

# ASSESSMENT SUMMARY

## TABLE OF CONTENTS

|  |          |
|--|----------|
| <b>1. INTRODUCTION</b> .....           | <b>3</b> |
| <b>2. ASSESSMENT SUMMARY</b> .....     | <b>3</b> |
| 2.1. Interoperability Principles ..... | 3        |
| 2.2. Interoperability Layers.....      | 5        |
| <b>3. ASSESSMENT RESULTS</b> .....     | <b>6</b> |

## 1. INTRODUCTION

The present document is a summary of the assessment of IPv4 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)<sup>1</sup>.

## 2. ASSESSMENT SUMMARY

**Internet Protocol Version 4 (IPv4)**<sup>2</sup> is the previous version of the Internet Protocol developed by the **Internet Engineering Task Force (IETF)**<sup>3</sup>. 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 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**

IPv4 is included in 2 national catalogues of recommended specifications. They belong to the Netherlands 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)<sup>4</sup> according to the National Interoperability Framework Observatory (NIFO)<sup>5</sup> factsheets.

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

- **Openness**

IPv4 is a defacto 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.

Since the adoption of IPv4 has been wide its relevance in the communications over computer networks is key to enable data exchange. Although a new version was carried out in order to prevent the exhaustion of IPv4 addresses it still prevailing and there are compatible methods to enable the backward compatibility.

---

<sup>1</sup> [https://ec.europa.eu/isa2/eif\\_en](https://ec.europa.eu/isa2/eif_en)

<sup>2</sup> <https://tools.ietf.org/html/rfc791> ; <https://tools.ietf.org/html/rfc1349> ; <https://tools.ietf.org/html/rfc2474> ; <https://tools.ietf.org/html/rfc6864>

<sup>3</sup> <https://www.ietf.org/>

<sup>4</sup> [https://ec.europa.eu/isa2/sites/isa/files/eif\\_brochure\\_final.pdf](https://ec.europa.eu/isa2/sites/isa/files/eif_brochure_final.pdf)

<sup>5</sup> <https://joinup.ec.europa.eu/collection/national-interoperability-framework-observatory-nifo/nifo-factsheets>

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 communications over the internet, the IPv4 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**

IPv4 is an open specification that is available for free and published in collaborative platforms for the reuse of solutions (e.g. Joinup). It is worth to note that not all the RFCs defining IPv4 are included in the platform, but indeed at the IETF's webpage. Additionally, it is a sector agnostic specification.

- **Technological neutrality and data portability**

The IPv4 is independent of any specific technology and/or platform and fosters data portability between systems and applications. The backward compatibility between the latest version and the IPv4 avoids the Interoperability hampering.

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

- **User-centricity**

IPv4 eases the implementation of the once-only principle by allowing the exchange and reuse of data by public administrations across borders.

- **Inclusion and accessibility**

The purpose of the specification is not related to e-accessibility. Therefore, IPv4 does not foster e-accessibility.

- **Security and privacy**

IPv4 has optional features by means of IPsec that allows the secure and trustworthy data exchange between public administration and stakeholders. However, the latest version of the Internet Protocol includes security features as mandatory enhancing its performance.

- **Multilingualism**

The purpose of the specification is not related to multilingualism. Therefore, IPv4 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, IPv4 contributes to the exchange of information between public administrations therefore, it reduces administrative burden.
- **Preservation of information**  
The purpose of the specification is not related the preservation of information. Therefore, IPv4 does not foster the long-term preservation of electronic records and other kinds of information.
- **Assessment of effectiveness and efficiency**  
There are already existing studies or documentation assessing the IPv4 in terms of effectiveness and efficiency<sup>6</sup>. Most of the studies are based on the comparison between both versions of Internet Protocol, IPv4 and IPv6.

## **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 complying with the EIF interoperability model:***

- **Interoperability governance**  
IPv4 is already associated with the European Interoperability Reference Architecture (EIRA) ABBs in the European Library of Specifications (ELIS). More specifically, IPv4 can define the interoperability aspects of the "Network", "Networking Service", "Private Network" and "Public Network" ABBs of the EIRA Technical Application View. Moreover, 6 Member States are recommending IPv6 in their ICT National Catalogues.  
Despite this, IPv4 is not included in any Catalogue of Standards at the European level.
- **Integrated public service governance & Legal Interoperability**

---

<sup>6</sup>[https://www.researchgate.net/publication/317135434\\_A\\_STUDY\\_ON\\_IPv4\\_and\\_IPv6\\_THE\\_IMPORTANCE\\_OF\\_TH\\_EIR\\_CO-EXISTENCE](https://www.researchgate.net/publication/317135434_A_STUDY_ON_IPv4_and_IPv6_THE_IMPORTANCE_OF_TH_EIR_CO-EXISTENCE)

<https://pdfs.semanticscholar.org/3455/fdc0741edc3263295ae8d0c226119613db81.pdf>

[https://www.researchgate.net/publication/224593091\\_A\\_comparative\\_review\\_of\\_IPv4\\_and\\_IPv6\\_for\\_research\\_t\\_est\\_bed](https://www.researchgate.net/publication/224593091_A_comparative_review_of_IPv4_and_IPv6_for_research_t_est_bed)

No evidence has been found of any formal agreement between European services providers including IPv4. Neither are existing assessments coming from CAMSS Team or other European standardisation entity assessing the compliance with the Regulation 1025/2012.

- **Organizational interoperability**

The purpose of the specification is not related to organisational Interoperability. Therefore, IPv4 is not a business process modelling standard or specification and does not define organisational interoperability aspect.

- **Semantic interoperability**

The information exchanged by means of an IPv4 packet, which is the smallest message entity exchanged through the IP, contains structured data that can be considered as a cross-sector reusable data model. It is important to ensure the data consumption. Additionally, IPv4 is included within the European collaborative platform Joinup.

- **Technical interoperability**

IPv4 is an open specification available for everyone for study or use.

### 3.ASSESSMENT RESULTS

This section presents an overview of the results of the CAMSS assessments of IPv4. 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                                   | 93%             | 94%                 | 14         | 1            | 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%                 | 15         | 3            | 4              |
| <b>Overall Score</b>   | <b>87%</b>      | <b>81%</b>          | <b>26</b>  | <b>4</b>     | <b>7</b>       |

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

With an 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 90% demonstrates that IPv6 fully supports the European Interoperability Framework in the domains where it applies.

### INTEROPERABILITY PRINCIPLES

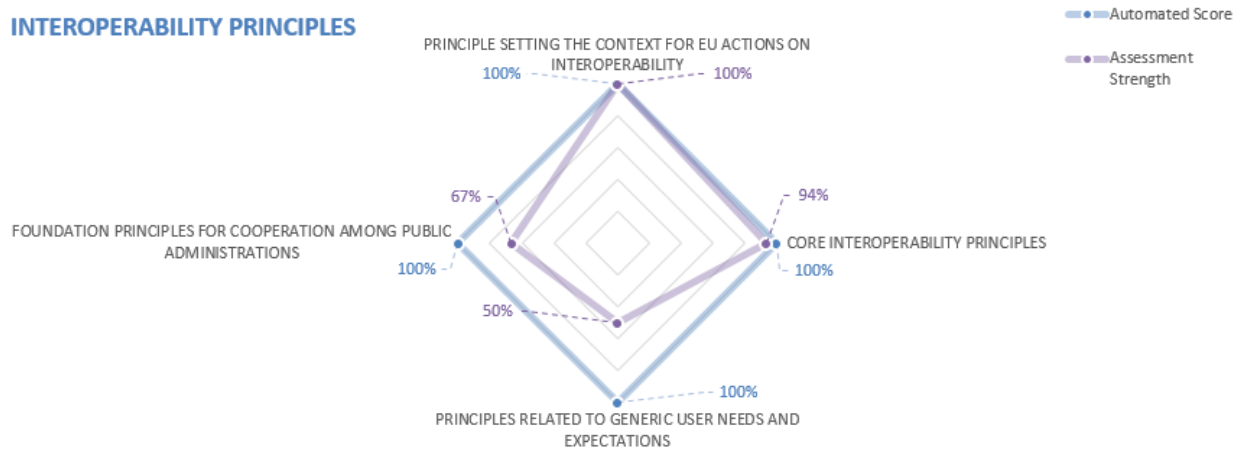


Figure 1 Assessment Results – Interoperability Principles

### INTEROPERABILITY LAYERS

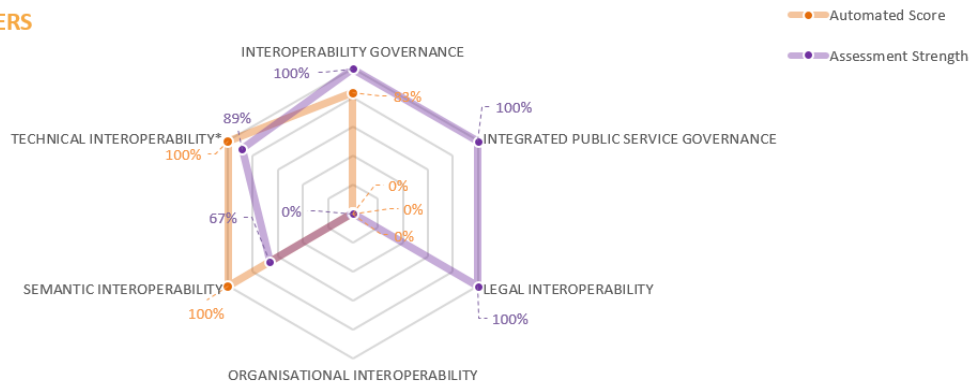


Figure 2 Assessment Results - Interoperability Layers