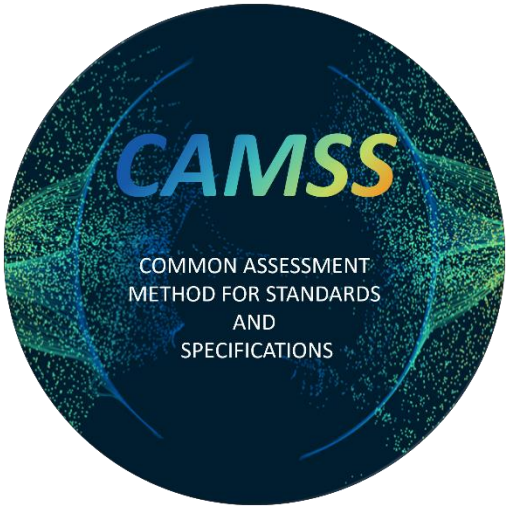

ASSESSMENT SUMMARY v1.0.0

OASIS Open Data Protocol (OData)[1]

Organization for the Advancement of Structured Information Standards (OASIS)[2]

[1] https://docs.oasis-open.org/odata/odata/v4.01/odata-v4.01-part1-protocol.html

[2] https://www.oasis-open.org/

Change Control

Modification	Details
Version 1.0.0	
Initial version	

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1. INTRODUCTION

The present document is a summary of the assessment of the OData carried out by CAMSS using the CAMSS Assessment EIF scenario[3]. The purpose of this scenario is assessing the compliance of a standard or specification with the European Interoperability Framework (EIF)[4].

2. ASSESSMENT SUMMARY

The **OASIS Open Data Protocol (OData)** is an application-level protocol for interacting with data through RESTful interfaces. An example of its usage is the Microsoft OData Client functionality for APIs, which uses OData as a data ingestor and allows users to interact with OData services from .NET apps[5].

The OData protocol supports the description of data models and the editing and querying of data according to those models. This fact works to increase the discoverability of interoperability solutions, assets or services, and the federated research through different and massive databases.

The specification has been developed by the Organization for the Advancement of Structured Information Standards (OASIS), which is an international community concerned with the development of open-source software and standards through collaboration in different domains, such as procurement, cybersecurity, Internet of Things, or the legal data exchange domain, among others. It is worth to note, that it has been developed by a large community and, as it is used, the ecosystem around it increases.

2.1. EIF Interoperability Principles

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

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

- **Subsidiarity and proportionality**
  OData is included in 2 national catalogues of recommended specifications. They belong to France and the Netherlands. The National Interoperability Framework (NIF) of these Member States varies when aligned with the European Interoperability Framework (EIF) according to the National Interoperability Framework Observatory (NIFO) factsheets[6].

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

- **Openness**
  OData is a specification that enables to address and access data feed resources, enabling more applications to make sense of a broader set of data. Moreover, it helps to simplify the querying

[3] https://ec.europa.eu/eusurvey/runner/CAMSSAssessmentEIFScenario6

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

[5] https://docs.microsoft.com/en-us/odata/client/getting-started

[6] https://interoperable-europe.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-public-administration-factsheets-2024

and sharing of data across disparate applications and multiple stakeholders and promotes the data reuse. The development process carried out by the OASIS Technical Committee (TC)[7] is publicly accessible, and is transparent in the sense that it accepts external contributions from different stakeholders. However, the topic selection of these reviews is independent of the external contributors. The OASIS TC is the developer community that maintains this specification.

Currently OData is used in the context of Datalab[8] (formerly known as Open Government Data Initiative), a cloud-based Open Data Catalogue for organisations that provide access to government data, including browse, visualise, analyse & download in multiple formats.
It is also used in the context of agricultural data by the agricultural ministry of Rumania, the Date Deschise AFIR project[9].

- **Transparency**
  OData allows the reusability of interoperability solutions, specifically break down data silos. Unfortunately, no evidence was found in terms of promoting and supporting the internal nor the external visibility of public services in the European context.

- **Reusability**
  OData increases the shared value of data. Apart from being used by a large community of users, OData services use a common data model, which allows any client to interact with the service in a well-defined way. For example, there are the Cambridge Weather-Pyslet demo service[10] and the City of Medicine Hat Open Data Portal[11], in the field of academics and medicine, respectively.

- **Technological neutrality and data portability**
  OData can be used for enormous amounts of data without the risk of hampering the interoperability of systems nor the scalability. OData is tied up to RESTful APIs communication. RESTful APIs may be platform-agnostic or platform/technology-dependent, implying it can be adapted to the environment or programming language being used. This might hamper interoperability depending on the use case. Furthermore, OData services return URLs to identify resources requested by clients. Where possible, interoperability increases by exploiting the information found in the route part of the URL. However, attention must be paid to those URLs including custom transformations (query options) and clients must be aware of it in future requests to the identified resource.

[7] https://www.oasis-open.org/committees/comments/index.php?wg_abbrev=odata

[8] https://github.com/openlab/OGDI-DataLab

[9] https://opendata.afir.info/Home/About

[10] https://github.com/OData/odataorg.github.io/blob/master/_ecosys/liveservices/Cambridge-Weather-Pysletdemo-service.md

[11] https://www.medicinehat.ca/en/home-property-and-utilities/mymh-portal.aspx

In this sense any user that imports data needs to check the URL provided by the system since it might contain certain parameters that filter the values (ID's, dates,...) for more information consult the Microsoft guide to import OData values onto powerBI/Excel.[12]

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

- **User-centricity**
  OData services return URLs to identify resources that may be later requested by clients. Where possible, data reusability increases by exploiting the information found in the route part of the URL, or by easing datasets management. However, data reusability might be limited. There is no evidence of any European solution confirming this aspect.

- **Inclusion and accessibility**
  The Open Data Protocol (OData) supports the creation of data services based on REST, which allow resources to be published and edited by web clients via HTTP messages. OData could allow a third-party information system to act on behalf of citizens who cannot, permanently or temporarily, make direct use of public services. In this sense, it can contribute to e-accessibility.

- **Security and privacy**
  OData is a recommendation and protocol for data exchange; in this sense, the protocol enables the secure and trustworthy exchange of data via the implementation of extensions.

- **Multilingualism**
  The purpose of OData is not related to the delivery of multilingual European Public Services. Therefore, this criterion is considered not applicable to this specification.

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

- **Administrative Simplification**
  OData offers access to information from relational databases, file systems, content management systems, traditional websites, and others. Therefore, it enables and reenforce the delivery of European public services and promotes the digitalisation of such services.

- **Preservation of information**
  OData is a protocol of querying and sharing, and as such is not supposed to offer long-term preservation of data. Therefore, this criterion is considered not applicable to this specification.

- **Assessment of effectiveness and efficiency**

[12] https://learn.microsoft.com/en-us/power-bi/connect-data/desktop-tutorial-analyzing-sales-data-from-excel-and-an-odata-feed

After researched whether exist studies or documentation assessing the efficiency and effectiveness, there exist some assessments indirectly addressing the effectiveness of OData in industry (e.g., Microsoft Open Technologies[13]), and an expert group from The Netherlands which has been assessing the OData in terms of efficiency[14].

2.2. EIF Interoperability Layers

The interoperability model which is applicable to all digital public services includes:

- Four layers of interoperability: legal, organisational, semantic and technical;
- A cross-cutting component of the four layers, 'integrated public service governance';
- A background layer, 'interoperability governance'.

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

- **Interoperability governance**

  OData is currently included in the EIRA Library of Interoperability Specifications (ELIS).

  Currently the specification is listed in a few ABB's; DataManagementApplicationService, DataAnalyticsApplicationComponent, DataAnalyticsApplicationService and DataManagementApplicationComponent.

  Moreover, the specification is recommended and included in the French[15] and the Netherlands catalogue[16]. Besides, the OData specification is included in the EUOS European catalogue of standards[17]. In terms of implementation conformity, OData provides an OData Service Validation Tool[18] for free to validate OData implementations.

- **Legal Interoperability**

  After checking the different standard catalogues at supra-national level, there is no mention of OData in any official document stating its conformance in regard to Regulation 1025/2012.

- **Organisational interoperability**

  The purpose of OData is not related to the organisational interoperability agreements per se, but given that it is recommended by Microsoft it can be argued that OData can serve as a baseline to facilitate interoperability agreements since the main strength of the specification is the semantic interoperability.

[13] https://www.odata.org/blog/microsoft-open-technologies-releases-odata-producer-for-sugarcrm-to-boost-the-efficiency-of-corporate-data-exchange/

[14] https://www.forumstandaardisatie.nl/open-standaarden/odata

[15] http://references.modernisation.gouv.fr/sites/default/files/Referentiel_General_Interoperabilite_V2.pdf

[16] https://www.forumstandaardisatie.nl/open-standaarden/aanbevolen

[17] https://www.standict.eu/standards-repository

[18] https://www.odata.org/blog/odata-service-validation-tool/

- **Semantic Interoperability**
  OData promotes the sharing of data and results, and is actively accelerating its use in different domains, particularly within government agencies. In this sense, the specification encourages both the creation of communities and the sharing of their data and results on national platforms.

3. ASSESSMENT RESULTS

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

Category	Automated Score	Assessment Strength	Compliance Level
Principle setting the context for EU actions on interoperability	100/100	100%	Seamless
Core interoperability principles	14200/1700	95%	Seamless
Principles related to generic user needs and expectations	940/1200	80%	Sustainable
Foundation principles for cooperation among public administrations	400/500	80%	Sustainable
Interoperability layers*	900/1000	82%	Seamless
Overall Score	3460/4200	89%	

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

With an 100% of assessment strength, this assessment can be considered representative of the specification compliance with the EIF principles and recommendations.

The Overall Automated Score of 82% (3460/4200) demonstrates that the specification supports the European Interoperability Framework in the domains where it applies.