

# ASSESSMENT SUMMARY

**Domain Name System (DNS)<sup>1</sup>**

Internet Engineering Task Force (IETF)<sup>2</sup>

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<sup>1</sup> <https://tools.ietf.org/html/1035>

<sup>2</sup> <https://ietf.org>

## 1. INTRODUCTION

The present document is a summary of the assessment of DNS carried out by CAMSS using the CAMSS EIF assessment scenario. The purpose of this scenario is assessing the compliance of a standard or specification with the European Interoperability Framework (EIF)<sup>3</sup>.

## 2. ASSESSMENT SUMMARY

DNS is a hierarchical and decentralised naming system for services, resources or computers on the internet or local networks. It associates various information with domain names assigned to entities.

DNS is documented in a wide range of IETF specifications.

### 2.1. Interoperability Principles

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

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

- **Subsidiarity and proportionality**

DNS is included in 3 national catalogues of recommended specifications. They belong to the Netherlands, Spain and Sweden. The National Interoperability Framework (NIF) of these Member States is fully aligned with at least 4 out of 5 sections of the European Interoperability Framework (EIF) according to the National Interoperability Framework Observatory (NIFO)<sup>4</sup> factsheets.

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

- **Openness**

DNS is an open specification available for everyone to study or use. In IETF, Stakeholders have the opportunity to contribute to the development of DNS and the decision making process includes a public review.

Additionally, DNS has a significant market acceptance which demonstrates that it is mature enough for the development of products and services, including for the creation of innovative solutions. However, the purpose of the specification is not related to an area of application that is key for fostering interoperability, the publication of public data as open data.

- **Transparency**

By allowing the association of information with domain names, DNS facilitates their comprehension and enhances their visibility in a network. Moreover, by allowing the association of information with a domain facilitates the identification of interfaces with administration

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<sup>3</sup> [https://ec.europa.eu/isa2/eif\\_en](https://ec.europa.eu/isa2/eif_en)

<sup>4</sup> <https://joinup.ec.europa.eu/collection/national-interoperability-framework-observatory-nifo/nifo-factsheets>

- **Reusability**  
DNS and open and sector-agnostic specification.
- **Technological neutrality and data portability**  
The DNS is independent from any specific technology and/or platform and fosters data portability between systems and applications.

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

- **User-centricity**  
DNS does not foster the implementation of the once-only principle.
- **Inclusion and accessibility**  
DNS does not foster e-accessibility. The purpose of the specification is not related to e-accessibility.
- **Security and privacy**  
DNS does not foster secure and trustworthy data exchange. The purpose of the specification is not related to secure and trustworthy.
- **Multilingualism**  
DNS does not foster the delivery of multilingual European public services. The purpose of the specification is not related to multilingualism.

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

- **Administrative Simplification**  
By associating a name to an IP, DNS facilitates the identification of the content of domains and therefore, reduces administrative burden.
- **Preservation of information**  
DNS does not foster the long-term preservation of electronic records and other kinds of information. The purpose of the specification is not related the preservation of information.
- **Assessment of effectiveness and efficiency**  
There are already existing studies or documentation assessing the DNS in terms of effectiveness and efficiency<sup>5</sup>.

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<sup>5</sup><https://ccronline.sigcomm.org/wp-content/uploads/2017/01/p36-hao.pdf>  
[https://www.researchgate.net/profile/Alessio\\_Merlo/publication/221271469\\_A\\_Comparative\\_Performance\\_Evaluation\\_of\\_DNS\\_Tunneling\\_Tools/links/00b4951c1e5065b0e6000000/A-Comparative-Performance-Evaluation-of-DNS-Tunneling-Tools.pdf](https://www.researchgate.net/profile/Alessio_Merlo/publication/221271469_A_Comparative_Performance_Evaluation_of_DNS_Tunneling_Tools/links/00b4951c1e5065b0e6000000/A-Comparative-Performance-Evaluation-of-DNS-Tunneling-Tools.pdf)

## 2.2. Interoperability Layers

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

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

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

- **Interoperability governance**  
7 Member States are recommending DNS in their ICT National Catalogues. Additionally, DNS is already associated with European Interoperability Reference Architecture (EIRA) ABBs in the European Library of Specifications (ELIS). More specifically, DNS can define the interoperability aspects of the "Network Service" and "Network component" ABBs of the EIRA Technical View.
- **Integrated public service governance & Legal Interoperability**  
After being evaluated compliant with the regulation on standardisation 1025/2012, DNS has been identified by Commission Implementing Decision. During the evaluation process, all the Member States are invited to share their doubts. The positive evaluation of DNS and its identification is considered an interoperability agreement.
- **Organisational interoperability**  
DNS is not a business process modelling standard or specification and does not define organisational interoperability aspect. The purpose of the specification is not related to organisational Interoperability.
- **Semantic Interoperability**  
The DNS specification includes the cross-sector reusable data structures of data communication used by the system.
- **Technical interoperability**  
DNS is an open specification available to everyone for study or use.

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[https://www.researchgate.net/publication/235996771\\_Performance\\_assessment\\_and\\_analysis\\_of\\_DNS\\_tunneling\\_tools](https://www.researchgate.net/publication/235996771_Performance_assessment_and_analysis_of_DNS_tunneling_tools)  
<https://ccronline.sigcomm.org/wp-content/uploads/2017/01/p36-hao.pdf>

### 3. ASSESSMENT RESULTS

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

Category	Automated Score	Assessment Strength	# Favourable	# Unfavourable	# Not Applicable
Principle setting the context for EU actions on interoperability	100%	100%	1	0	0
Core interoperability principles	100%	88%	14	0	2
Principles related to generic user needs and expectations	0%	0%	0	0	4
Foundation principles for cooperation among public administrations	100%	67%	2	0	1
Interoperability layers*	100%	82%	18	0	4
<b>Overall Score</b>	<b>100%</b>	<b>73%</b>	<b>27</b>	<b>0</b>	<b>10</b>

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

With a 73% of assessment strength, this assessment can be considered representative of the specification compliance with the EIF principles and recommendations.

The Overall Automated Score of 100% demonstrates that the specification fully supports the European Interoperability Framework in the domains where it applies.

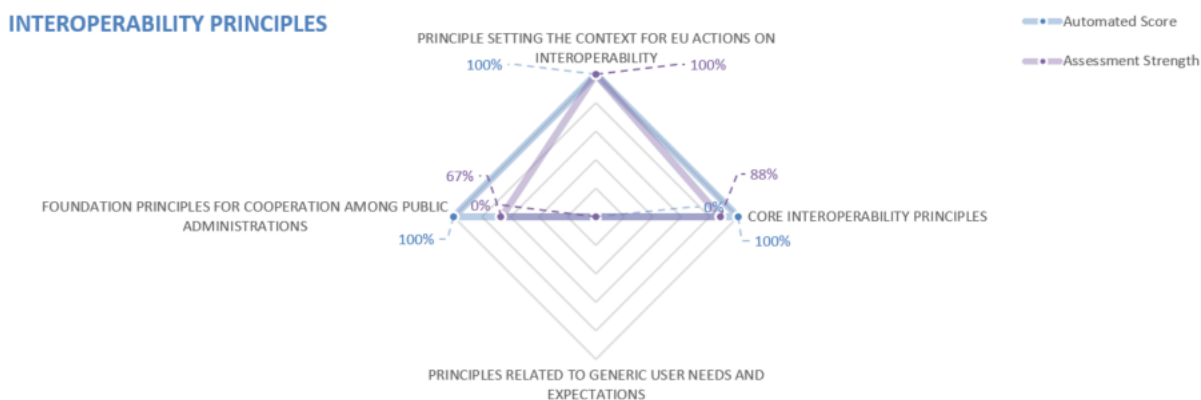


Figure 1 Interoperability principles Results

## INTEROPERABILITY LAYERS

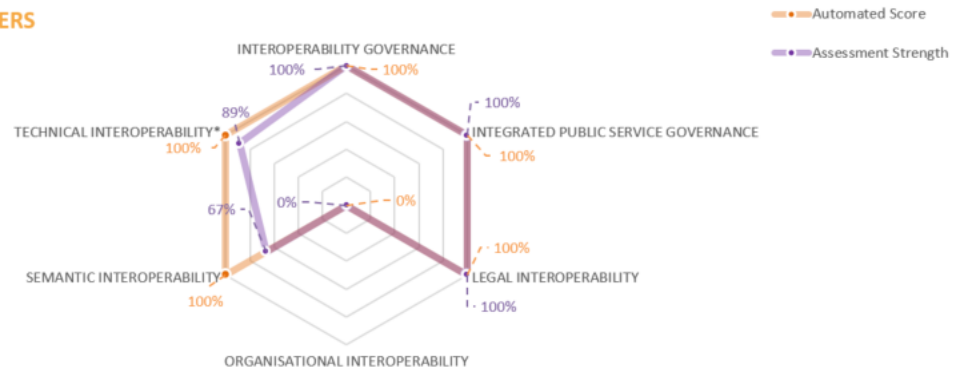


Figure 2 Interoperability layers Results