



# ASSESSMENT SUMMARY v1.0.0

Dynamic Attribute Provisioning Services<sup>1</sup>

Fraunhofer AISEC<sup>2</sup>

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<sup>1</sup>Dynamic Attribute Provisioning Services: <https://github.com/International-Data-Spaces-Association/IDS-G/blob/main/Components/IdentityProvider/DAPS/README.md>

<sup>2</sup> Fraunhofer AISEC: <https://www.aisec.fraunhofer.de/en.html>

## Change Control

Modification		Details
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TABLE OF CONTENT

1. INTRODUCTION..... 4

2. ASSESSMENT SUMMARY..... 4

2.1. Interoperability Principles .....4

2.2. Interoperability Layers.....6

3. ASSESSMENT RESULTS ..... 8

TABLE OF FIGURES

Figure 1. Interoperability principles Results .....8

Figure 2. Interoperability layers Results .....9

## 1. INTRODUCTION

The present document is a summary of the assessment of the **Dynamic Attribute Provisioning Services (DAPS)** carried out by CAMSS using the CAMSS Assessment EIF Scenario 6.0.0<sup>3</sup>. The purpose of this scenario is assessing the compliance of a standard or specification with the European Interoperability Framework (EIF)<sup>4</sup>.

## 2. ASSESSMENT SUMMARY

DAPS is an attribute server that issues OAuth2 access tokens to International Data Spaces connectors. The infrastructure component "Dynamic Attribute Provisioning Service" (DAPS) in a given IDS ecosystem enables enrichment of identities of organisations and connectors with additional attributes.

### 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**

DAPS is not included in any national catalogue of recommended specifications whose Member State NIF has a high performance on interoperability according to NIFO factsheets.

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

- **Openness**

- DAPS utilizes the Apache 2.0<sup>5</sup> license, granting software developers the freedom to modify, copy, and distribute the source code without imposing restrictions on usage. Further, International Data Spaces Global (IDS-G)<sup>6</sup>, author of this specification, is licensed under Creative Commons Attribution 4.0 International<sup>7</sup>. Maintained by IDS-G, the specification is openly available on GitHub for user modifications, public discussions, and public reviews with feedback collected of any releases.

DAPS, with various releases, is considered mature for use in digital solution development. It is directly employed in initiatives like Catena X<sup>8</sup>, contributing to a standardized data exchange across the automotive value chain. In Catena X, DAPS plays a pivotal role in determining a company's eligibility to access specific data by distributing attributes through certificates.

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<sup>3</sup>CAMSS Assessment EIF Scenario 6.0.0: <https://joinup.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/camss-assessment-eif-scenario/release/600>

<sup>4</sup> European Interoperability Framework (EIF): [https://ec.europa.eu/isa2/eif\\_en](https://ec.europa.eu/isa2/eif_en)

<sup>5</sup> Apache License 2.0: <https://www.apache.org/licenses/LICENSE-2.0>

<sup>6</sup> IDS-G: <https://docs.internationaldataspaces.org/ids-knowledgebase/v/ids-g/README>

<sup>7</sup> Creative Commons Attribution 4.0 International: <https://creativecommons.org/licenses/by/4.0/>

<sup>8</sup> Catena-X: <https://catena-x.net/en/>

- **Transparency**

DAPS is used to provide dynamic, up-to-date attribute information about Participants and Connectors in International Data Spaces. Therefore, its use improves the interoperability and comprehensibility of data, important for the visibility of administrative procedures. Thanks to DAPS, data privacy and secure data exchange is possible in IDS, which enables the exposure of interfaces to access the public administration's services.

- **Reusability**

This specification refers to the Dynamic Attribute Provisioning Services so, it is inherently abstract and can be implemented and/or used in any domain as long as it fulfills the requirements. Therefore, its use goes beyond a specific business domain.

- **Technological neutrality and data portability**

This specification aims to be versatile across various technologies and platforms by providing frameworks that work with different tech setups. Besides, DAPS is only meant to be used as a whole and can typically be customised and/or extended to align with specific organizational requirements and use cases. In addition, this specification ensures data portability as it improves identity and access management to IDS.

***The specification partially supports the principles related to generic user needs and expectations:***

- **User-centricity**

One of the main advantages of this technique of dynamic attribute provisioning is that attribute revocation does not enforce certificate revocation and re-issuance. This means that information is provided once-only and reused as needed.

- **Inclusion and accessibility**

The specification does not foster e-accessibility. Therefore, this criterion is considered not applicable to this specification.

- **Privacy**

Although DAPS has not been found included in any initiative neither at European nor on national level covering privacy aspects, it has the potential to enhance privacy by providing more granular control over the sharing and management of user attributes. DAPS provides the International Data Spaces with identity management across companies according to modern standards with low organizational effort.

- **Security**

DAPS introduces certain aspects that can contribute to enabling the secure exchange of data by providing identity and access management in IDS, which provides an access control mechanism that enhances data integrity and protection during the exchange between different systems. This specification merely administers the International Data Spaces attributes of the registered connectors. Furthermore, DAPS must offer informative metadata according to RFC 8414 (OAuth 2.0 Authorization Server Metadata)<sup>9</sup>, means that reliability of the exchanged data is improved.

- **Multilingualism**

The purpose of DAPS is not related to the delivery of multilingual public services. Therefore, this criterion is not applicable to this specification.

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

- **Administrative Simplification**

While the purpose of DAPS is not related to enabling digital service delivery channels, it can simplify the delivery of European public services as it offers a technique to modulate access to certain data in International Data Spaces, which aligns with Europe's vision of data.

- **Preservation of information**

The purpose of DAPS is not related to enabling the long-term preservation of data/information/knowledge (electronic records included). Therefore, this criterion is considered not applicable to this specification.

- **Assessment of effectiveness and efficiency**

There are assessments that indirectly address the specification's effectiveness and efficiency. For instance, there is paper called "A Survey of Dataspace Connector Implementations"<sup>10</sup> that provides an overview of existing literature and reviews current open-source dataspace connector implementations that are compliant with the International Data Spaces (IDS) standard. By using this IDS standard, they are indirectly demonstrating its relevancy, effectiveness and efficiency compared to other alternatives.

## **2.1. 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".

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<sup>9</sup> RFC 8414 (OAuth 2.0 Authorization Server Metadata): <https://datatracker.ietf.org/doc/html/rfc8414>

<sup>10</sup> A Survey of Dataspace Connector Implementations: <https://arxiv.org/pdf/2309.11282.pdf>

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

- **Interoperability Governance**

At the time of elaborating this assessment, this specification is not included in the EIRA Library of Interoperability Specifications (ELIS) nor any Member States' catalogues of recommended specification. Furthermore, no Member States have been found recommending DAPS in their ICT National Catalogues.

International Data Spaces Association (IDSA<sup>11</sup>) has a method of certifying conformance to the IDS standards, including interoperability and performance aspects. Besides, IDSA is part of the Data Spaces Business Alliance (DSBA<sup>12</sup>) alongside Gaia-X European Association for Data and Cloud AISBL, the Big Data Value Association (BDVA<sup>13</sup>) and FIWARE<sup>14</sup>. They aim to converge the best skills, assets, and experience in Europe into a one-stop-shop for data spaces, from inception to deployment. Furthermore, DAPS is included in the “Data Spaces Support Centre” (DSSC<sup>15</sup>), an initiative funded by the European Commission to facilitate data sharing and link the expertise of data sharing practitioners and researchers.

- **Legal interoperability**

DAPS does not appear in any of the main European standard development bodies. Therefore, the specification is not a European standard.

- **Organisational interoperability**

Even though the purpose of DAPS is not related to facilitating organisational interoperability agreements, DAPS is related facilitate the modelling of business processes as IDSA was formed in 2017 to develop the IDS (formerly known as Industrial Data Spaces) reference architecture model and certification procedures based on industry requirements.

- **Semantic Interoperability**

One of IDSA's underlying objectives is to improve data interoperability and integrity. Therefore, it encourages the creation of communities along with the sharing of their data and results at European platforms (e.g. DBSA). Furthermore, IDS-G has public channels such as GitHub where users can discuss and ask any matter at hand.

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<sup>11</sup> IDSA: <https://internationaldataspaces.org/>

<sup>12</sup> DSBA: <https://data-spaces-business-alliance.eu/>

<sup>13</sup> BDVA: <https://www.bdva.eu/about>

<sup>14</sup> FIWARE: <https://www.fiware.org/>

<sup>15</sup> DSSC: <https://dssc.eu/>

### 3. ASSESSMENT RESULTS

This section presents an overview of the results of the CAMSS assessments for **DAPS**. 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 is used to calculate the “Automated Score” per category and an “Overall Score”.

Category	Automated Score	Assessment Strength	Compliance Level
Principles setting the context for EU actions on interoperability	20/100 (20%)	100%	Ad-hoc
Core interoperability principles	1560/1700 (92%)	100%	Seamless
Principles related to generic user needs and expectations	1100/1200 (92%)	67%	Seamless
Foundation principles for cooperation among public administrations	380/500 (76%)	60%	Sustainable
Interoperability layers*	520/1000 (52%)	90%	Essential
Overall Score	2280/3800 (76%) <sup>16</sup>	84%	

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

With a 84% of assessment strength, this assessment can be considered representative of the specification compliance with the EIF principles and recommendations.

The Overall Automated Score of 76% (2280/3800) demonstrates that the specification supports the European Interoperability Framework in the domains where it applies.

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<sup>16</sup> See the “results interpretation” section of the 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/results-visualisation-and-interpretation>