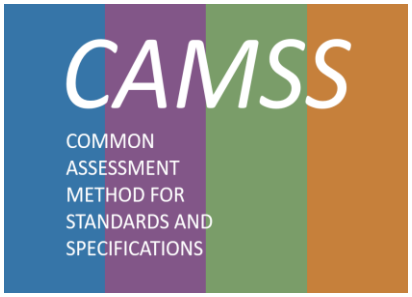

ASSESSMENT SUMMARY v1.0.0

OWL 2 Web Ontology Language (OWL2)[1]

World Wide Web Consortium (W3C)[2]

[1] https://www.w3.org/TR/owl2-overview/

[2] https://www.w3.org/

Change Control

Modification	Details
Version 1.0.0	
Initial version	

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1. INTRODUCTION

The present document is a summary of the assessment of OWL2 carried out by CAMSS using the CAMSS EIF assessment scenario. The purpose of this scenario is assessing the compliance of a standard or specification with the European Interoperability Framework (EIF)[3].

2. ASSESSMENT SUMMARY

The **OWL 2 Web Ontology Language (OWL2)** is an extension of RDF for accessing, importing, sharing and reusing public ontologies. OWL2 is based on elements of RDF and it adds more vocabulary for describing properties and classes. The first version of OWL was released in 2004 which was designed as representation languages for authoring ontologies. Some years later, in 2009, a new W3C working group started to extend OWL with several new features. W3C announced the new version, OWL2, on 27 October 2009.

2.1. Interoperability Principles

Interoperability principles are fundamental behavioural aspects that drive interoperability actions. They are relevant to the process of establishing interoperable European public services. They describe the context in which European public services are designed and implemented.

***The specification fully supports the principles setting context for EU actions on interoperability*:**

- **Subsidiarity and proportionality**
  OWL2 is included in 2 national catalogues of recommended specifications. They belong to the Netherlands and Spain. The National Interoperability Framework (NIF) of these Member States is fully aligned with at least 4 out of 5 sections of the European Interoperability Framework (EIF) according to the National Interoperability Framework Observatory (NIFO)[4] factsheets.

The specification partially supports the principles setting context for EU actions on interoperability:

- **Openness**
  OWL allows accessing, importing, sharing and reusing public ontologies, so it facilitates the publication of public data as open data. OWL2 is an open specification publicly available for study or use. In W3C, all the stakeholders have the opportunity for the development and approval process of the specification as a recommended standard. The specification is licensed on a (F)RAND and a royalty-free basis. W3C as an international community developing open standards supports OWL2.

  OWL2 has a significant market acceptance which demonstrates that it is mature enough for its use. Moreover, it fosters the creation of innovative solutions.

[3] https://ec.europa.eu/isa2/eif_en

[4] https://joinup.ec.europa.eu/collection/national-interoperability-framework-observatory-nifo/nifo-factsheets

- **Transparency**
  The main purpose of OWL2 is to allow accessing, importing, sharing and reusing public ontologies. The data described by an ontology in the OWL family is interpreted as a set of "individuals" and a set of "property assertions" which relate these individuals to each other. So it helps administrations to visualize and understand ontologies with the different relationships. However, OWL2 does not help the availability of interfaces with internal information.

- **Reusability**
  OWL2 is a business domain agnostic specification that can be reused in a cross-domain way. Moreover, it is publicly available for implementation and use for free on W3C's webpage.

- **Technological neutrality and data portability**
  OWL is developed as a vocabulary extension of RDF and is derived from the DAML+OIL Web Ontology Language. So it can be said that OWL2 is dependent of RDF. The specification is proportionate to the needs of its users. There are several studies where implementation of OWL2 has been carried out to prove its scalability. Moreover, OWL2 has a positive impact on system interoperability.

***The specification does not support the principles related to generic user needs and expectations*:**

- **User-centricity**
  The purpose of OWL2 is not related to the implementation of the once-only principle. Therefore, this criterion does not apply to this specification.

- **Inclusion and accessibility**
  The purpose of OWL2 is not related to e-accessibility. Therefore, this criterion is considered not applicable to this specification.

- **Security and privacy**
  OWL 2 is designed to facilitate ontology development and sharing via the Web. So it fosters trustworthy data exchange between administrations and stakeholders.

- **Multilingualism**
  The purpose of OWL2 is not related to the delivery of multilingual services. Therefore, this criterion is not applicable to this specification.

The specification partially supports the foundation principles for cooperation among public administrations:

- **Administrative Simplification**
  OWL2 is an extension of RDF for accessing, importing, sharing and reusing public ontologies. Using OWL2 helps to reduce the administrative burden by easing the publication and reusing the administration's data.

- **Preservation of information**
  There are examples of ontologies developed for the preservation and maintenance of metadata in archives systems. An example of this is the Library of Congress initiative PREMIS OWL Ontology.

- **Assessment of effectiveness and efficiency**
  There is not an explicit assessment of the effectiveness and efficiency of OWL2. However, there are links that compare the different OWL2 profiles in terms of effectiveness and efficiency.

2.2. Interoperability Layers

The interoperability model which is applicable to all digital public services includes:
- Four layers of interoperability: legal, organisational, semantic and technical;
- A cross-cutting component of the four layers, 'integrated public service governance';
- A background layer, 'interoperability governance'.

The Specification supports the implementation of digital public services complying with the EIF interoperability model:

- **Interoperability governance**
  3 Member States are recommending OWL2 in their ICT National Catalogues. Although OWL current version (OWL2) is not included in any EIRA ABB in the current European Library of Specifications (ELIS), the previous version of the specification can define the interoperability aspects of the "Core Data Model" ABB of the EIRA Semantic View. The specification is included within catalogues of standards at the national level but not at the EU level.

  There is a cross-border project that use OWL2. CELLAR is the repository of the Publications Office of the European Union. His main purpose is to disseminate the content and metadata created by the Publication Office. It drives the Publications Office's major portals and its resources are semantically described by the CDM (Common Data Model), which is an OWL ontology.

- **Integrated public service governance & Legal Interoperability**
  The specification has already been assessed using the CAMSS method in the MSP scenario, which is fully compliant with the European Standardisation Regulation. However, no evidence has been found of the specification being included in a formal interoperability agreement between organisations involved in the European public services provision.

- **Organisational interoperability**
  OWL2 is not a business process modelling standard or specification and does not define organisational interoperability aspect. The purpose of the specification is not related to organisational Interoperability.

- **Semantic Interoperability**
  OWL is an extension of RDF that adds more vocabulary for describing properties and classes. RDF is considered an agnostic specification which defines reusable cross-sector data model. Moreover, OWL2 is highly aligned with the principles for Linked Data promoted by W3C and Tim Berners-Lee.

- **Technical interoperability**
  OWL2 is an open specification that is widely used for accessing, importing, sharing and reusing public ontologies.

3. Assessment Results

This section presents an overview of the results of the CAMSS assessments for **OWL 2 Web Ontology Language (OWL2).** The CAMSS "Strength" indicator measures the reliability of the assessment by calculating the number of answered (applicable) criteria. On the other hand, the number of favourable answers and the number of unfavourable ones are used to calculate the "Automated Score" per category and an "Overall Score".

Category	Automated Score	Assessment Strength	# Favourable	# Unfavourable	# Not Applicable
Principle setting the context for EU actions on interoperability	100%	100%	1	0	0
Core interoperability principles	89%	100%	17	2	0
Principles related to generic user needs and expectations	100%	25%	1	0	3
Foundation principles for cooperation among public administrations	100%	100%	3	0	0
Interoperability layers*	90%	91%	18	2	2
Overall Score	88%	87%	30	4	5

**The technical interoperability layer is covered by the criteria corresponding to the core interoperability principle ''Openness''.*

With an 87% of assessment strength, this assessment can be considered representative of the specification compliance with the EIF principles and recommendations.

The Overall Automated Score of 88% demonstrates that the specification highly supports the European Interoperability Framework in the domains where it applies.

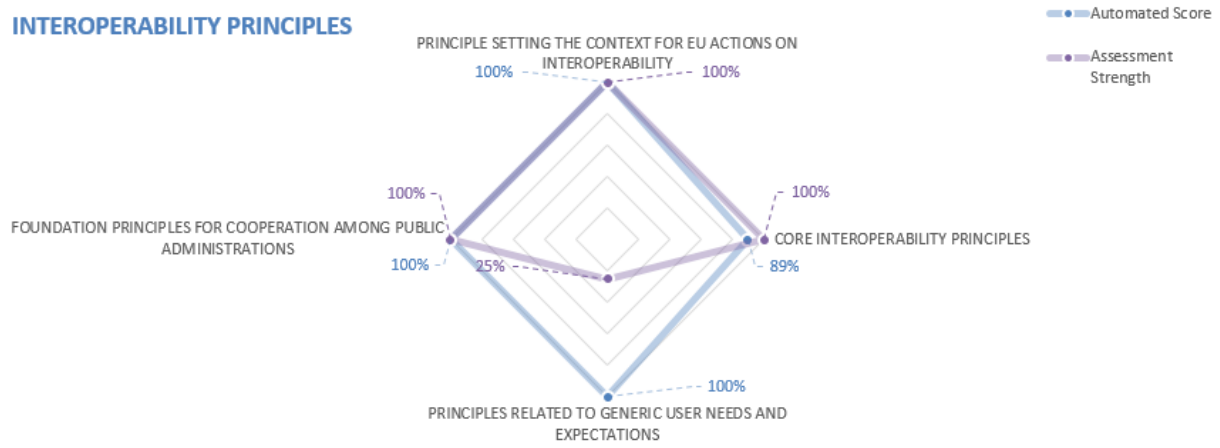

Figure 1. Interoperability principles Results

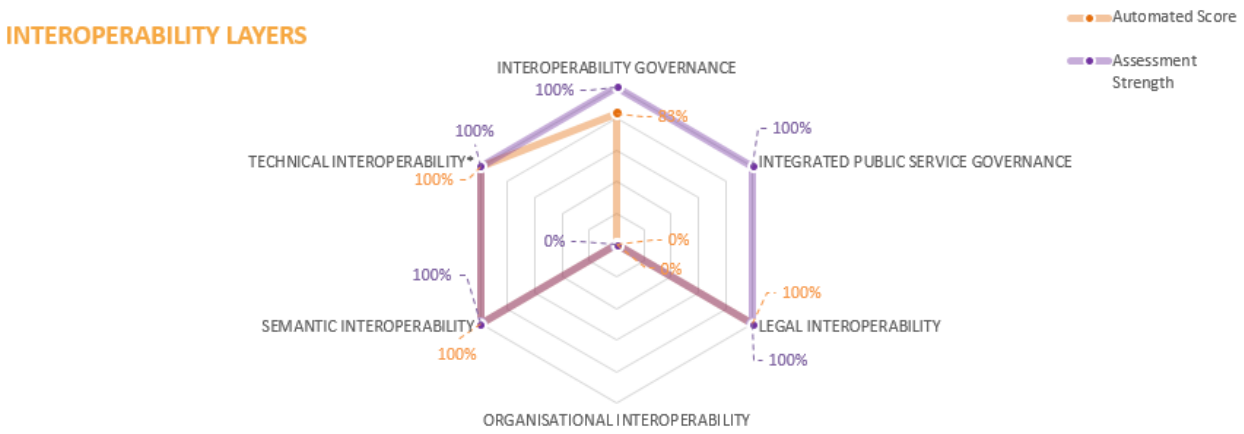

Figure 2. Interoperability layers Results