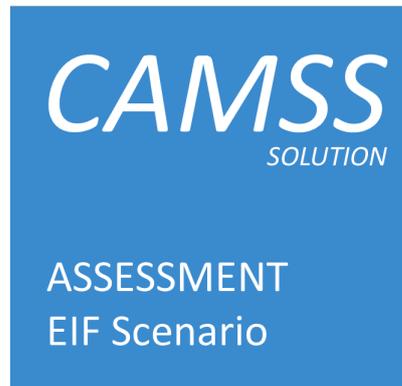


## CAMSS Assessment EIF Scenario v5.0.0

Fields marked with \* are mandatory.

# CAMSS Assessment EIF Scenario v5.0.0

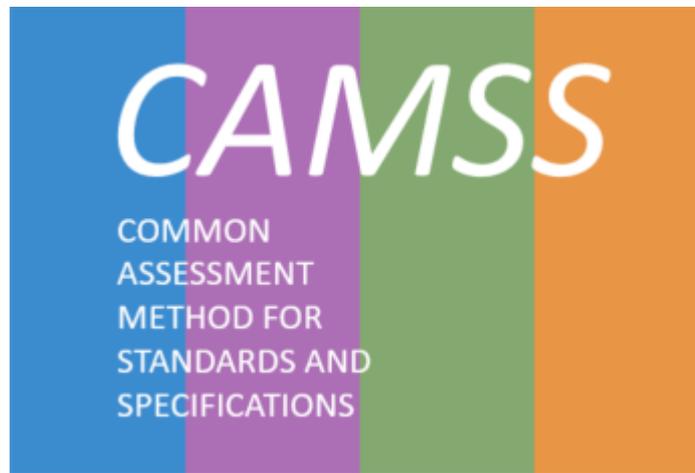


**Release Date:** 31/01/2022

**Scenario Version:** 5.0.0

**INTRODUCTION**

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## EIF Scenario

The European Interoperability Framework (EIF) provides guidance to public administrations on how to improve governance of their interoperability activities, establish cross-organisational relationships, streamline processes supporting end-to-end digital services, and ensure that existing and new legislation do not compromise interoperability efforts.

This CAMSS Scenario allows to assess the compliance of **interoperability specifications** with the EIF. The objective of the obtained assessment is to determine the suitability of the assessed interoperability specification for the delivery of interoperable European public services.

## Background

[CAMSS](#) is the European guide for assessing and selecting standards and specifications for an eGovernment project, a reference when building an architecture, and an enabler for justifying the choice of standards and specifications in terms of interoperability needs and requirements. It is fully aligned with the European Standardisation Regulation 1025/2012.

The main objective of CAMSS is achieving interoperability and avoiding vendor lock-in by establishing a neutral and unbiased method for the assessment of technical specifications and standards in the field of ICT. This method will be compliant with Regulation 1025/2012 on European Standardisation.

While ICT solutions have specific characteristics at the political, legal, and organisational levels; semantic and technical interoperability are based mostly on technical specifications or standards. Within the context of the elaboration of their National Interoperability Frameworks, Member States organise the assessment of technical specifications or standards, in order to establish their national recommendations. Deciding on the recommended technical specifications or standards often calls for a resource-intensive and time-consuming assessment. In order to tackle this, the [Digital Europe Programme](#) (DEP) defines an action focused on the development of a common assessment method for standards and specifications (CAMSS).

### The purpose of CAMSS is:

- to ensure that assessments of technical ICT specifications or standards and interoperability profiles are performed according to high and consistent standards;

- to ensure that assessments will contribute significantly to the confidence in the interoperability of systems implementing these specifications and profiles;
- to enable the reuse, in whole or in part, of such assessments;
- to continuously improve the efficiency and effectiveness of the assessment process for ICT technical specifications, standards, and interoperability profiles.

**The expected benefits of the CAMSS are:**

- Ensuring greater transparency throughout the selection of standards in the context of ICT strategies, architectures, and interoperability frameworks. This will be achieved through the establishment of a commonly agreed assessment method, assessment process, and a list of assessment attributes.
- Reducing resource and time requirements and avoiding duplication of efforts. (Partial) sharing of finalised assessments of standards and specifications.
- Allowing easier and faster assessments, and reusing the ones already performed through the creation and maintenance of a library of standards.

Your compliance level of the specification assessed depends on the scores you achieved in each section of the survey. Please see below the survey score conversion table below for guidance.

Section	Compliance Level				
	Ad-hoc	Opportunistic	Essential	Sustainable	Seamless
<b>Principles setting the context for EU Actions on Interoperability</b>	20	40	50	80	90
<b>EIF Core Interoperability Principles</b>	0 to 440	441 to 880	881 to 1320	1321 to 1760	1761 to 2200
<b>EIF Principles Related to generic user needs and expectations</b>	0 to 100	101 to 200	201 to 300	301 to 400	401 to 500
<b>EIF Foundation principles for cooperation among public</b>	0 to 100	101 to 200	201 to 300	301 to 400	401 to 500

## administrations

### EIF

#### Interoperability Layers

0 to 220

221 to 440

441 to 660

661 to 880

881 to 1100

The following table shows the 'compliance levels' that a specification can reach depending on the assessment score.

Compliance Level	Description
<b>Ad-hoc</b>	Poor level of conformance with the EIF - The specification does not cover the requirements and recommendations set out by the EIF in this area.
<b>Opportunistic</b>	Fair level of conformance with the EIF - The specification barely covers the requirements and recommendations set out by the European Interoperability Framework in this area.
<b>Essential</b>	Essential level of conformance with the EIF - The specification covers the basic aspects set out in the requirement and recommendations from the European Interoperability Framework.
<b>Sustainable</b>	Good level of conformance with the EIF scenario - The specification covers all the requirements and recommendations set out by the European Interoperability Framework in this area.
<b>Seamless</b>	Leading practice of conformance level with the EIF - The specification fully covers the requirements and recommendations set out by the European Interoperability Framework in this area.

**Contact:** For any general or technical questions, please send an email to [DIGIT-CAMSS@ec.europa.eu](mailto:DIGIT-CAMSS@ec.europa.eu). Follow all activities related to the CAMSS on our [CAMSS community page](#).

## USER CONSENT

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### **Disclaimer:**

*By no means will the Interoperability Specification assessment imply any endorsement of the EC to the assessed specification. Likewise, The use of CAMSS Tool implies that the user accepts that the EC is not liable on the assessment nor on any direct or indirect consequence/decision of such assesment.*

CAMSS Tools are based on EU Survey, by accepting the CAMSS Privacy Statment the user also accepts EU Survey [Privacy Statement](#) and the [Terms of use](#).

\* Please, fill in the mandatory\* information to start the assessment

- \*I have read and agreed to the following CAMSS Privacy Statement: [here](#)
- I agree to be contacted for evaluation purposes, namely to share my feedback on specific DEP solutions and actions and on the DEP programme and the European Interoperability Framework in general.

This assessment tool is licensed under the [European Union Public License \(EUPL\)](#)

# IDENTIFICATION

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## Information on the information provider

Your Last name

CAMSS Team

Your First Name

Your Position / Role

\* Your Organisation

European Commission DG DIGIT

Your Contact phone number

\* Would you like to be contacted for evaluation purposes in the context of your assessment? To see how your data is handled, please check again the Privacy statement [here](#)

In case you would like to be contacted, please select "yes" and provide your email.

- Yes  
 No

Contact Email

DIGIT-CAMSS@eu.europa.eu

\* Where did you learn about CAMSS?

- DEP Programme (DEP website, DEP social media)  
 Joinup (e.g., CAMSS Collection, Joinup social media)  
 European Commission  
 Public Administrations at national, regional or local level  
 Standards Developing Organizations (SDOs)  
 Other

If you answered "Other" in the previous question, please specify how:

## Information on the specification

\* Specificaton type

- Specification
- Standard
- Application Profile
- Family of Specification

\* Title of the specification

Schema.org

\* Version of the specification

14.0

\* Description of the specification

Schema.org provides a collection of common vocabularies that can be used by webmasters to code their web pages so that they can be read by the major search engines.

\* URL from where the specification is distributed

<https://github.com/schemaorg/schemaorg/blob/main/data/releases/14.0/schema-all.html>

\* Name and website of the standard developing/setting organisation (SDO/SSO) of the specification

- W3C (<https://www.w3.org>)
- OASIS (<https://www.oasis-open.org/>)
- IEEE (<https://standards.ieee.org/>)
- ETSI (<https://www.etsi.org/>)
- GS1 (<https://www.gs1.fr/>)
- openEHR (<https://www.openehr.org/>)
- IETF (<https://www.ietf.org/>)
- Other (SDO/SSO)

\* In case of Other SDO, please, provide its name:

Schema.org

\* and, provide its URL:

<https://schema.org/>

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Contact information/contact person of the SDO

a) for the organisation

b) for the specification submitted

## Information on the assessment of the specification

Reason for the submission, the need and intended use for the specification

If any other evaluation of this specification is known, e.g. by member states or European Commission projects, provide a link to this evaluation.

## Considerations

Is the functional area of application for the formal specification addressing interoperability and eGovernment?

YES

NO

Additional Info

The use of schema.org (structured data) mark-up schema helps search engines understand the information on web pages and potentially provides richer search results. The use of schema.org increases interoperability between information systems and enables new tools and applications to use a common data structure.

## EIF PRINCIPLES SETTING THE CONTEXT FOR EU ACTIONS ON INTEROPERABILITY

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This category is related to the first underlying principle ([UP](#)) of the EIF Subsidiarity and Proportionality (UP1). The basis of this principle is to ensure that the EU Actions are taken or stated to improve national actions or decisions. Specifically, it aims to know if National Interoperability Frameworks are aligned with the EIF.

*Please note that some of the questions have a prefilled answer depending on the SDO. To ensure it, please see that these questions include a help message that remarks it.*

## Subsidiarity and Proportionality

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**\* A1 - To what extent has the specification been included in a national catalogue from a Member State whose National Interoperability Framework has a high performance on interoperability according to National Interoperability Framework Observatory factsheets?**

**EIF Recommendation 1:** Ensure that national interoperability frameworks and interoperability strategies are aligned with the EIF and, if needed, tailor and extend them to address the national context and needs.

This criterion assesses if the specifications have been included within the National Catalogues of Specifications of the Member States that are highly aligned with the higher level of performance in terms of interoperability.

The Digital Public Administration Factsheets uses three categories to evaluate the level of National Interoperability frameworks in accordance with the EIF. The three categories are 1. CONCEPTUAL MODEL FOR INTEGRATED PUBLIC SERVICES PROVISION; 2 INTEROPERABILITY LAYERS, and 3. INTEROPERABILITY PRINCIPLES. National Interoperability Frameworks reports can be found here: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-public-administration-factsheets-2020>

- Not Answered
- Not Applicable
- The specification has not been included within the catalogue of any Member State.
- The specification has been included within the catalogue of a Member State with a lower performance than stated in the Digital Public Administration Factsheets from the NIFO.
- The specification has been included within the catalogue of a Member State with a middle-lower performance than stated in the Digital Public Administration Factsheets from the NIFO.
- The specification has been included within the catalogue of a Member State with a middle-upper performance than stated in the Digital Public Administration Factsheets from the NIFO.
- The specification has been included within the catalogue of a Member State with a higher performance than stated in the Digital Public Administration Factsheets from the NIFO.

**\* Justification**

There is no Member State that includes schema.org in their national catalogue with The National Interoperability Framework (NIF) in alignment with the three categories: 1. Conceptual model for integrated public services provision, 2. interoperability layers, and 3. interoperability principles.

CAMSS List of Standards:

<https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/camss-list-standards>

## EIF CORE INTEROPERABILITY PRINCIPLES

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In this category, elements related to the core interoperability principles (UP) are encompassed, which are: openness (UP 2), transparency (UP3), reusability (UP4), technological neutrality, and data portability (UP5).

# Openness

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## \* A2 - Does the specification facilitate the publication of open data?

EIF Recommendation 2: Publish the data you own as open data unless certain restrictions apply

Relates to the ability of the specification to publish data as open data or not.

- Not Answered
- Not Applicable
- NO
- YES

### \* Justification

According to the 5 star Open Data model suggested by Tim Berners-Lee about how to publish linked data, the second star corresponds to the availability of data as structured data. Schema.org is a structured data mark-up schema enabling search engines and other information systems to query data in a structured manner. Then, this specification supports the publication of data as open data.

Schema.org reference, Getting started section:

<https://schema.org/docs/gs.html>

Tim Berners-Lee 5-star schema for Open Data:

<https://5stardata.info/en/>

## A2(a) - To what extent does the specification facilitate the publication of public data as open data?

EIF Recommendation 2: Publish the data you own as open data unless certain restrictions apply.

Relates to what degree of open data can reach the specification according to the main principles of 'open data'.

These principles are stated by Tim Berners-Lee in the 5-Stars approach: <https://5stardata.info/en/>

- Not Answered
- Not Applicable
- The specification does not support the publication of data on the web, or does so but with a non-open licence.
- The specification supports publishing data on the web with an open licence and in a structured, machine-readable format.
- In addition to the previous question, the specification does not require proprietary software for the processing of its related data.
- In addition to the previous question, the specification is or incorporates open standards (e.g. W3C).
- In addition to the requirements stated in the previous answer, the specification supports published data as Linked Data.

### \* Justification

According to the 5 star Open Data model suggested by Tim Berners-Lee about how to publish linked data, schema.org is a structured data mark-up schema enabling search engines and other information systems to query data in a structured manner. As well as supporting the publication of data as open data, the specification facilitates the publication of public data as open data since it fulfils all the requirements to generate Linked Data.

Schema.org reference, Getting started section:  
<https://schema.org/docs/gs.html>

Tim Berners-Lee 5-star schema for Open Data:  
<https://5stardata.info/en/>

**\* A3 - To what extent do stakeholders have the opportunity to contribute to the development of the specification?**

**EIF Recommendation 3:** Ensure a level playing field for open-source software and demonstrate active and fair consideration of using open source software, taking into account the total cost of ownership of the solution.

Relates to in which measure the different stakeholders that a specification can benefit have the opportunity to participate in the working groups focused on the development of certain specifications.

- Not Answered
- Not Applicable
- There is no information on the working group of the specification.
- The working group is open to participation by any stakeholder but requires registration, fees, and membership approval.
- The working group is open to participation by any stakeholder but requires fees and membership approval.
- The working group is open to participation following a registration process.
- The working group is open to all without specific fees, registration, or other conditions.

**\* Justification**

Schema.org relies on more than one development community, mainly the Community Group and the Steering Group (see Schema.org homepage reference, 'About Schema.org' section). In order to contribute to the development of shema.org specification, stakeholder's participation is only possible through the Community Group or the dedicated mailing list. While the Community Group requires stakeholders to register to the W3 community (see W3 community reference, Mailing List), the mailing list does not require any type of registration process (see Schema.org homepage reference, 'About Schema.org' section). Additionally, anyone interested can contribute to the mailing list using the dedicated contact point (by contacting [public-vocabs@w3.org](mailto:public-vocabs@w3.org)), or participate via the schema.org Github (e.g. in the Issues or Discussions section) prior to a registration process.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

W3 community reference, Mailing List:  
<https://lists.w3.org/Archives/Public/public-vocabs/>

Schema.org-W3 Github reference, Issues section:  
<https://github.com/schemaorg/schemaorg/issues>

Schema.org-W3 Github reference, Discussions section:  
<https://github.com/schemaorg/schemaorg/discussions>

**\* A4 - To what extent is a public review part of the release lifecycle?**

**EIF Recommendation 3:** Ensure a level playing field for open-source software and demonstrate active and fair consideration of using open source software, taking into account the total cost of ownership of the solution.

A public review consists of the public availability of the specification's draft for stakeholders to provide inputs for the improvement and fix of possible bugs.

- Not Answered
- Not Applicable
- Specification releases do not foresee public reviews.
- Public review is applied to certain releases depending on the involved changes.
- All major releases foresee a public review.
- All major and minor releases foresee a public review but, during which, collected feedback is not publicly visible.
- All major and minor releases foresee a public review during which collected feedback is publicly visible.

\* Justification

All schema.org releases provide for public review. Changes to the schema.org specification are proposed, discussed, prepared and reviewed by the schema.org Community Group and ultimately reviewed and published by the Steering Group, which holds the final decision. Collected feedback is also available through the schema.org Github (see Schema.org-W3 Github reference, Issues section).

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

Schema.org-W3 Github reference, Issues section:  
<https://github.com/schemaorg/schemaorg/issues>

\* **A5 - Is the specification available with any restrictions related to Fair, Reasonable, and Non-Discriminatory ((F)RAND)?**

**EIF Recommendation 3:** Ensure a level playing field for open-source software and demonstrate active and fair consideration of using open source software, taking into account the total cost of ownership of the solution.

The FRAND basis relates to fair, reasonable, and non-discriminatory IPR disclosures.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Schema.org is open to any interested party who has agreed to the W3C Community Contributor License Agreement (CLA) (see Schema.org homepage reference, Community Group and Steering Group section). The CLA provisions refer to the W3C Patent Policy, which covers the availability of schema.org with any restrictions related to fair, reasonable and non-discriminatory ((F)RAND) rights.

Schema.org homepage reference, Community Group and Steering Group section:  
<https://schema.org/docs/about.html>

W3C Patent Policy reference:  
<https://www.w3.org/TR/patent-practice#ref-AC>

**\* A6 - Is the specification licensed on a royalty-free basis?**

**EIF Recommendation 3:** Ensure a level playing field for open-source software and demonstrate active and fair consideration of using open source software, taking into account the total cost of ownership of the solution.

Additionally to the EIF's recommendation that refers to open-source software it applies to a specification in itself at any interoperability level (legal, organisational, semantic, or technical)

- Not Answered
- Not Applicable
- NO
- YES

**\* Justification**

Schema.org is open to any interested party who has agreed to the W3C Community Contributor License Agreement (CLA) (see Schema.org homepage reference, Community Group and Steering Group section). The W3C Royalty-Free IPR licences granted under the W3C Patent Policy apply to the schema.org specification.

Schema.org homepage reference, Community Group and Steering Group section:  
<https://schema.org/docs/about.html>

W3C Patent Policy reference:  
<https://www.w3.org/TR/patent-practice#ref-AC>

**\* A7 - To what extent is the specification sufficiently mature for its use in the development of digital solutions/services?**

**EIF Recommendation 4:** Give preference to open specifications, taking due account of the coverage of functional needs, maturity and market support, and innovation.

Maturity related to the stability of the specification, meaning that it has been evolved enough and mechanisms for its development have been put in place (Change Management processes, monitoring, etc.)

- Not Answered
- Not Applicable
- The specification has no published releases and no publicly accessible information on its development state.
- The specification is under development without published releases.
- The specification is under development with published preview releases.
- The specification has published major releases but without public documentation on its supporting processes (e.g. change management and release management).
- The specification, in addition to having major releases available, has published documentation on its supporting processes (e.g. change management and release management).

**\* Justification**

Schema.org was founded by big tech companies and its use is widespread in the major search engines like Google or Yahoo! (see Schema.org homepage reference, 'About Schema.org' section). Schema.org started

in 2011 and went through 14 major releases in the last nine years, the last one in 2022. Besides, the schema.org project publishes documentation on all the specification's supporting processes on its Releases section.

Schema.org homepage reference, 'About Schema.org' section:

<https://schema.org/docs/about.html>

Schema.org reference, Releases section:

<https://schema.org/docs/releases.html>

**\* A8 - To what extent has the specification sufficient market acceptance for its use in the development of digital solutions/services?**

**EIF Recommendation 4:** Give preference to open specifications, taking due account of the coverage of functional needs, maturity and market support, and innovation.

Relates to how the specification is supported by the market, taking as a reference whether or not the specifications are widely used or implemented. There is an exception, and it is when the specification is being used to create innovative solutions.

- Not Answered
- Not Applicable - The specification does not have market acceptance because it is directly used to create innovative solutions.
- There is no information about the specification's market uptake.
- The specification has known implementations but not enough to indicate market acceptance.
- The specification has widespread use indicating market acceptance.
- The specification has widespread use and relevant independent reports proving its market acceptance.
- The specification has widespread use, indicating market acceptance.

**\* Justification**

Schema.org was founded by major technology companies and its use extends to the world's leading search engines, such as Google and Yahoo! (see Schema.org homepage reference, 'About Schema.org' section). Besides, the schema.org project has supported the development of another specification in order to better represent web content and display it in a useful and relevant way, the HTML Microdata tags (see Schema.org reference, Getting started section). In this sense, schema.org will not only help search engines to better perform, but also would increase its market applicability in the wide web community, proving its market acceptance: the more web services implement these HTML tags, the more widespread use the specification will achieve in the market.

Schema.org homepage reference, 'About Schema.org' section:

<https://schema.org/docs/about.html>

Schema.org reference, Getting started section:

<https://schema.org/docs/gs.html>

HTML Microdata reference:

<https://dev.w3.org/html5/md-LC/>

**\* A9 - To what extent has the specification support from at least one community?**

**EIF Recommendation 3:** Ensure a level playing field for open-source software and demonstrate active and fair consideration of using open source software, taking into account the total cost of ownership of the solution.

Related to whether or not communities are surrounding the specification at any level legal, organisational, semantic, or technical contributions to its enhancement and development.

- Not Answered
- Not Applicable
- There is no community linked to the specification.
- Specification support is available but as part of a closed community requiring registration and possibly fees.
- There is no specific community to support the specification but there are public channels for the exchange of help and knowledge among its users.
- There is a community providing public support linked to the specification but in a best-effort manner.
- There is a community tasked to provide public support linked to the specification and manage its maintenance.

\* Justification

Schema.org relies on more than one development community, mainly the Community Group and the Steering Group (see Schema.org homepage reference, 'About Schema.org' section). All information relating to this specification can be found in the schema.org homepage (see Schema.org reference, Releases section), as well as in relevant platforms supported by W3C (e.g., Mailing list and Github). See also the Github Wiki section to engage with other schema.org external communities (e.g., Stackoverflow).

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

Schema.org reference, Releases section:  
<https://schema.org/docs/releases.html>

W3 community reference, Mailing List:  
<https://lists.w3.org/Archives/Public/public-vocabs/>

Schema.org-W3 Github reference:  
<https://github.com/schemaorg/schemaorg/>

Schema.org-W3 Github, Wiki section:  
<https://github.com/schemaorg/schemaorg/wiki>

## Transparency

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\* **A10 - To what extent does the specification enable the visibility of administrative procedures, rules data, and services?**

**EIF Recommendation 5:** Ensure internal visibility and provide external interfaces for European public services.

- Not Answered
- Not Applicable
- The specification hinders visibility.
- The specification neither promotes nor hinders visibility.

- The specification can contribute and promote the visibility of administrations, but it is not its main purpose.
- The specification can enable the visibility of administrations if combined with other specifications.
- The specification actively promotes and supports visibility.

\* Justification

Schema.org may contribute and promote the visibility of administrative procedures, rules data and services on the web. The specification promotes schemas for structured data (e.g. services, data) enabling potential users to find and use such data as services or relevant information. Up to date, there is no evidence of schema.org as a promising enabler of visibility, but there are ongoing projects such as the Schema.org profile of DCAT Application Profile for Data Portals in Europe (Schema.org profile of DCAT-AP, or DCAT-AP-SDO) that are working in this direction.

Schema.org homepage reference, 'Documentation' section:

<https://schema.org/docs/documents.html>

DCAT-AP reference:

<https://op.europa.eu/en/web/eu-vocabularies/dcat-ap>

DCAT-AP-SDO reference:

<https://ec-jrc.github.io/dcat-ap-to-schema-org/>

\* **A11 - To what extent does the specification scope comprehensibly administrative procedures, rules data, and services?**

**EIF Recommendation 5:** Ensure internal visibility and provide external interfaces for European public services.

- Not Answered
- Not Applicable
- The specification hinders comprehensibility.
- The specification neither promotes nor hinders comprehensibility.
- The specification can contribute and promote the comprehensibility of administrations, but it is not its main purpose.
- The specification can scope the comprehensibility of administrations if combined with other specifications.
- The specification actively promotes and supports comprehensibility.

\* Justification

Schema.org can scope the comprehensibility of administrative procedures, rules data and services on European websites. The specification favours the promotion of semantic interoperability between different applications, basing its logic on the reuse of existing controlled vocabularies and potential mappings to existing metadata vocabularies. The specification will be used along with another specification, DCAT, in order to propose a common DCAT schema (DCAT-AP-SDO, Schema.org profile of DCAT Application Profile for Data Portals in Europe) enabling administrations and citizens to find and understand datasets located in the European Union and all Member States' data portals.

Schema.org homepage reference, 'Documentation' section:

<https://schema.org/docs/documents.html>

DCAT reference:

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

DCAT-AP-SDO reference:  
<https://ec-jrc.github.io/dcat-ap-to-schema-org/>

**\* A12 - To what extent does the specification enable the exposure of interfaces to access the public administration's services?**

**EIF Recommendation 5:** Ensure internal visibility and provide external interfaces for European public services.

Relates to ensuring availability of interfaces with internal information systems. As the EIF defines: *Public administrations operate a large number of what are often heterogeneous and disparate information systems in support of their internal processes. Interoperability depends on ensuring the availability of interfaces to these systems and the data they handle. In turn, interoperability facilitates the reuse of systems and data and enables these to be integrated into larger systems.*

- Not Answered
- Not Applicable
- The specification prevents the exposure of such interfaces.
- The specification neither promotes nor hinders the exposure of such interfaces.
- The specification can contribute to the exposure of interfaces, but it is not its main purpose.
- The specification can enable the exposure of interfaces if combined with other specifications.
- The specification enables exposure of such interfaces.

**\* Justification**

Schema.org enables the exposure of interfaces to access European public administration's services when combined with other specifications. The specification is currently used in combination with DCAT, in order to propose a common data schema (DCAT-AP-SDO, Schema.org profile of DCAT Application Profile for Data Portals in Europe) enabling administrations and citizens to find and reuse datasets located in EU data portals. Despite the fact that there is no evidence of any public administration's service making use of this common data schema (DCAT-AP-SDO, Schema.org profile of DCAT Application Profile for Data Portals in Europe), the specification may favour the promotion of semantic interoperability between different information systems and promote the adoption of a common mechanism to enhance the exposure of such services.

Schema.org homepage reference, 'Documentation' section:  
<https://schema.org/docs/documents.html>

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

DCAT-AP-SDO reference:  
<https://ec-jrc.github.io/dcat-ap-to-schema-org/>

**\* A13 - To what extent does the specification ensure the protection of personal data managed by Public Administrations?**

**EIF Recommendation 5:** Ensure internal visibility and provide external interfaces for European public services.

Securing the right to the protection of personal data, by respecting the applicable legal framework for the large volumes of personal data of citizens, held and managed by Public administrations.



- Not Answered
- Not Applicable
- The specification hinders the protection of personal data.
- The specification does not address the protection of personal data but neither prevents it.
- The specification includes certain data protection considerations but without being exhaustive.
- The specification explicitly addresses data protection but without referring to relevant regulations.
- The specification explicitly addresses data protection and its alignment to relevant regulations.

\* Justification

The purpose of schema.org is not related to the protection of personal data managed by public administrations. Therefore, this criterion is not applicable to this specification.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

## Reusability

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\* **A14 - To what extent is the specification usable beyond the business-specific domain, allowing its usage across business domains?**

**EIF Recommendation 6:** Reuse and share solutions, and cooperate in the development of joint solutions when implementing European public services.

Relates to the use of the specification beyond a specific business domain. E.g. a specification developed under the eHealth domain that can be used in other domains or not.

- Not Answered
- Not Applicable
- The specification is tied to a specific domain and is restricted from being used in other domains.
- The specification is associated with a specific domain but its use in other domains is difficult.
- The specification is associated with a specific domain but could be partially used in other domains.
- The specification is associated with a specific domain but could be used 'as-is' to other domains.
- The specification is domain-agnostic, designed to be used in any domain.

\* Justification

Schema.org was originally conceived for the semantic web. Nonetheless, the specification project has successfully extended schema.org to other domains because of the variety of attributes and types it presents (see Schema.org reference, Data model section). Besides, schema.org also offers additional domain-related schema extensions that may differ from each other (see Schema.org homepage reference, 'Organization of Schemas' section), increasing the specification usability beyond a unique business-specific domain.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

Schema.org reference, Data model section:  
<https://schema.org/docs/datamodel.html>

Schema.org homepage reference, 'Organization of Schemas' section:  
<https://schema.org/docs/schemas.html>

**\* A15 - To what extent is the specification usable beyond the business-specific domain, allowing its implementation across business domains?**

**EIF Recommendation 6:** Reuse and share solutions, and cooperate in the development of joint solutions when implementing European public services.

Relates to the use of the specification beyond a specific business domain. E.g. a specification developed under the eHealth domain that can be used in other domains or not.

- Not Answered
- Not Applicable
- The specification is tied to a specific domain and is restricted from being implemented in other domains.
- The specification is associated with a specific domain but its implementation in other domains is difficult.
- The specification is associated with a specific domain but could be partially implemented in other domains.
- The specification is associated with a specific domain but could be implemented 'as-is' to other domains.
- The specification is domain-agnostic, designed to be implemented in any domain.

**\* Justification**

Schema.org was originally conceived for the semantic web. Nonetheless, the specification project has successfully extended schema.org to other domains because of the variety of attributes and types it presents (see Schema.org reference, Data model section). Besides, schema.org also offers additional domain-related schema extensions that may differ from each other (see Schema.org homepage reference, 'Organization of Schemas' section), improving the specification capability to be implemented in other domains prior to a deliberate selection of the schema.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

Schema.org reference, Data model section:  
<https://schema.org/docs/datamodel.html>

Schema.org homepage reference, 'Organization of Schemas' section:  
<https://schema.org/docs/schemas.html>

## Technological Neutrality and Data Portability

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**\* A16 - Is the specification technology agnostic?**

**EIF Recommendation 8:** Do not impose any technological solutions on citizens, businesses, and other administrations that are technology-specific or disproportionate to their real needs

Relates to the dependency of the specification to be implemented without relying on specific technologies or platforms.

- Not Answered
- Not Applicable

- NO  
 YES

\* Justification

Schema.org does not rely on other specifications, except for derivative projects such as Microdata, which leverages support from other specifications to extend its functionality. However, the specification can be considered technology-agnostic.

Schema.org reference, Getting started with schema.org using Microdata section:  
<https://schema.org/docs/gs.html>

Schema.org-W3 Github reference, 'Improving schemas' section:  
<https://github.com/schemaorg/schemaorg/blob/main/README.md>

\* **A17 - Is the specification platform agnostic?**

**EIF Recommendation 8:** Do not impose any technological solutions on citizens, businesses, and other administrations that are technology-specific or disproportionate to their real needs

Relates to the dependency of the specification to be implemented without relying on specific technologies or platforms.

- Not Answered  
 Not Applicable  
 NO  
 YES

\* Justification

Schema.org can be deployed in any platform since the specification can be coded into RDF and JSON-LD, which are compatible with the vast majority of information systems. Therefore, the specification is platform-agnostic.

Schema.org reference, Getting started section:  
<https://schema.org/docs/gs.html>

Schema.org-W3 Github reference, 'Improving schemas' section:  
<https://github.com/schemaorg/schemaorg/blob/main/README.md>

\* **A18 - To what extent does the specification allow for partial implementations?**

**EIF Recommendation 8:** Do not impose any technological solutions on citizens, businesses, and other administrations that are technology-specific or disproportionate to their real needs.

Partial implementations refer to the application of specifications, not in their whole, but part of the requirements or features it defines in the text.

It can also be understood as the implementation of different profiles, which is also related to a certain set of requirements depending on the context of implementation.

- Not Answered  
 Not Applicable

- The specification is only meant to be used as a whole.
- The specification could be partially implemented but does not make specific provisions towards this.
- The specification could be partially implemented but includes only guidelines towards this rather than sets of requirements.
- The specification explicitly foresees sets of requirements that can be implemented incrementally.
- The specification explicitly foresees sets of requirements that can be implemented incrementally or separately.

\* Justification

Schema.org allows for partial implementation as long as the schema implementation is conformant with the specification requirements, namely those requirements concerning the schema data structure. The schema.org project highly recommends the use of authoring schema validators.

Schema.org reference, Data model section, Conformance section:  
<https://schema.org/docs/datamodel.html>

\* **A19 - Does the specification allow customisation?**

EIF Recommendation 8: Do not impose any technological solutions on citizens, businesses, and other administrations that are technology-specific or disproportionate to their real needs.

A clear example of customizations is Core Vocabularies, which define a set of general requirements that could fit in any context and allow for the customization to fit specific business requirements in the implementation.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Schema.org opted for a flexible data model and adapted its vocabulary for authoring practices (see Schema.org reference, Data model section, Notes for toolmakers and schema authors section). Moreover, schema.org project, in its commitment to turn schema.org into a more flexible model, introduced 'hosted extensions' (see Schema.org Hosted Extensions reference), which offer simplified schema.org vocabularies, more generic than the original vocabularies, in order to allow customised use of the specification. Therefore, the specification allows customisation. The schema.org project highly recommends the use of schema validators for testing the conformance of authoring use cases.

Schema.org reference, Data model section, Notes for toolmakers and schema authors section:  
<https://schema.org/docs/datamodel.html>

Schema.org Hosted Extensions reference:  
<https://schema.org/docs/extension.html>

Schema.org reference, Data model section, Conformance section:  
<https://schema.org/docs/datamodel.html>

\* **A20 - Does the specification allow extension?**

**EIF Recommendation 8:** Do not impose any technological solutions on citizens, businesses, and other administrations that are technology-specific or disproportionate to their real needs.

A clear example of customizations is Core Vocabularies, which define a set of general requirements that could fit in any context and allow for the customization to fit specific business requirements in the implementation.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Schema.org opted for a flexible data model and introduced 'hosted extensions' (see Schema.org Hosted Extensions reference), as a way of adding more detailed descriptive vocabulary building on the schema.org core vocabulary (see Schema.org reference, Organization of Schemas section, Extensions subsection). The specification allows extension and encourages users to share their work through through the GS1 Web Vocabulary platform; external extensions are, however, out of the scope of the schema.org development community.

Schema.org Hosted Extensions reference:  
<https://schema.org/docs/extension.html>

Schema.org reference, Organization of Schemas section, Extensions subsection:  
<https://schema.org/docs/schemas.html>

GS1 Web Vocabulary platform:  
<https://www.gs1.org/voc/>

\* **A21 - To what extent does the specification enable data portability between systems/applications supporting the implementation of European public services?**

**EIF Recommendation 9:** Ensure data portability, namely that data is easily transferable between systems and applications supporting the implementation and evolution of European public services without unjustified restrictions, if legally possible.

- Not Answered
- Not Applicable
- The specification prevents or does not support data portability.
- The specification neither addresses data portability nor prevents it.
- The specification addresses data portability but without specific provisions to enable it.
- The specification introduces certain aspects that can contribute to enabling data portability.
- The specification explicitly addresses and enables data portability.

\* Justification

Schema.org is a (structured data) mark-up schema that helps search engines understand the information on web pages and potentially provides richer search results. Therefore, the specification addresses data portability. In future scenarios, DCAT-AP-SDO (Schema.org profile of DCAT Application Profile for Data Portals in Europe) will potentially replace the common European DCAT Application Profile for Data Portals in Europe (DCAT-AP), which aims to enable data portability between information systems in the EU.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

DCAT-AP-SDO reference:  
<https://ec-jrc.github.io/dcat-ap-to-schema-org/>

DCAT-AP reference:  
<https://op.europa.eu/en/web/eu-vocabularies/dcat-ap>

**\* A22 - To what extent does the specification enable data portability between systems/applications supporting the evolution of European public services?**

**EIF Recommendation 9:** Ensure data portability, namely that data is easily transferable between systems and applications supporting the implementation and evolution of European public services without unjustified restrictions, if legally possible.

- Not Answered
- Not Applicable
- The specification prevents or does not support data portability.
- The specification neither addresses data portability nor prevents it.
- The specification addresses data portability but without specific provisions to enable it.
- The specification introduces certain aspects that can contribute to enabling data portability.
- The specification explicitly addresses and enables data portability.

**\* Justification**

Schema.org is a (structured data) mark-up schema that helps search engines understand the information on web pages and potentially provides richer search results. Therefore, the specification addresses data portability. At European level, the DCAT Application Profile for Data Portals in Europe (DCAT-AP) will be mapped to schema.org, resulting in DCAT-AP-SDO (Schema.org profile of DCAT Application Profile for Data Portals in Europe); apart from aiming at improving data portability within European Data Portals, the DCAT-AP-SDO schema will support the evolution of European public services by enhancing data discovery networks on the web as its precursor DCAT-AP did (see ISA Programme reference, DCAT-AP and public sector databases).

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

DCAT-AP reference:  
<https://op.europa.eu/en/web/eu-vocabularies/dcat-ap>

DCAT-AP-SDO reference:  
<https://ec-jrc.github.io/dcat-ap-to-schema-org/>

ISA Programme reference, DCAT-AP and public sector databases:  
[https://ec.europa.eu/isa2/solutions/dcat-application-profile-data-portals-europe\\_en](https://ec.europa.eu/isa2/solutions/dcat-application-profile-data-portals-europe_en)

## EIF PRINCIPLES RELATED TO GENERIC USER NEEDS AND EXPECTATIONS

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This category includes all underlying principles from the EIF which are related to user needs. Principles included here are user-centricity (UP6), inclusion and accessibility (UP7), security and privacy (UP8), and multilingualism (UP9).

## User-Centricity

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### \* A23 - To what extent does the specification allow relevant information to be reused when needed?

**EIF Recommendation 13:** As far as possible under the legislation in force, ask users of European public services once-only and relevant-only information.

The Once-Only Principle is related to making the operations or transactions between administrations and stakeholders more efficient. It implies avoiding the provision of certain data or information twice or more when this information is already available for public administrations.

Additional and relevant information can be found here: <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Once+Only+Principle>

- Not Answered
- Not Applicable
- Information needs to be provided whenever this is needed.
- There is limited reuse of provided information.
- Provided information is reused, but this is not consistently done.
- Provided information is reused, but not in all scenarios.
- Information is provided once-only and reused as needed.

### \* Justification

Schema.org, as a cross-border and cross-sector vocabulary, increases government-to-government reuse of data and therefore can prevent citizens or businesses from providing information multiple times. According to the Publications Office (OP) of the EU, as a mark-up schema, the specification may boost governmental data reuse helping to achieve the once-only principle in future releases of DCAT-AP, once this schema is mapped to schema.org which will result in the Schema.org profile of DCAT-AP (DCAT-AP-SDO).

OP reference, 'DCAT-AP standard can become a tool for internal information governance purposes' section: [https://ec.europa.eu/isa2/dcat-ap-key-european-data-publishers-reach-data-consumers-and-create-european-open-data-ecosystem\\_en](https://ec.europa.eu/isa2/dcat-ap-key-european-data-publishers-reach-data-consumers-and-create-european-open-data-ecosystem_en)

DCAT-AP-SDO reference:  
<https://ec-jrc.github.io/dcat-ap-to-schema-org/>

## Inclusion and Accessibility

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### \* A24 - To what extent does the specification enable the e-accessibility?

**EIF Recommendation 14:** Ensure that all European public services are accessible to all citizens, including persons with disabilities, the elderly, and other disadvantaged groups. For digital public services, public administrations should comply with e-accessibility specifications that are widely recognised at the European or

international level.

Examples of specifications addressing e-accessibility are, for instance, WAI-ARIA (<https://www.w3.org/WAI/standards-guidelines/aria/>) included within Web Content Accessibility Guidelines (WCAG) Overview (<https://www.w3.org/WAI/standards-guidelines/wcag/>).

- Not Answered
- Not Applicable
- The specification prevents or does not support e-accessibility.
- The specification neither addresses e-accessibility nor prevents it.
- The specification can contribute and promote e-accessibility, but it is not its main purpose.
- The specification can enable e-accessibility if combined with other specifications.
- The specification explicitly addresses and enables e-accessibility.

\* Justification

According to the official schema.org blog, the specification addresses e-accessibility to some extent. The specification worked along with the IMS Global Learning Consortium's Access For All Specification and the Accessibility Metadata Project in order to provide accessibility of content for a wide range of users. Therefore, the specification can enable e-accessibility when combined with a set of recommendations taken from such collaborations (see Schema.org Accessibility Properties for Discoverability Vocabulary reference).

Official blog for schema.org reference, Content Accessibility post:  
<http://blog.schema.org/2013/12/content-accessibility.html>

IMS Global Learning Consortium's Access For All Specification homepage reference:  
<http://www.imsglobal.org/activity/accessibility>

Accessibility Metadata Project reference:  
<http://www.a11ymetadata.org/about/>

Schema.org Accessibility Properties for Discoverability Vocabulary reference:  
<https://www.w3.org/2021/a11y-discov-vocab/latest/#intro>

## Security and Privacy

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\* **A25 - To what extent does the specification enable the secure exchange of data?**

**EIF Recommendation 15:** Define common security and privacy framework and establish processes for public services to ensure secure and trustworthy data exchange between public administrations and in interactions with citizens and businesses.

Relates to the actions that Public Administrations establish concerning sensitive information for the proper delivery of public services. The different actions imply the reception, classification, and exchange of such information.

- Not Answered
- Not Applicable
- The specification prevents or does not support the secure and trustworthy exchange of data.
- The specification introduces certain aspects that can contribute to enabling the secure exchange of data.
-

The specification addresses data security and trustworthy data exchange but does not foresee specific provisions to enable them.

- The specification addresses data security and trustworthy data exchange but specific provisions to enable them are limited.
- The specification explicitly addresses and enables the secure and trustworthy exchange of data.

\* Justification

Schema.org grants data exchange permissions through the schema.org type DigitalDocumentPermission. Such metadata improves the reliability of data exchanged between citizens, businesses and public administrations.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

Schema.org reference, DigitalDocumentPermission type:  
<https://schema.org/DigitalDocumentPermission?msckid=fe03a55bab5411eca9752ad0bc8beac1>

\* **A26 - To what extent does the specification enable the secure processing of data?**

**EIF Recommendation 15:** Define common security and privacy framework and establish processes for public services to ensure secure and trustworthy data exchange between public administrations and in interactions with citizens and businesses.

Relates to the actions that Public Administrations establish concerning sensitive information for the proper delivery of public services. The different actions imply the reception, classification, and exchange of such information.

- Not Answered
- Not Applicable
- The specification prevents or does not support the secure and trustworthy processing of data.
- The specification introduces certain aspects that can contribute to enabling the secure processing of data.
- The specification addresses data security and trustworthy data processing but does not foresee specific provisions to enable them.
- The specification addresses data security and trustworthy data processing but specific provisions to enable them are limited.
- The specification explicitly addresses and enables the secure and trustworthy processing of data.

\* Justification

Schema.org grants data processing permissions through the schema.org type DigitalDocumentPermission. Such metadata improves the reliability of processed data between citizens, businesses and public administrations.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

## Multilingualism

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**\* A27 - To what extent could the specification be used in a multilingual context?**

EIF Recommendation 16: Use information systems and technical architectures that cater to multilingualism when establishing a European public service. Decide on the level of multilingualism support based on the needs of the expected users.

- Not Answered
- Not Applicable
- The specification cannot be used in a multilingual context.
- The specification could be used in a multilingual context but has no specific provisions to facilitate this.
- The specification foresees limited support for multilingualism.
- The specification foresees support for multilingualism but this is not complete.
- The specification is designed to fully support multilingualism.

**\* Justification**

Schema.org mark-up can be used on web pages written in any language. Therefore, the specification is designed to fully support multilingualism.

Schema.org reference, FAQs section:  
<https://schema.org/docs/faq.html#7>

## EIF FOUNDATION PRINCIPLES FOR COOPERATION AMONG PUBLIC ADMINISTRATIONS

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This category includes the criteria aiming to evaluate principles related to collaboration amongst public organisations, business, and citizens. This is related to the underlying principles of administrative simplification (UP10), preservation of information (UP11), and assessment of effectiveness and efficiency (UP12).

### Administrative Simplification

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**\* A28 - Does the specification simplify the delivery of European public services?**

EIF Recommendation 17: Simplify processes and use digital channels whenever appropriate for the delivery of European public services, to respond promptly and with high quality to users' requests and reduce the administrative burden on public administrations, businesses and citizens.

- Not Answered
- Not Applicable
- NO
- YES

**\* Justification**

Schema.org allows the exchange of metadata across borders which, in some cases can reduce the administrative burden. For example, by linking the DCAT Application Profile for Data Portals in Europe (DCAT-AP) and schema.org data discoverability on the web (Schema.org profile of DCAT Application Profile for Data Portals in Europe, or DCAT-AP-SDO) will increase, considerably easing access to European public

services.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

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

DCAT-AP-SDO reference:  
<https://ec-jrc.github.io/dcat-ap-to-schema-org/>

**\* A29 - Does the specification enable digital service delivery channels?**

**EIF Recommendation 17:** Simplify processes and use digital channels whenever appropriate for the delivery of European public services, to respond promptly and with high quality to users' requests and reduce the administrative burden on public administrations, businesses and citizens.

- Not Answered
- Not Applicable
- NO
- YES

**\* Justification**

Schema.org may enable digital service delivery channels. European Legislation Identifier (ELI) is using schema.org in some of its use cases, increasing the access to legislative documents. ELI is adopting the schema.org Legislation vocabulary.

Schema.org homepage reference, 'About Schema.org' section:  
<https://schema.org/docs/about.html>

ELI-Joinup reference:  
<https://joinup.ec.europa.eu/collection/eli-european-legislation-identifier/solution/eli-legislation-extension-schemaorg/about>

Schema.org reference, Legislation vocabulary:  
<https://schema.org/Legislation>

## Preservation of Information

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**\* A30 - To what extent does the specification enable the long-term preservation of data/information /knowledge (electronic records included)?**

**EIF Recommendation 18:** Formulate a long-term preservation policy for information related to European public services and especially for information that is exchanged across borders.

Relates to the capacity of the specification to contribute to the long-term preservation of information.

- Not Answered
- Not Applicable
-

- The specification prevents or does not support long-term preservation.
- The specification neither addresses the long-term preservation nor prevents it.
- The specification addresses the long-term preservation of electronic resources (information, data, etc) in a limited manner.
- The specification addresses long-term preservation of electronic resources (information, data, etc), but not in a complete manner.
- The specification explicitly addresses and enables long-term preservation.

\* Justification

According to the schema.org project website, the schema.org specification provides a specific vocabulary that can be used by applications that publish, discover or integrate various types of data. Although the main purpose of schema.org is not related to data preservation, the specification can enable long-term preservation of data through additional file export mechanisms or by integrating schema.org into other data markup schemes (see Zotero reference, Forums section) that enable data preservation..

Schema.org homepage reference, 'Data and Datasets overview' section:  
<https://schema.org/docs/data-and-datasets.html>

Zotero reference, Forums section:  
<https://forums.zotero.org/discussion/35992/export-to-schema-org-rdfa-and-or-microdata>

## Assessment of Effectiveness and Efficiency

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\* **A31 - To what extent are there assessments of the specification's effectiveness?**

**EIF Recommendation 19:** Evaluate the effectiveness and efficiency of different interoperability solutions and technological options considering user needs, proportionality, and balance between costs and benefits.

Related to the degree to which the specification is effective while using it. There are indirect methods to determine that the specification is effective, for instance then a solution that has an effective performance and uses the specification to deliver the expected service.

Effectiveness: *the extent to which the specifications reach the expected action according to its purpose.*

- Not Answered
- Not Applicable
- There are no such assessments.
- There are such assessments that indirectly address the specification.
- There are such assessments evaluating digital solutions' effectiveness that involve the specification.
- There are such assessments addressing the specification and its effectiveness together with other specifications.
- There are such assessments directly addressing the specification.

\* Justification

There are different kind of assessments evaluating the schema.org specification. However, these evaluations indirectly address the specification's effectiveness or may focus on the phases prior to the development of digital solutions, what makes them hard to find. Check bibliographical platforms or research

centres, such as ResearchGate (see Europeana Foundation and INESC-ID joint research reference) or the Joint Research Centre of the European Commission (JRC) (see JRC publications repository reference, 'Application Programming Interfaces in Governments' document).

Europeana Foundation and INESC-ID joint research reference:

<https://www.researchgate.net/profile/Nuno-Freire-2/publication>

[/325529501\\_Evaluation\\_of\\_Schemaorg\\_for\\_Aggregation\\_of\\_Cultural\\_Heritage\\_Metadata/links](/325529501_Evaluation_of_Schemaorg_for_Aggregation_of_Cultural_Heritage_Metadata/links)

</5b22540da6fdcc69745ee712/Evaluation-of-Schemaorg-for-Aggregation-of-Cultural-Heritage-Metadata.pdf>

JRC publications repository reference, 'Application Programming Interfaces in Governments' document:

<https://publications.jrc.ec.europa.eu/repository/handle/JRC120429>

### \* A32 - To what extent are there assessments of the specification's efficiency?

**EIF Recommendation 19:** Evaluate the effectiveness and efficiency of different interoperability solutions and technological options considering user needs, proportionality, and balance between costs and benefits.

Related to the good use of time and resources not wasted unnecessarily by a specification being used. There are indirect methods to determine that the specification is efficient, for instance, a solution delivering a service with an efficient performance that uses the specification.

Efficiency: times and means needed to achieve the results using the specification.

- Not Answered
- Not Applicable
- There are no such assessments.
- There are such assessments that indirectly address the specification.
- There are assessments evaluating digital solutions' efficiency that involve the specification.
- There are such assessments addressing the specification and its efficiency together with other specifications.
- There are such assessments directly addressing the specification.

### \* Justification

After having checked different sources, there is no evidence of the existence of studies directly assessing the schema.org specification's efficiency. This contrasts with the fact that there is a large community making use of this specification.

Schema.org reference, Community Group and Steering Group section:

<https://schema.org/docs/about.html>

Schema.org reference, Additional Resources section:

<https://schema.org/docs/documents.html>

## EIF INTEROPERABILITY LAYERS

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This category is aligned with the related interoperability models described in the EIF and apply to all the public services. It includes six layers: interoperability governance, integrated public service governance, legal interoperability, organisational interoperability, semantic interoperability, and technical interoperability covered by criteria A2 to A10 under the Openness category.

# Interoperability Governance

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## \* A33 - Is the (or could it be) specification mapped to the European Interoperability Architecture (EIRA)?

**EIF Recommendation 20:** Ensure holistic governance of interoperability activities across administrative levels and sectors.

The EIRA defines the required capabilities for promoting interoperability as a set of Architecture Building Blocks (ABBs). The association of specification to these ABBs means the capacity to enable Legal, Organisational, Semantic, or Technical aspects needed for the development of interoperable public services. This association can be taken from ELIS the EIRA Library of Interoperability Specifications (ELIS) but also can be established ad-hoc.

- Not Answered
- Not Applicable
- NO
- YES

### \* Justification

Schema.org is already associated with EIRA ABBs in the EIRA Library Of Interoperability Specifications (ELIS). More specifically, schema.org can define the interoperability aspects of the Ontologies Catalogue ABB of the EIRA Semantic View.

EIRA Library of Interoperability Specifications (ELIS):

<https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/elis/release/v110>

## \* A34 - To what extent can the conformance of the specification's implementations be assessed?

**EIF Recommendation 21:** Put in place processes to select relevant standards and specifications, evaluate them, monitor their implementation, check compliance and test their interoperability.

Relates to the implementation of the specification being conformant with the requirements established in the text of the specification. There are different methods to ensure the conformance of an implementation: check manually if the implementation meets the requirements in the specification text (if any), use additional methods or resources provided to this purpose or use specific tools provided by the SDO developing the specification.

- Not Answered
- Not Applicable
- The specification does not include a definition of conformance.
- The specification defines conformance but not as a set of measurable requirements.
- The specification defines conformance as requirements that can be measured manually.
- The specification defines conformance as requirements with resources to enable automated measurement.
- The specification is complemented by a conformance testing platform to allow testing of implementations.

### \* Justification

The conformance of schema.org implementations can be assessed in several ways since it is defined as a set of requirements (see Schema.org reference, Vocabulary Definition Files section). Additionally, the schema.org project offers a conformance testing platform to allow testing implementations (see Schema.org

reference, Validator section).

Schema.org reference, Data model-Conformance section:

<https://schema.org/docs/datamodel.html>

Schema.org reference, Vocabulary Definition Files section:

<https://schema.org/docs/developers.html#defs>

Schema.org reference, Validator section:

<https://validator.schema.org/>

**\* A35 - Is the specification recommended by an European Member State?**

**EIF Recommendation 23:** Consult relevant catalogues of standards, specifications, and guidelines at the national and EU level, in accordance with your NIF and relevant DIFs, when procuring and developing ICT solutions.

Recommended specifications are these specifications that the Member States provide as examples for the implementation of certain digital public services or for being used when procuring these digital public services or solutions.

- Not Answered
- Not Applicable
- NO
- YES

**\* Justification**

There is no Member State recommending schema.org in its ICT National Catalogue.

CAMSS List of Standards:

<https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/camss-list-standards>

**\* A36 - Is the specification selected for its use in an European Cross-border project/initiative?**

**EIF Recommendation 23:** Consult relevant catalogues of standards, specifications, and guidelines at national and EU level, in accordance with your NIF and relevant DIFs, when procuring and developing ICT solutions.

The European Commission set up a process for the identification and assessment of specifications for its use in the development of IT solutions and also when procuring them. Find here the commission implementing decisions that include the specifications identified by the European Commission: [https://ec.europa.eu/growth/single-market/european-standards/ict-standardisation/ict-technical-specifications\\_en](https://ec.europa.eu/growth/single-market/european-standards/ict-standardisation/ict-technical-specifications_en)

Additionally, there could be other situations where a specification can be selected for European projects or initiatives out of the scope of the above-mentioned context. These specifications can be considered positively in this assessment.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Schema.org has been selected for its use to be implemented in existing solutions (see ELI reference) and as a semantic asset in the European Union Location Framework (EULF) project (see JRC repository reference, Architectures and Standards for Spatial Data Infrastructures and Digital Government document).

ELI-Joinup reference:

<https://joinup.ec.europa.eu/collection/eli-european-legislation-identifier/solution/eli-legislation-extension-schemaorg/about>

JRC repository reference, Architectures and Standards for Spatial Data Infrastructures and Digital Government document:

<https://publications.jrc.ec.europa.eu/repository/handle/JRC121025>

European Union Location Framework (EULF) reference:

<https://e3p.jrc.ec.europa.eu/publications/european-union-location-framework>

\* **A37 - Is the specification included in an open repository/catalogue of standards at national level?**

**EIF Recommendation 23:** Consult relevant catalogues of standards, specifications, and guidelines at the national and EU level, in accordance with your NIF and relevant DIFs, when procuring and developing ICT solutions.

**EIF Recommendation 6:** Reuse and share solutions, and cooperate in the development of joint solutions when implementing European public services.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Schema.org is not included in any Member States' catalogues of recommended specifications.

CAMSS List of Standards:

<https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/camss-list-standards>

\* **A38 - Is the specification included in an open repository/catalogue of standards at European level?**

**EIF Recommendation 23:** Consult relevant catalogues of standards, specifications, and guidelines at the national and EU level, in accordance with your NIF and relevant DIFs, when procuring and developing ICT solutions.

**EIF Recommendation 6:** Reuse and share solutions, and cooperate in the development of joint solutions when implementing European public services.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Although the specification has been implemented in some projects at European level, there is no evidence of the inclusion of schema.org in an open repository/catalogue of standards at European level.

EUOS repository of standards:

<https://www.standict.eu/standards-repository>

GENELEC and CEN search tool catalogue:

<https://standards.cencenelec.eu/dyn/www/f?p=CEN:105::RESET::::>

## Legal Interoperability

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### \* A39 - Is the specification a European Standard?

**EIF Recommendation 27:** Ensure that legislation is screened by means of 'interoperability checks', to identify any barriers to interoperability. When drafting legislation to establish a European public service, seek to make it consistent with relevant legislation, perform a 'digital check', and consider data protection requirements.

European Standards are those standards developed by certain organisations dedicated to this purpose. CEN, CENELEC, and ETSI are the principal organisations and all of them are developing their standards under the basis of meeting the requirements established within the European Standardisation Regulation. CEN-CENELEC homepage: <https://www.cencenelec.eu/>

- Not Answered
- Not Applicable
- NO
- YES

### \* Justification

After checking the different standard catalogues at supra-national level, there is no evidence of schema.org as a European standard.

ICT technical specifications:

[https://ec.europa.eu/growth/single-market/european-standards/ict-standardisation/ict-technical-specifications\\_en](https://ec.europa.eu/growth/single-market/european-standards/ict-standardisation/ict-technical-specifications_en)

GENELEC and CEN search tool catalogue:

<https://standards.cencenelec.eu/dyn/www/f?p=CEN:105::RESET::::>

## Organisational Interoperability

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### \* A40 - Does the specification facilitate the modelling of business processes?

**EIF Recommendation 28:** Document your business processes using commonly accepted modelling techniques and agree on how these processes should be aligned to deliver a European public service.

- Not Answered
- Not Applicable
-

NO

YES

\* Justification

Schema.org provides a data model that allows modeling business processes within and beyond an organisation.

Schema.org reference, Data model section:  
<https://schema.org/docs/datamodel.html>

\* **A41 - To what extent does the specification facilitate organisational interoperability agreements?**

**EIF Recommendation 29:** Clarify and formalise your organisational relationships for establishing and operating European public services.

Relates to specifications' capacities to help and ease the creation and formalisation of Interoperability agreements. E.g. Memorandums of Understanding (MoUs), Services Level Agreements (SLAs).

- Not Answered
- Not Applicable
- The specification's definition hinders the drafting of such agreements.
- The specification makes no provisions that would facilitate the drafting of such agreements.
- The specification defines certain elements to facilitate such agreements.
- The specification defines most elements to facilitate such agreements.
- The specification explicitly identifies all elements to be used in drafting such agreements.

\* Justification

Schema.org contains a specific vocabulary that can be used in applications that publish, discover or integrate different types of data. That is, not only does it provide schemas for describing collections of structured data, but also the specification's capability complements many other data-related formats and standards which facilitates organisational interoperability agreements.

Schema.org reference, Data and Datasets overview section:  
<https://schema.org/docs/data-and-datasets.html>

## Semantic Interoperability

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\* **A42 - Does the specification encourage the creation of communities along with the sharing of their data and results on national platforms?**

**EIF Recommendation 32:** Support the establishment of sector-specific and cross-sectoral communities that aim to create open information specifications and encourage relevant communities to share their results on national and European platforms.

Relates to specifications that are narrowly related to the data/information being exchanged, its format, and

structure. It would allow a common method/mechanism to improve its reuse and exchange removing possible limitations. An example of it could be RDF, which is used to describe information and its metadata using specific syntax and serialisation.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Schema.org has the W3-schema.org project website, as well as a dedicated platform in Github for sharing results and best practices. Therefore, the specification encourages the creation of open information about the specification and encourages relevant communities from the EU (as well as non-EU communities) to share their results; therefore, this platform also extends at national level.

W3 community reference, Important links section:  
<https://www.w3.org/community/schemaorg/>

Schema.org-W3 Github, Wiki section:  
<https://github.com/schemaorg/schemaorg/wiki>

\* **A43 - Does the specification encourage the creation of communities along with the sharing of their data and results on European platforms?**

**EIF Recommendation 32:** Support the establishment of sector-specific and cross-sectoral communities that aim to create open information specifications and encourage relevant communities to share their results on national and European platforms.

Relates to specifications that are narrowly related to the data/information being exchanged, its format, and structure. It would allow a common method/mechanism to improve its reuse and exchange removing possible limitations. An example of it could be RDF, which is used to describe information and its metadata using specific syntax and serialisation.

- Not Answered
- Not Applicable
- NO
- YES

\* Justification

Schema.org has the W3-schema.org project website, as well as a dedicated platform in Github for sharing results and best practices. Therefore, the specification encourages the creation of open information about the specification and encourages relevant communities from the EU (as well as from non-EU communities) to share their results.

W3 community reference, Important links section:  
<https://www.w3.org/community/schemaorg/>

Schema.org-W3 Github, Wiki section:  
<https://github.com/schemaorg/schemaorg/wiki>

## **Useful links**

[CAMSS Joinup Page \(https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss\)](https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss)

[CAMSS Library of Assessments \(https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/camss-assessments-library\)](https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/camss-assessments-library)

[CAMSS Assessment EIF Scenario - User Guide \(https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/camss-assessment-eif-scenario/camss-assessment-eif-scenario-quick-user-guide\)](https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/camss-assessment-eif-scenario/camss-assessment-eif-scenario-quick-user-guide)

## **Contact**

DIGIT-CAMSS@ec.europa.eu



# CAMSS Assessment EIF Scenario v5.0.0 - Results

## CAMSS Assessment Result

Thank you for your contribution.

The score of the specification related to the scenario under which it is being evaluated depends on the scores achieved in each section of the survey. Please see the example below for guidance.

The following table shows the 'compliance levels' that a specification can reach depending on the assessment score.

**EIF Scenario Compliance Level Conversion Table**

Section	Compliance Level				
	Ad-hoc	Opportunistic	Essential	Sustainable	Seamless
<b>Principles setting the context for EU Actions on Interoperability</b>	20	40	50	80	90
<b>EIF Core Interoperability Principles</b>	0 to 440	441 to 880	881 to 1320	1321 to 1760	1761 to 2200
<b>EIF Principles Related to generic user needs and expectations</b>	0 to 100	101 to 200	201 to 300	301 to 400	401 to 500

**EIF Foundation principles for cooperation among public administrations**

0 to 100      101 to 200      201 to 300      301 to 400      401 to 500

**EIF Interoperability Layers**

0 to 220      221 to 440      441 to 660      661 to 880      881 to 1100

The table below expresses the range of the score per section. When used in combination with the table above, the total score can be interpreted. See the example below for guidance.

**Section Compliance Conversion Table**

Compliance Level	Description
<b>Ad-hoc</b>	Poor level of conformance with the EIF - The specification does not cover the requirements and recommendations set out by the EIF in this area.
<b>Opportunistic</b>	Fair level of conformance with the EIF - The specification barely covers the requirements and recommendations set out by the European Interoperability Framework in this area.
<b>Essential</b>	Essential level of conformance with the EIF - The specification covers the basic aspects set out in the requirement and recommendations from the European Interoperability Framework.
<b>Sustainable</b>	Good level of conformance with the EIF scenario - The specification covers all the requirements and recommendations set out by the European Interoperability Framework in this area.
<b>Seamless</b>	Leading practice of conformance level with the EIF - The specification fully covers the requirements and recommendations set out by the European Interoperability Framework in this area.

**Example – How to find the final Compliance Level**

Using the score reached after the initial assessment, the interpretation can be made as follows.

1. In the summary table, observe the score for each section, e.g. EIF Core Interoperability Principles has 2200 points.
2. In the middle table – the Section Compliance Conversion Table – see that this number correlates to a column. In our example, the 2200 points of Core Interoperability Principles fall in the EIF Core Interoperability Principles row, and '1761 to 2200' point range, placing it in the column 'Compliance **Seamless**'.

3. Next, in the top table – the EIF Scenario Compliance Level Conversion Table – we see Compliance Level "Seamless", and from its description that the specification for the EIF Core Interoperability Principles 'fully covers the requirements and recommendations set out by the European Interoperability Framework in this area.'

For additional calculation of the assessment strength, please follow the instruction provided in the User Guide, found [here](#).

## Summary

**Your Score** 3720

**Maximum Score** 4400



Section	Score for this Section	
EIF PRINCIPLES SETTING THE CONTEXT FOR EU ACTIONS ON INTEROPERABILITY	20/100	
EIF CORE INTEROPERABILITY PRINCIPLES	2100 /2200	
EIF PRINCIPLES RELATED TO GENERIC USER NEEDS AND EXPECTATIONS	480 /500	
EIF FOUNDATION PRINCIPLES FOR COOPERATION AMONG PUBLIC ADMINISTRATIONS	340 /500	
EIF INTEROPERABILITY LAYERS	780 /1100	

## Scores by Question

## EIF PRINCIPLES SETTING THE CONTEXT FOR EU ACTIONS ON INTEROPERABILITY

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Score for this Section: 20/100

**A1 - To what extent has the specification been included in a national catalogue from a Member State whose National Interoperability Framework has a high performance on interoperability according to National Interoperability Framework Observatory factsheets?**

Your answer **✗** The specification has not been included within the catalogue of any Member State.

20  
out of  
100  
points



## EIF CORE INTEROPERABILITY PRINCIPLES

---

Score for this Section: 2100/2200

**A2 - Does the specification facilitate the publication of open data?**

Your answer **✓** YES

100  
out of  
100  
points



**A2(a) - To what extent does the specification facilitate the publication of public data as open data?**

Your answer **✓** In addition to the requirements stated in the previous answer, the specification supports published data as Linked Data.

100  
out of  
100  
points



**A3 - To what extent do stakeholders have the opportunity to contribute to the development of the specification?**

Your answer **✓** The working group is open to participation following a registration process.

80  
out of  
100  
points



**A4 - To what extent is a public review part of the release lifecycle?**

Your answer **✓** All major and minor releases foresee a public review during which collected feedback is publicly visible.

100  
out of  
100  
points



**A5 - Is the specification available with any restrictions related to Fair, Reasonable, and Non-Discriminatory ((F)RAND)?**

Your answer  YES

100  
out of  
100  
points



**A6 - Is the specification licensed on a royalty-free basis?**

Your answer  YES

100  
out of  
100  
points



**A7 - To what extent is the specification sufficiently mature for its use in the development of digital solutions/services?**

Your answer  The specification, in addition to having major releases available, has published documentation on its supporting processes (e.g. change management and release management).

100  
out of  
100  
points



**A8 - To what extent has the specification sufficient market acceptance for its use in the development of digital solutions/services?**

Your answer  The specification has widespread use, indicating market acceptance.

100  
out of  
100  
points



**A9 - To what extent has the specification support from at least one community?**

Your answer  There is a community tasked to provide public support linked to the specification and manage its maintenance.

100  
out of  
100  
points



**A10 - To what extent does the specification enable the visibility of administrative procedures, rules data, and services?**

Your answer  The specification can contribute and promote the visibility of administrations, but it is not its main purpose.

60  
out of  
100  
points



**A11 - To what extent does the specification scope comprehensively administrative procedures, rules data, and services?**

Your answer  The specification can scope the comprehensibility of administrations if combined with other specifications.

80 out of 100 points



**A12 - To what extent does the specification enable the exposure of interfaces to access the public administration's services?**

Your answer  The specification can enable the exposure of interfaces if combined with other specifications.

80 out of 100 points



**A13 - To what extent does the specification ensure the protection of personal data managed by Public Administrations?**

Your answer  Not Applicable

100 out of 100 points



**A14 - To what extent is the specification usable beyond the business-specific domain, allowing its usage across business domains?**

Your answer  The specification is domain-agnostic, designed to be used in any domain.

100 out of 100 points



**A15 - To what extent is the specification usable beyond the business-specific domain, allowing its implementation across business domains?**

Your answer  The specification is domain-agnostic, designed to be implemented in any domain.

100 out of 100 points



**A16 - Is the specification technology agnostic?**

Your answer  YES

100 out of 100 points



**A17 - Is the specification platform agnostic?**

Your answer  YES

100 out of 100 points



**A18 - To what extent does the specification allow for partial implementations?**

Your answer  The specification explicitly foresees sets of requirements that can be implemented incrementally or separately.

100  
out of  
100  
points



**A19 - Does the specification allow customisation?**

Your answer  YES

100  
out of  
100  
points



**A20 - Does the specification allow extension?**

Your answer  YES

100  
out of  
100  
points



**A21 - To what extent does the specification enable data portability between systems/applications supporting the implementation of European public services?**

Your answer  The specification explicitly addresses and enables data portability.

100  
out of  
100  
points



**A22 - To what extent does the specification enable data portability between systems/applications supporting the evolution of European public services?**

Your answer  The specification explicitly addresses and enables data portability.

100  
out of  
100  
points



**EIF PRINCIPLES RELATED TO GENERIC USER NEEDS AND EXPECTATIONS**

Score for this Section: 480/500

**A23 - To what extent does the specification allow relevant information to be reused when needed?**

Your answer  Information is provided once-only and reused as needed.

100  
out of  
100  
points



**A24 - To what extent does the specification enable the e-accessibility?**

Your answer  The specification can enable e-accessibility if combined with other specifications.

80  
out of  
100  
points



**A25 - To what extent does the specification enable the secure exchange of data?**

Your answer  The specification explicitly addresses and enables the secure and trustworthy exchange of data.

100  
out of  
100  
points



**A26 - To what extent does the specification enable the secure processing of data?**

Your answer  The specification explicitly addresses and enables the secure and trustworthy processing of data.

100  
out of  
100  
points



**A27 - To what extent could the specification be used in a multilingual context?**

Your answer  The specification is designed to fully support multilingualism.

100  
out of  
100  
points



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**EIF FOUNDATION PRINCIPLES FOR COOPERATION AMONG PUBLIC ADMINISTRATIONS** Score for this Section: 340/500

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**A28 - Does the specification simplify the delivery of European public services?**

Your answer  YES

100  
out of  
100  
points



**A29 - Does the specification enable digital service delivery channels?**

Your answer  YES

100  
out of  
100  
points



**A30 - To what extent does the specification enable the long-term preservation of data/information /knowledge (electronic records included)?**

Your answer  The specification addresses the long-term preservation of electronic resources (information, data, etc) in a limited manner. 60 out of 100 points 

**A31 - To what extent are there assessments of the specification's effectiveness?**

Your answer  There are such assessments that indirectly address the specification. 40 out of 100 points 

**A32 - To what extent are there assessments of the specification's efficiency?**

Your answer  There are such assessments that indirectly address the specification. 40 out of 100 points 

---

## EIF INTEROPERABILITY LAYERS

Score for this Section: 780/1100

**A33 - Is the (or could it be) specification mapped to the European Interoperability Architecture (EIRA)?**

Your answer  YES 100 out of 100 points 

**A34 - To what extent can the conformance of the specification's implementations be assessed?**

Your answer  The specification is complemented by a conformance testing platform to allow testing of implementations. 100 out of 100 points 

**A35 - Is the specification recommended by an European Member State?**

Your answer  NO 20 out of 100 points 

**A36 - Is the specification selected for its use in an European Cross-border project/initiative?**

Your answer  YES 100 out of 100 points 

**A37 - Is the specification included in an open repository/catalogue of standards at national level?**

Your answer **✘** NO

20  
out of  
100  
points



**A38 - Is the specification included in an open repository/catalogue of standards at European level?**

Your answer **✘** NO

20  
out of  
100  
points



**A39 - Is the specification a European Standard?**

Your answer **✘** NO

20  
out of  
100  
points



**A40 - Does the specification facilitate the modelling of business processes?**

Your answer **✔** YES

100  
out of  
100  
points



**A41 - To what extent does the specification facilitate organisational interoperability agreements?**

Your answer **✔** The specification explicitly identifies all elements to be used in drafting such agreements.

100  
out of  
100  
points



**A42 - Does the specification encourage the creation of communities along with the sharing of their data and results on national platforms?**

Your answer **✔** YES

100  
out of  
100  
points



**A43 - Does the specification encourage the creation of communities along with the sharing of their data and results on European platforms?**

Your answer **✔** YES

100  
out of  
100  
points



Contact [DIGIT-CAMSS@ec.europa.eu](mailto:DIGIT-CAMSS@ec.europa.eu)

[CAMSS Joinup Page](#)

Useful links [CAMSS Library of Assessments](#)

[CAMSS Assessment EIF Scenario - User Guide](#)

Contribution ID b316def0-72e3-40e1-8066-a7cc5adef306

Completed at 29/03/2022 10:21:42

Completion time -