



ASSESSMENT SUMMARY v2.0.0

Open Systems Interconnection (OSI)¹

International Organization for Standardization (ISO)²

¹ OSI Specification: <https://www.iso.org/standard/20269.html>

² ISO: <https://www.oasis-open.org/>

Change Control

Modification		Details
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1. INTRODUCTION

The present document is a summary of the assessment of the **Open Systems Interconnection (OSI)** carried out by CAMSS using the CAMSS Assessment EIF scenario³. 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 Open Systems Interconnection (OSI) is a model provides a common basis for the coordination of standards development for the purpose of systems interconnection, while allowing existing standards to be placed into perspective within the overall reference model. The model identifies areas for developing or improving standards but does not intend to serve as an implementation specification.

The specification was common for large networks to support multiple network protocol suites, with many devices unable to interoperate with other devices because of a lack of common protocols. When TCP/IP came into widespread use on multi-vendor networks for internetworking OSI was relegated. Nonetheless the OSI reference model is still in place in certain aspects like cloud computing. OSI provides the public administrations with a reference model to establish a common basis for the coordination of standards development for the purpose of systems interconnection among open systems that operate with OSI⁵.

The specification has been developed by the International Organization for Standardization (ISO), which is an international community concerned with developing international standards.

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 does not support the principles setting context for EU actions on interoperability:

- **Subsidiarity and proportionality**

No member state has been found including the Open Systems Interconnection (OSI) in its national catalogue of recommended specifications.

³ CAMSS Assessment EIF Scenario: <https://ec.europa.eu/eusurvey/runner/CAMSSAssessmentEIFScenario6>

⁴ Isa2 programme web site: https://ec.europa.eu/isa2/eif_en

⁵ OSI model for Microsoft: <https://learn.microsoft.com/en-us/windows-hardware/drivers/network/windows-network-architecture-and-the-osi-Model>

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

- Openness

The OSI model is an ISO International Standard. In this context, standards are developed by groups of experts called technical committees. These experts are put forward by ISO's national members⁶. If a user interested in getting involved, they ought to contact their national standards body. Companies and individuals are not eligible to join ISO as members.

Currently the specification does not include a public review of the release life-cycle, although the specification and its releases are publicly available through national providers. This is dependent on the members of the committee involved on the review.

Any IS/IEC Publicly Available Standard (PAS) is systematically reviewed every 3 years, the committee members re-asses the standard and propose updates (if necessary). The specification current version replaces the previous version from 1984 which was developed as an industry effort, attempting to get industry participants to agree on common network standards to provide multi-vendor interoperability.

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Currently the specification is widely used in various implementations. Currently the International Classification for Standards (ICS)⁸ lists the specification's updates showing its widespread use and implementation.

This specification is supported by ISO's Information technology committee⁹. In order to participate in creating standards, the user must be part of their national standards body (assuming their country is part of ISO).

- Transparency

The main purpose of the specification is the exchange of information among systems that are "open" to one another, meaning that operate using the OSI principles. For this purpose the specification defines multiple layers where the primarily machines can interacting a consistent manner.

OSI identifies 7 layers (Physical, Data Link, Network, Transport, Session, Presentation and Application) each layer deals with an aspect of the information transfer among systems, from the physical medium to the presentation and application end.

⁶ ISO Get-involved: <https://www.iso.org/get-involved.html>

⁷ OSI model for c<https://blogs.cisco.com/cloud/an-osi-model-for-cloud>

⁸ ICS: <https://www.iso.org/ics/35.100/x/>

⁹ ISO Information technology committee: <https://www.iso.org/committee/45020.html>

- **Reusability**

The specification OSI can be implemented in many fields and business domains. It is a fully domain agnostic specification since it's a reference model to facilitate the interconnection between open systems and being vendor neutral.

- **Technological neutrality and data portability**

OSI is independent of any technological specification and can be implemented without dependencies since it's a reference model to facilitate the interconnection between open systems and being cross compatible.

The specification foresees that it can be implemented separately. Being a reference model based on layers, it offers the users the possibility to work with any amount of layers. This can be seen on the Microsoft implementation¹⁰, where only 5 of the 7 layers are in use.

The specification does dwell in data portability between systems/applications or supporting the implementation/evolution of standards since it is designed to support the interchange of information among different information systems. But its main focus is the model, it contributes to data portability but it is up to the users to develop it.

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

- **User-centricity**

The purpose of OSI is not related to the reuse of information. The specification is a model to setup the interchange of information between open systems.

- **Inclusion and accessibility**

The purpose of OSI is not related to e-accessibility. Only on the application layer this user need could be accommodated but the specification makes no provision for it.

- **Security**

The purpose of OSI is not related to the restriction to data/information but there are agreements on security aspects that facilitates the restriction of access to data, but without providing specific requirements. Regarding data protection the specification addresses the protection of data against unauthorised changes during the transfer of data between systems, in particular on the Application Layer, where on the Connection-mode facilities data integrity can be protected via agreements on security aspects.

- **Privacy**

The purpose of OSI is not related to the restriction to data/information but there are agreements on security aspects that facilitates the restriction of access to data, but without providing specific requirements.

¹⁰ OSI in Microsoft: <https://learn.microsoft.com/en-us/windows-hardware/drivers/network/windows-network-architecture-and-the-osi-model>

- **Multilingualism**

The specification is not specifically designed to be multilingual but since the presentation layer deals with standardising data types and their representations, a single international character code standard such as Unicode¹¹ is necessary for software internationalisation and multilingual communication of OSI based platforms. This has resulted in multiple attempts to translate the lower layers of communication values onto more universal codification for the upper layers¹².

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

- **Administrative Simplification**

OSI contributes to improve the delivery of public services since it is designed for being used by all the interconnected systems, therefore if Governments and public sector organisations implement it, they will enhance the delivery of services, improving interoperability and portability of data. Digital service delivery channels involve the use of digital technologies to provide services to users or customers. These channels can include websites, mobile applications, APIs, and other digital platforms. The OSI model, as a conceptual framework, contributes to the development and interoperability of protocols that may be used in creating these digital service delivery channels.

- **Preservation of information**

OSI is a reference model to setup an exchange system between open systems. Therefore, this criterion is considered not applicable to this specification.

- **Assessment of effectiveness and efficiency**

Currently Microsoft has provided some insights regarding the specification effectiveness and efficiency while assessing the implementation of other specifications, in this case, via Microsoft network drivers.

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'.

¹¹ Unicode: <https://www.iso.org/standard/76835.html>

¹² OSI upper layers: <https://www.sciencedirect.com/science/article/abs/pii/S0920548997000044>

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

- **Interoperability governance**

OSI is associated to the ABB's Data Space Connector, Data Space Connector consumer and Data Space Provider in the EIRA Library Of Interoperability Specifications (ELIS)¹³.

OSI has been included on the Spanish catalogue UNE¹⁴.

In terms of implementation conformity, OSI provides some documentation regarding the conformance requirements¹⁵.

- **Legal Interoperability**

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

- **Organisational interoperability**

The specification is a reference model that provides a common basis for the coordination of standards development for the purpose of systems interconnection among systems based on the OSI model.

Through a conceptual and structured approach, the specification can provide valuable insights and principles that can be applied to the modelling, analysis, and improvement of business processes, especially in environments where information systems and networked operations play a critical role.

OSI does not provide specific provisions for interoperability agreements, but the core of the OSI is based on the idea to facilitate the interconnection of systems/processes via multiple layers, therefore it is possible to reach interoperability agreements per each layer (specially on the top ones like representation).

- **Semantic Interoperability**

OSI is a reference model that provides a common basis for the coordination of standards development for the purpose of systems interconnection. The OSI model has been included in the Interoperable Europe Portal catalogue of ICT standards¹⁶, encouraging the creation of communities along with the sharing of their data and results as its purpose is to improve cloud computing portability and interoperability, thus improving communication between different actors.

¹³ ELIS: <https://interoperable-europe.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/elis>

¹⁴ UNE: <https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma/?c=norma-une-en-27498-1989-n0022067>

¹⁵ <https://www.iso.org/standard/17473.html?browse=ics>

¹⁶ <https://interoperable-europe.ec.europa.eu/collection/ict-standards-procurement>

3. ASSESSMENT RESULTS

This section presents an overview of the results of the CAMSS assessments for **OSI**. 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	20/100 (%)	100%	Ad-hoc
Core interoperability principles	1500/1700 (88%)	100%	Seamless
Principles related to generic user needs and expectations	900/1200 (75%)	100%	Sustainable
Foundation principles for cooperation among public administrations	460/500 (92%)	100%	Seamless
Interoperability layers*	780/1000 (78%)	100%	Sustainable
Overall Score	2860/3700 (77%)	100%	

**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 77% (2860/3700) demonstrates that the specification supports the European Interoperability Framework in the domains where it applies.