ASSESSMENT SUMMARY

Internet Protocol Version 6 (IPv6)[1]

Internet Engineering Task Force (IETF)[2]

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[1] https://tools.ietf.org/html/rfc2460
[2] https://www.ietf.org/

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1. INTRODUCTION

The present document is a summary of the assessment of IPv6 carried out by the CAMSS Team using the CAMSS EIF assessment scenario. The purpose of this scenario is assessing the compliance of a standard or technical specification with the European Interoperability Framework (EIF)[3].

2. ASSESSMENT SUMMARY

Internet Protocol Version 6 (IPV6) is the most recent version of the Internet Protocol developed by the **Internet Engineering Task Force (IETF)**. The communication protocol provides an identification and location system for computers on Networks. Internet and is an essential specification as it allows the routing of traffic across the internet.

2.1. Interoperability Principles

Interoperability principles are fundamental behavioural aspects that drive interoperability actions. They arerelevant 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**
  IPv6 is included in 4 national catalogues of recommended specifications. They belong to Austria, 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)[4] according to the National Interoperability Framework Observatory (NIFO)[5] factsheets.

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

- **Openness**
  IPv6 is an open specification publicly available for study or use. In IETF, all the stakeholders have the opportunity to contribute to the development of IPv6 and the decision making process includes a public review. Additionally, IPv6 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.

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

[4] https://ec.europa.eu/isa2/sites/isa/files/eif_brochure_final.pdf

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

- **Transparency**
By allowing communications over the internet, the IPv6 fosters the visibility and comprehensibility of administrative rules, processes, data, services and decision-making of public administrations. In addition this specification ensures the availability of interfaces with internal information systems of a public administration.

- **Reusability**
IPv6 is an open specification that is available for free and published in collaborative platforms for the reuse of solutions (e.g. Joinup). Additionally, it is a sector agnostic specification.

- **Technological neutrality and data portability**
The IPv6 is independent from any specific technology and/or platform and fosters data portability between systems and applications.

Technical Specification partially supports the principles related to generic user needs and expectations:

- **User-centricity**
IPv6 eases the implementation of the once-only principle by allowing the exchange and reuse of data by public administrations across borders.

- **Inclusion and accessibility**
IPv6 does not foster e-accessibility. The purpose of the specification is not related e-accessibility.

- **Security and privacy**
IPv6 is more secure that its previous version, IPv4. It contributes to a secure and trustworthy data exchange between citizens and businesses, and public administrations.

- **Multilingualism**
IPv6 does not foster the delivery of multilingual European public services. The purpose of the specification is not related multilingualism.

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

- **Administrative Simplification**
By allowing communications over the internet, IPv6 contributes to the exchange of information between public administrations therefore, it reduces administrative burden.

- **Preservation of information**
IPv6 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 IPv6 in terms of effectiveness and efficiency[6].

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 Technical Specification supports the implementation of digital public services compliying with the EIF interoperability model:

- **Interoperability governance**
  9 Member States are recommending IPv6 in their ICT National Catalogues. Additonaly, IPv6 is already associated to the European Interoperability Reference Architecture (EIRA) ABBs in the European Library of Specifications (ELIS). More specifically, IPv6 can define the interoperability aspects of the "Network", "Network Service", "Private Network" and "Public Network" ABBs of the EIRA Technical View.

- **Integrated public service governance & Legal Interoperability**
  After being evaluated compliant with the regulation on standardisation 1025/2012, IPv6 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 IPv6 and its identification is considered an interoperability agreement.

- **Organizational interoperability**
  IPv6 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 information shared by an IPV6 packet, the smallest message entity exchanged via the Internet Protocol, contains information structured in cross-border reusable data model.

- **Technical interoperability**
  IPv6 is an open specification available for everyone for study or use.

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[6] https://www.internetsociety.org/deploy360/ipv6/case-studies/

3. ASSESSMENT RESULTS

This section presents an overview of the results of the CAMSS assessments of IPv6. The Assessment "Strength" indicator measures the reliability of the assessment by calculating the number of 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 categories.

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%	94%	15	0	1
Principles related to generic user needs and expectations	100%	50%	2	0	2
Foundation principles for cooperation among public administrations	100%	67%	2	0	1
Interoperability layers	100%	82%	18	0	4
Overall Score	**100%**	**81%**	**29**	**0**	**8**

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

With a 81% 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 IPv6 fully supports the European Interoperability Framework in the domains where it applies.

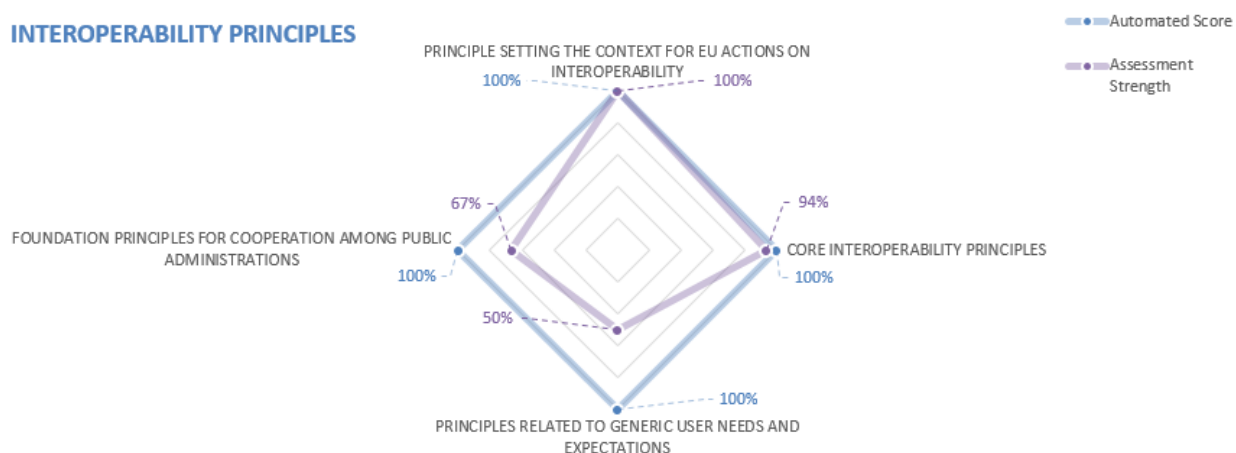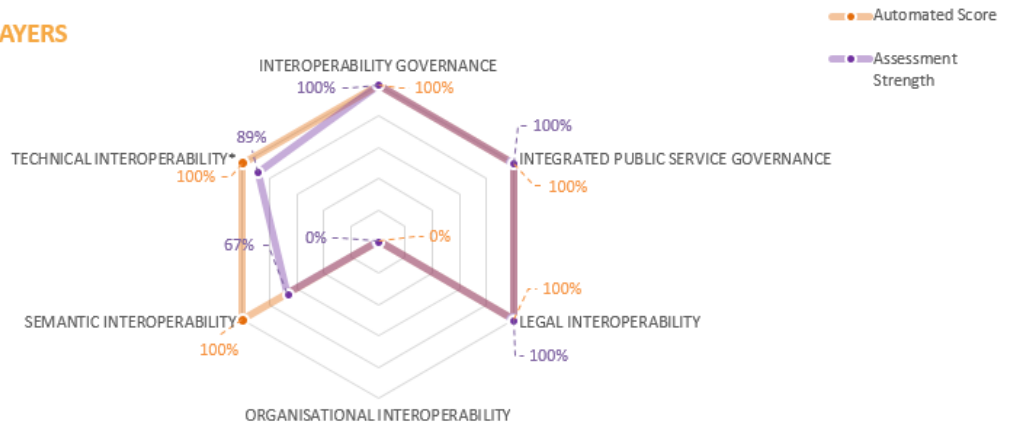**Figure 1 Assessment Results – Interoperability Principles**

INTEROPERABILITY LAYERS

Figure 2 Assessment Results - Interoperability Layers