European Commission

# ASSESSMENT SUMMARY v1.0.0

## eXtensible Access Control Markup Language (XACML) v3.0[1]

Organization for the Advancement of Structured Information Standards (OASIS)[2]

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[1] http://docs.oasis-open.org/xacml/3.0/errata01/xacml-3.0-core-spec-errata01.html

[2] https://www.oasis-open.org/

# Change Control

| Modification | Details |
|---|---|
| **Version 1.0.0** | |
| **Initial version** | |

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# 1. INTRODUCTION

The assessment of **XACML** has been 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].

The present document is a summary of the assessment. Additionally, it includes the observations gathered throughout the assessment process and an interpretation of the results of the assessment

# 2. ASSESSMENT SUMMARY

XACML stands for "eXtensible Access Control Markup Language". The standard defines a declarative fine-grained, attribute-based access control policy language, an architecture, and a processing model describing how to evaluate access requests according to the rules defined in policies.

As a published standard specification, one of the goals of XACML is to promote common terminology and interoperability between access control implementations by multiple vendors. XACML is primarily an attribute-based access control system (ABAC), also known as a policy-based access control (PBAC) system.

## 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**
  There is no Member State that includes the XACML in their national catalogue with the National Interoperability Framework (NIF) aligned with at least 4 out of 5 sections of the European Interoperability Framework (EIF) according to the National Interoperability Framework Observatory (NIFO)[4] factsheets.

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

- **Openness**
  XACML  is an open specification publicly available for study or use. In OASIS, all the stakeholders have the opportunity to contribute to the development of XACML and the decision making process includes OASIS members review. It has a significant market acceptance that demonstrates that it is mature enough for the development of products and services, including for the creation of innovative solutions.
  XACML specification is available for free for everyone to study. At the moment of performing the assessment, XACML is not widely used in across sector manner.

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

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

- **Transparency**

  By allowing the exchange of data over the internet, XACML fosters the visibility and comprehensibility of administrative rules, processes, services. In addition this specification ensures the availability of interfaces with internal information systems of a public administration.

- **Reusability**

  XACML 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**

  XACML 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**

  XACML eases the implementation of the once-only principle by allowing the data to be exchanged and reused by public administrations across borders.

- **Inclusion and accessibility**

  XACML does not foster e-accessibility. The purpose of the specification is not related eaccessibility.

- **Security and privacy**

  XACML does not provides security features that foster the trustworthy data exchange between administration and stakeholders. It is a protocol exclusively designed for the transfer of files implemented on XML.

- **Multilingualism**

  XACML does not foster the delivery of multilingual European public services. The purpose of the specification is not related multilingualism.

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

- **Administrative Simplification**

  XACML contributes to the exchange of information between public administrations therefore, it reduces administrative burden.

- **Preservation of information**
  XACML 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 documents and studies about the XACML performance in different environments. An example of this is the research article "A Performance Analysis of the XACML DecisionProcess and the Impact of Caching", which analyses the performance of XACML involved in the decision process of web services developed in the cloud and the impact of caching.

## 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**
  1 Member States is recommending XCML in their ICT National Catalogues. Additionally, XCML is not associated to European Interoperability Reference Architecture (EIRA) ABBs in the European Library of Specifications (ELIS) at the time of elaborating this assessment.

  XACML is the basis of the Polocy Management impelemented by the cross-border project SEMINARIS. This projects aims to provide e-services with the required underlying secure authentication and management approach.

- **Integrated public service governance & Legal Interoperability**
  After carrying out an exhaustive research, no evidence has been found of an established agreement between organisations involved in European public services provision. Also, after checking the list of specifications identified by the MSP Multi-stakeholder-platform, no assessment verifying the compliance of the specification with the European standardisation regulation has been found.

- **Organisational interoperability**
  XACML does not foster organizational interoperability. The purpose of the specification is not related to the topic.

- **Semantic Interoperability**
  The XACML specification includes data structures and models that can be considered as reusable models for establishing data policies, the data involved and the processes involved. However, the purpose of the specification is not related with the publication of data.

- **Technical interoperability**

  This technical interoperability layer is covered by the core interoperability principle ''Openness''.

## 3. ASSESSMENT RESULTS

This section presents an overview of the results of the CAMSS assessments for **XACML**. 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 | 0% | 100% | 0 | 1 | 0 |
| Core interoperability principles | 86% | 74% | 12 | 2 | 5 |
| 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* | 78% | 82% | 14 | 4 | 4 |
| Overall Score | 79% | 72% | 22 | 6 | 11 |

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

With a 72% of assessment strength, this assessment can be considered representative of the specification compliance with the EIF principles and recommendations.

The Overall Automated Score of 79% demonstrates that the specification supports the European Interoperability Framework in the domains where it applies.
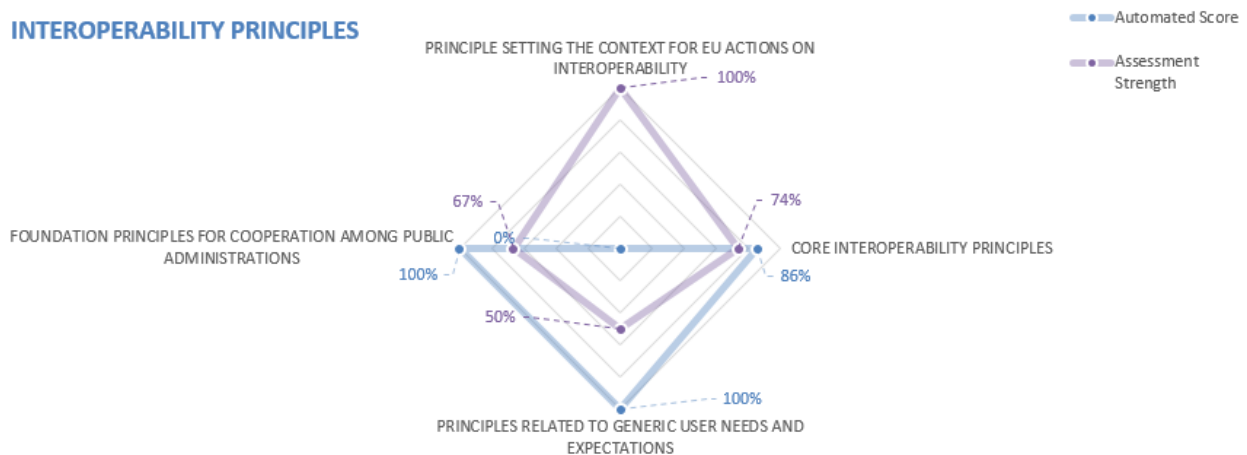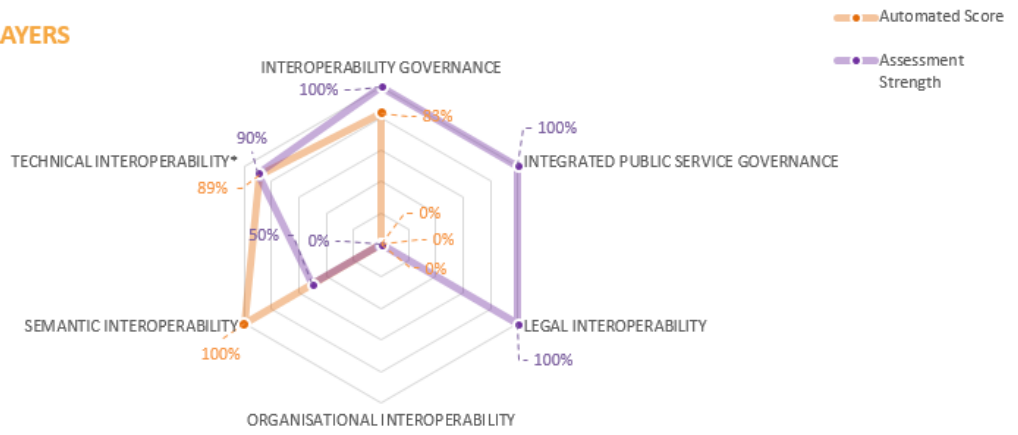


**Figure 1. Interoperability principles Results**

## INTEROPERABILITY LAYERS



**Figure 2. Interoperability layers Results**