO), whilst the artefacts (e.g. the controlled vocabularies expressed in SKOS, XML, GeneriCode, XML, etc.) are supplied by the OP. For this, the CSSV uses the properties *dct:creator* and *cssv:isMaintainedBy*. Additionally, the *dcat:Dataset* has the property *dct:type* that can be used to state that the Specification is of type “definition, artefact or other”. The DCAT vocabulary also provides the possibility of expressing who is responsible for the publication of the definition or the artefacts via the property *dct:publisher* (see the DCAT model).

The maintainer or publisher of a Specification is a *foaf:Agent*, which allows great flexibility to the CSSV model as *foaf:Agent* is the base class in many ontologies. The CSSV puts forward the reuse of the Core Person Vocabulary (ISA² CPV) and the Organization Ontology (W3C Org) for this purpose. Also, the *foaf:Agent* also provides the contact point of the specification.

Concerning the Intellectual Property Rights, they are covered by the fact that a specification which is a *dcat:Resource* and it allows to define the *dct:license* and *dct:rights*.

Finally, note that all the descendants of the *cssv:Specification* are disjoint. This entails that an individual of an application profile or family cannot be a standard, but does not preclude that, in time, the application profile or the family can become standards. If that were the case then individuals of *cssv:Standard* would be created to represent the standardisation of those specifications that are application profiles and families.

4.4. The Core Assessment Vocabulary (CAV)

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

¹⁵ EU Vocabularies: <https://publications.europa.eu/en/web/eu-vocabularies/controlled-vocabularies>

that it can be used to assess any type of asset. Hence, the CAV is at the very core of the CAMSS Ontology. Or, in other words, the CAMSS Ontology reuses 100% of the CAV.

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

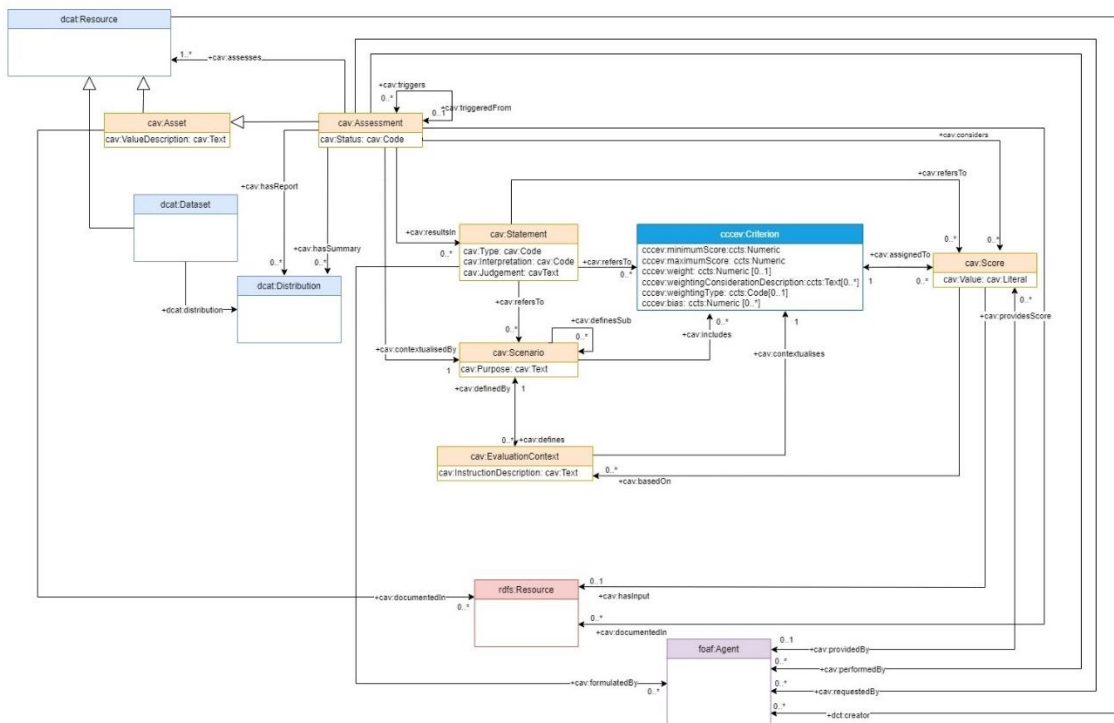


Figure 4 The Core Assessment Vocabulary

A CAV **Assessment** is a specialisation of an Asset, which is itself also a specialisation of the *dcat:Resource*. As any asset, it can be identified and described, and has individual distributions, publishers, etc. Additionally, to these properties, the CAV class Assessment needs to specify who are the requestors and evaluators of the Assessments. These can be anything represented by a FOAF¹⁶ Agent, such as a natural person or an organisation. Notice that the objects assessed are also Resources meaning that the CAV may be used to assess anything that is considered a valuable resource. Examples of such resources could be products, services, or, in the case of CAMSS, standards, and specifications.

An Assessment results in **Statements** capturing the produced knowledge and providing value judgments. These can refer to the Assessment as a whole or a specific section, even being as detailed as to refer to individual evaluated criteria. A **Criterion** is typically derived from a Reference Framework, which is to be understood as a series of “agreed and descriptive reference requirements” coming from one or more sources (e.g., legislation, specifications and standards, ICT policy-related works like the EIF within the EIS,

¹⁶ FOAF Vocabulary Specification <http://xmlns.com/foaf/spec/>

etc.). Throughout the Assessment each Criterion is assigned a **Score** (in principle by humans, but potentially also by systems) as the value output that is considered when formulating the resulting Statement(s). The **Score** can take into consideration any resource input (e.g., when the score is calculated based on different input parameters, algorithms, and formulae).

Any Assessment is performed in the context of a **Scenario**. The Scenario defines the purpose of the Assessment and the set of Criteria to be scored by one or more Agents. Scenarios can be defined with a flexible structure including nested sections (represented as sub-Scenarios) that serve to provide additional context, group thematically Criteria and be referred to by the assessment's resulting Statement(s). Criteria can themselves be simple or complex and originate from various reference sources. The overall context for the evaluation of the Criteria is provided by the Scenario, however, in case certain Criteria require additional contextualisation or evaluation instructions these can exceptionally be provided by means of **EvaluationContext** which is related to a resource.

Finally, an Assessment might trigger another related Assessment of different content which has its own Scenario and Criteria. Note that it is also possible to model work in progress, expressed by having the Assessment defining optional links to Scores, Statements, reports, and summaries.

4.5. ELIS Overview

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

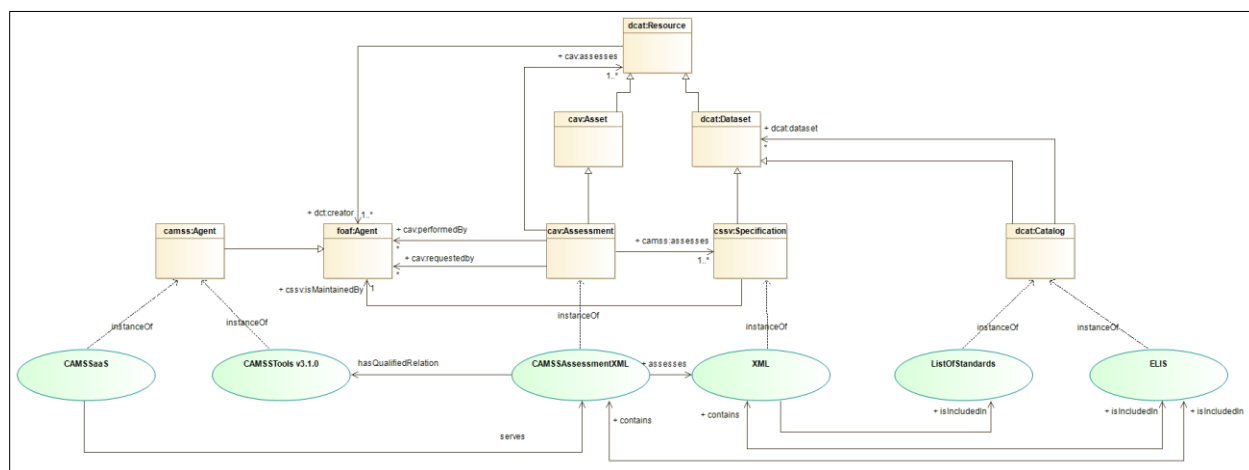


Figure 5 ELIS conceptual overview

Beware of the following:

- The ELIS Catalogue is instantiated using the DCAT class Catalog.
- The ELIS Catalogue has as many entries as instances of DCAT 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 DataSet.
- The Primary Topic always has a Distribution that 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 a domain expressed as *dcat:theme* and the ELIS_T-box, which defines de structure.
 - o The **Interoperability Specification Domain** helps to contextualise the area/domain that the specifications included in ELIS are addressing. It is worth noting that one specification can have multiple domains depending on the association with ABBs and its context. In those cases, specs can be considered as multi-domain or cross-domain, but since the ELIS is referring also to EIRA views, it needs to be specified.
 - o The **ELIS T-Box** provides the structure of the library according to CSSV and CAV.
- Additionally, each EIRA Interoperability Specification can express its interoperability aspects via the association to one or other EIRA ABB as defined in EIRA¹⁷ (expressed as SKOS Concepts).

The language chosen to represent the ELIS is the Terse RDF Triple Language (Turtle)¹⁸. 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.

5. ELIS v5.0.1 AND RELEASE COMPONENTS

The ELIS v5.0.1 release consists of the following release components:

- [ELIS v5.0.1.ttl](#); the EIRA Library of Interoperability Specifications in TTL format.
- [ELIS v5.0.1.xlsx](#); the EIRA Library of Interoperability Specifications in Microsoft Excel format.
- [ELIS T-box v5.0.1.ttl](#); the constituent entities of the ELIS.
- [EIRA v5.0.0 SKOS](#); The EIRA as controlled vocabulary in SKOS format.
- [ELIS Overview v5.0.1](#); Document for the introduction to the ELIS catalogue.
- [CAMSS Info Package v8.0.0](#); Set of informative documents about CAMSS.

¹⁷ EIRA v5.0.0 SKOS: <https://joinup.ec.europa.eu/collection/european-interoperability-reference-architecture-eira/solution/eira/distribution/eira-v500-skos>

¹⁸ RDF 1.1. Turtle: <https://www.w3.org/TR/turtle/>

- [ELIS v5.0.1 Release Notes](#); The release notes of this ELIS release.
- [ELIS Factsheets v5.0.1](#); an overview of the ELIS population process.
- [EUPL License v1.2](#); the license under which ELIS will be released.
- [ELIS v5.0.1 Release](#); an archive containing each of the above-mentioned files.

6. ELIS FACTSHEETS ONLINE DASHBOARD

This section explains the ELIS Factsheets online dashboard¹⁹ that allows users to access ELIS metrics from the different versions and an overall snapshot.

6.1. ELIS Dashboard Rethinking

The ELIS online Dashboard recently includes text helpers consisting of providing additional references (①) to each element/domain easing comprehensibility on the user experience side. Additionally, the CAMSS team has improved their methodology for generating the metrics from the ELIS Catalogue (in xlsx format), consisting of a semi-automated process for depicting a real-time status of any ELIS Catalogue, thus minimising human manipulation of the metrics.

6.2. ELIS dashboard

The online documentation includes:

- **Home Page:** It includes an overall view that allows the comparison between versions and shows the evolution of the ELIS over versions. It also includes the main purpose of the ELIS Dashboard and includes key elements to help users to read the information in the tables and graphics.
- **On-going version:** It provides the latest metrics and information on the ELIS being developed.
- **Current version 5.0.1:** It provides the metrics and information related to ELIS 5.0.1.
- **ELIS 5.0.0:** It provides the metrics and information related to ELIS v5.0.0.
- **ELIS 1.1.0:** It provides the metrics and information related to ELIS v1.1.0.
- **ELIS 1.0.1:** It provides the metrics and information related to ELIS v1.0.1.
- **ELIS 1.0.0:** It provides the metrics and information related to ELIS v1.0.0.

Here below is described a little bit more in detail the content of each section.

¹⁹ ELIS online dashboard: <https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/elis/elis-dashboard>

The home page includes general information on the understanding of the whole dashboard and graphical elements comparing all versions and the evolution of the ELIS. The figures below come from the home page and aim to represent the evolution of the ELIS.

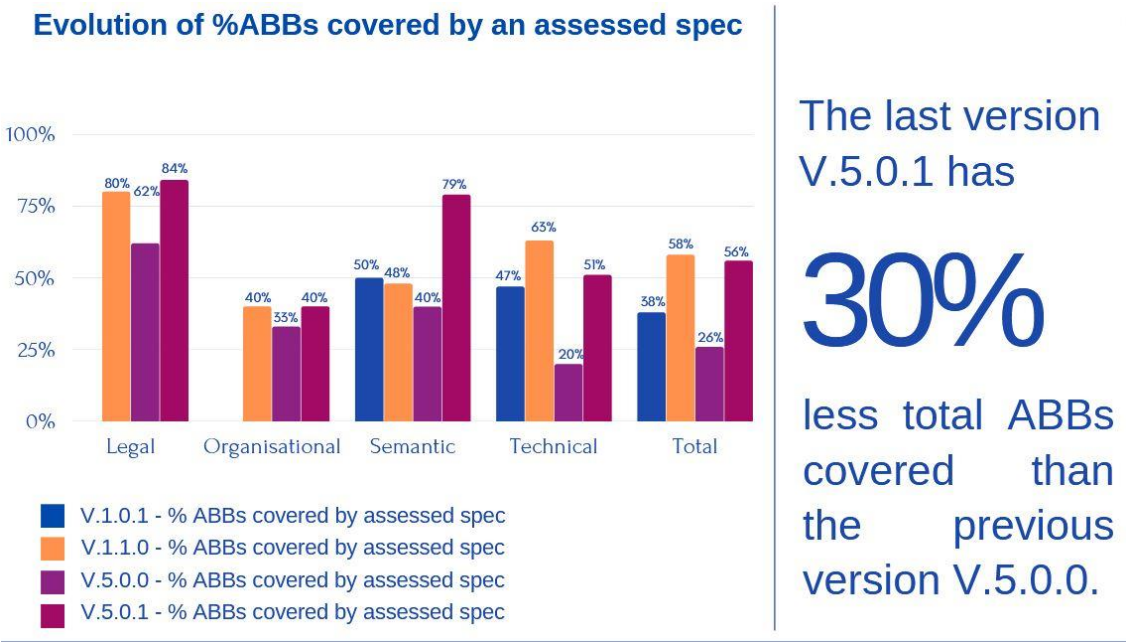


Figure 6 Evolution of ABBs covered by assessed specs per view

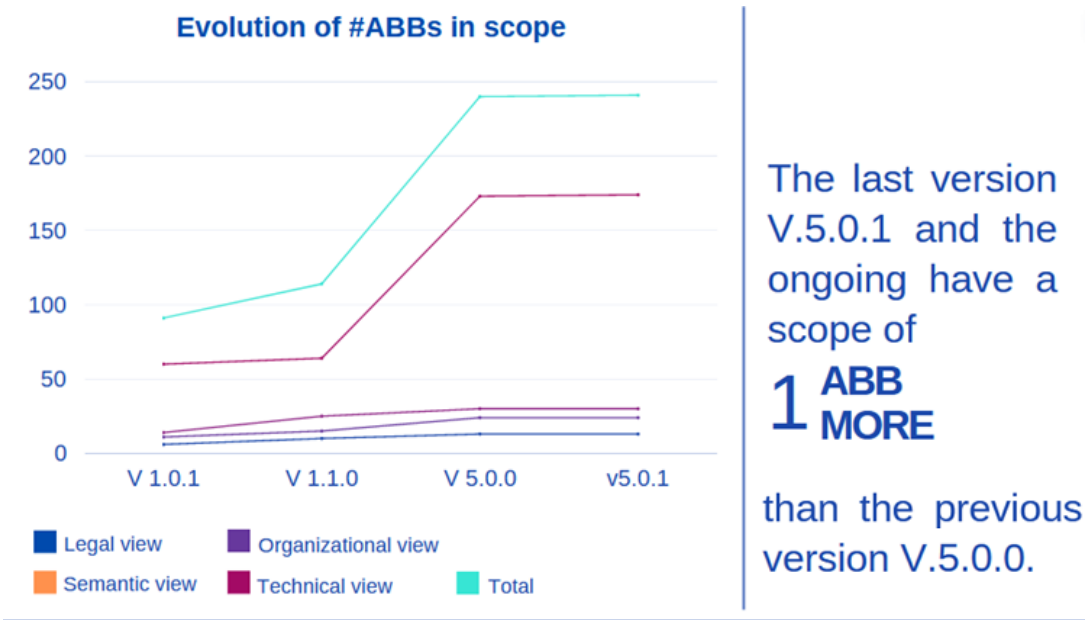


Figure 7 Evolution of ELIS in terms of # of ABBs in scope

The sections for specific versions of the ELIS are all structured in the same way:

- **General table containing ELIS metrics.** this table includes the following information:
 - Number of EIRA ABBs.
 - Number and percentage of ABBs in Scope.
 - Number and percentage of ABBs covered.
 - Number of specifications per view.
 - Number of specifications assessed (EIF Scenario).
 - Number and percentage of ABBs covered by an assessed specification.

The following image shows an example of the table, specifically for version 1.0.0:

Version 1.0.0 Translate

Metrics and characteristics

The following table shows the global data of [ELIS](#) in its [version 1.0.0](#). The analysis of the metrics can be found in the tabs below.

Metrics/ view	Legal	Organisational	Semantic	Technical	Total
Total number of ABBs	7	23	14	63	107
#ABBs in scope	6	11	14	62	93
%ABBs in scope	86%	48%	100%	98%	87%
#ABBs covered	6	11	14	62	93
%ABBs covered	100%	100%	100%	100%	100%
#Spects assessed (EIF scenario)	0	0	10	26	29
%ABBs covered by an assessed spec	0%	0%	50%	45%	37%

Figure 8 Metrics table for ELIS v1.0.0 in the online dashboard

- **ELIS Coverage per EIRA view:** This section depicts the coverage of ELIS per view considering the number and the percentage of ABBs in scope.

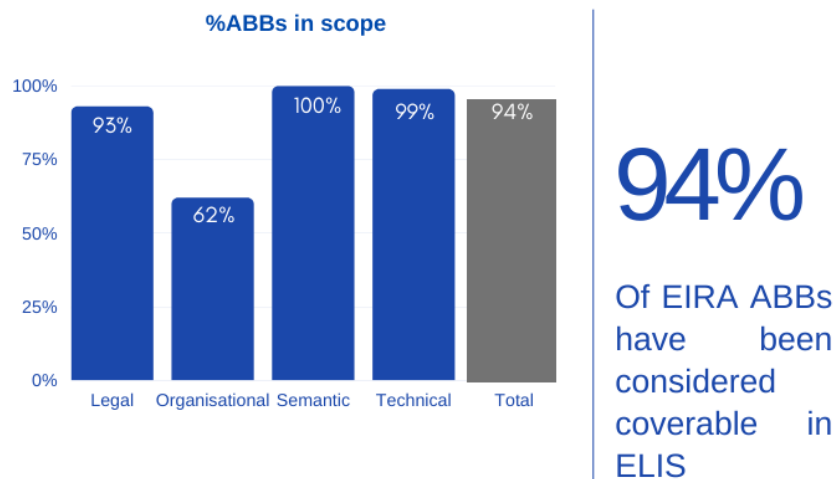


Figure 9 ELIS Coverage per EIRA View. ABBs in Scope

- **ABBs covered by assessed specification:** This section depicts the ELIS coverage of EIRA in terms of assessed specifications.

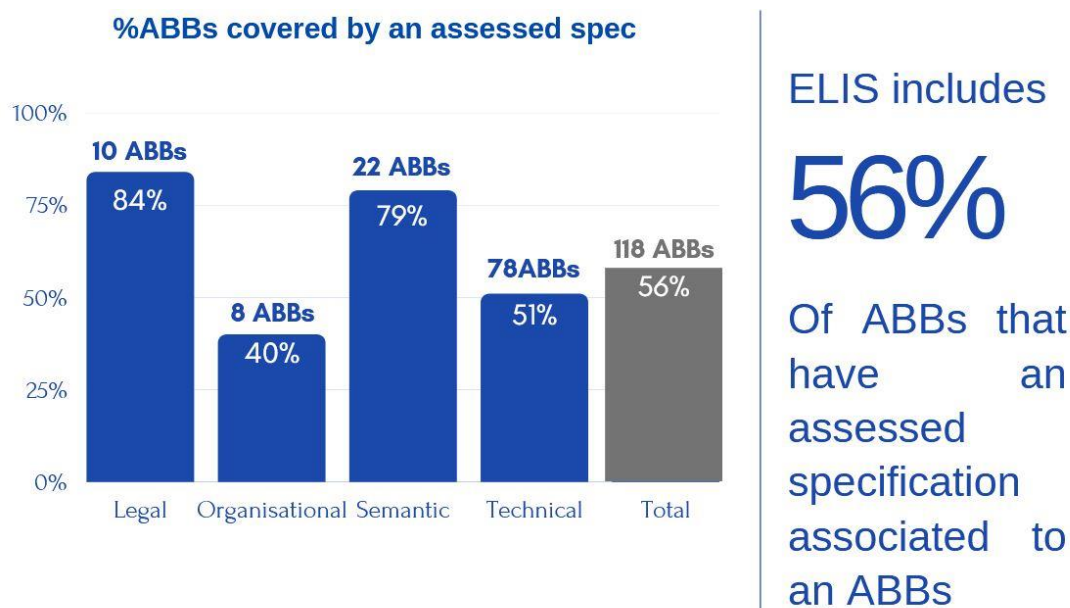


Figure 10 ELIS Coverage of EIRA assessed specifications.

6.3. Maintenance

The presented elements require a maintenance process, which is planned monthly according to the process followed for the population and development of the ELIS.

However, not all the pages need to be maintained continually. It is the case of already published versions of the ELIS. It is worth noting that on-going version is used to reflect changes in ELIS throughout the contract.

Therefore, the following sections will need to be maintained and updated monthly while the ongoing version is being developed:

- **Home page graphics.** To keep the evolution of the ELIS alive allowing users to see changes in real-time.
- **On-going version.** The information contained within this version space is subject to changes since the ELIS is evolving while it is populated.

The space for the current version includes a dedicated subsection where it is shown the comparison between the current month (X) and the previous month (X-1). Using this approach users can see the evolution compared with last month. See the example below:

Metrics/ view	Legal	Organisational	Semantic	Technical	Total
Total number of ABBs <small>①</small>	14	39	30	175	258
#ABBs in scope <small>①</small>	13	24	30	174	241
%ABBs in scope <small>①</small>	93%	62%	100%	99%	94%
#ABBs covered <small>①</small>	12	20	28	158	214***
%ABBs covered <small>①</small>	93%	84%	94%	89%	89%
#Specs per View <small>①</small>	62	32	90	189	332*
#Specs assessed (EIF scenario) <small>①</small>	5	8	31	43	68
#ABBs covered by an assessed spec <small>①</small>	10	8	22	78	118
%ABBs covered by an assessed spec <small>①</small>	84%	40%	79%	51%	56%
Assessment Score Average in EIF scenario (v5.1.0) assessments** <small>①</small>					86%
Strength of assessment score average in EIF scenario (v5.1.0) assessments** <small>①</small>					86%
Assessment Score Average in EIF scenario (Previous versions) assessments** <small>①</small>					85%
Strength of assessment score average in EIF scenario (Previous versions) assessments** <small>①</small>					83%

Figure 11 Current version 5.0.1 last snapshot

ABBs in Scope evolution (%)

In these graphs, you can see **ELIS** coverage per **EIRA** view through ABBs percentage in scope.

ABBs in scope are these ABBs that have been considered coverable by a specification. Meaning that **CAMSS** Team has done the exercise of associating one or more specifications.

The population process is just starting, therefore the figures do not show changes, however, this will be evolving throughout the process.

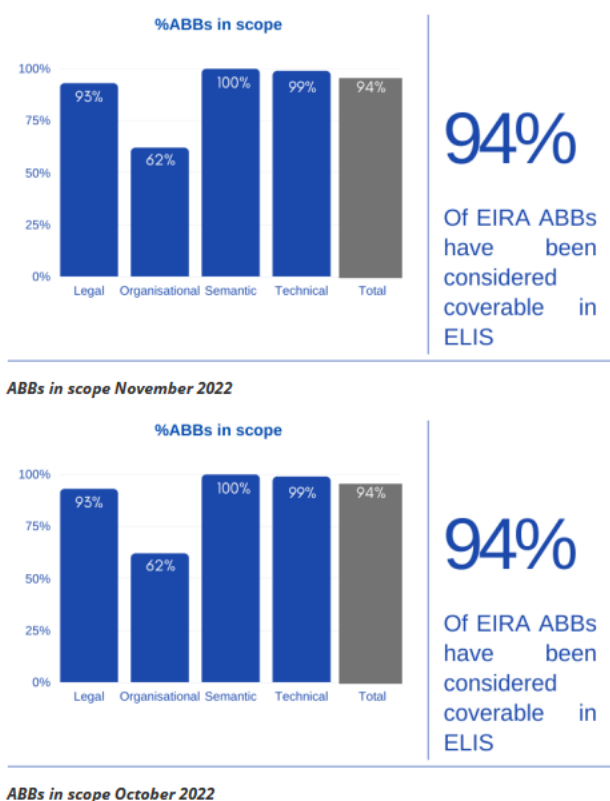


Figure 12 Previous month status subsection.

The images above show the table containing the metrics but within this retrospective are also included graphics above mentioned (see figures 5 and 6).

7. ACRONYMS

Acronym	Description
ABB	Architecture Building Block
CSSV	Core Standards and Specifications Vocabulary
DCAT	Data Catalog Vocabulary
EIA	European Interoperability Action
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
TOGAF	The Open Group Architecture Forum

ANNEX I – ELIS SPARQL QUERIES



sparql.zip

ANNEX II – ELIS CATALOGUE IN XLSX FORMAT



ELIS
Catalogue_v5.0.1.xls

ANNEX III – ELIS CATALOGUE IN TTL FORMAT



ELISv5.0.1.ttl