ASSESSMENT SUMMARY v1.0.0

European Interoperability Reference Architecture (EIRA)[1]

Interoperability and Digital Government DIGIT.B.2[2]

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[1] EIRA 6.1.0: https://interoperable-europe.ec.europa.eu/collection/european-interoperability-reference-architecture-eira/solution/eira/release/610

[2] Interoperability and Digital Government DIGIT.B.2: https://interoperable-europe.ec.europa.eu/

Change Control

Modification	Details
Version 1.0.0	
Initial version	

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1. INTRODUCTION

The present document is a summary of the assessment of the **EIRA 6.1.0** carried out by CAMSS using the CAMSS Assessment EIF scenario[3]. The purpose of this scenario is to assess the compliance of a standard or specification with the European Interoperability Framework (EIF)[4].

2. ASSESSMENT SUMMARY

The European Interoperability Reference Architecture (EIRA) is an architecture content metamodel defining the most salient architectural building blocks (ABBs) needed to build interoperable e-government systems. EIRA provides a common terminology that can be used by people working for public administrations in various architecture and system development tasks.

EIRA uses (and extends) the ArchiMate language[5] as a modelling notation and uses service orientation as an architectural style. EIRA is an Architecture content metamodel defining the most salient architectural building blocks (ABBs) needed to build interoperable e-Government systems. An example is Madrid's Council, that planned a Smart City Data Space oriented to the efficient management of resources in the city[6].

EIRA was created in the context of Action 2016.32 of the ISA² Programme and is being maintained under the Digital Europe Programme (DEP), Interoperability and Digital Government DIGIT.B.2.

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**
  The European Interoperability Reference Architecture (EIRA) is an architecture content metamodel defining the most salient architectural building blocks (ABBs) needed to build interoperable e-Government systems. Currently the specification is not included in any catalogue of a member state.

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[3]CAMSS Assessment EIF Scenario: https://ec.europa.eu/eusurvey/runner/CAMSSAssessmentEIFScenario6

[4] ISA2 programme: https://ec.europa.eu/isa2/eif_en

[5] Archimate: https://www.opengroup.org/archimate-forum/archimate-overview

[6]   Interoperability   Architecture   Solutions   Success   Stories: https://interoperable-europe.ec.europa.eu/collection/european-interoperability-reference-architecture-eira

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

- **Openness**

  EIRA supports the whole data publication process by providing Semantic building blocks representing data that can be related to the application services in technical view. By providing this traceability, the EIRA supports the creation of solutions that can be used for publication of data in the web.

  The specification is developed by the European Commission, specifically by the DIGIT B.2. The development process is open, there is a team working on the action, but there are spaces and communities where users can participate providing feedback for the update and creation of new features. The evolution of the EIRA follows the semantic versioning approach x.y.z.

  All releases of the EIRA are publicly available and there are mechanisms and channels for providing feedback. Even though there is no creation of a public consultation of each release, the logic and philosophy of the action is that every stakeholder is able to provide feedback for improvements or fixes. Additionally, the Interoperable Europe Solutions action conducts Public Policy Support actions (pilots) with different Member States and its different levels, that are used to gather feedback while implementing the EIRA.

  The EIRA is a completely free of charge specification provided by the European Commission, and there is no fee or IPR limitation to use it. Moreover, the tools used for modelling and working with the EIRA, are open source and can be used without paying. Moreover, apart from using the specification with no limitations, the action provides support for implementing it free of charge.

  The EIRA is already in its version 6.1.0, which in itself demonstrates maturity. Moreover, there are several cases where Member States have used EIRA as the basis for planning new Digital Public Services[7]. An example is Madrid's Council, that planned a Smart City Data Space oriented to the efficient management of resources in the city.

  In relation with Data Spaces, EIRA includes an approach that is aligned with major initiatives such as the Data Space Support Centre (DSSC)[8], the International Data Space Association (IDSA)[9]. This is a trend at European Level that leads to innovation, where EIRA and its specialisations can support public administrations to innovate.

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[7]   Interoperability   Architecture   Solutions   Success   Stories: https://interoperable-europe.ec.europa.eu/collection/european-interoperability-reference-architecture-eira/success-stories

[8] DSSC: https://dssc.eu/

[9] IDSA: https://internationaldataspaces.org/

The EIRA is maintained by the European Commission in an active manner, with teams working specifically on EIRA and related specifications such as eGovERA[10]. This guarantees that the specification evolves as stakeholders and the interoperability environment detect new needs.

- **Transparency**

Since EIRA is a reference architecture and covers all LOST views, it can help to plan the digital public services in alignment with transparency implications such as making visible the different data, rues and services ensuring that users and public servants can clearly identify what happens with and within the public services.

As a reference architecture, the specification covers all LOST views, which means from legal requirements to how technically are there implemented. This can help to ensure that EIRA covers from administrative procedures and actors involved, the rules at legal, semantic, and technical level. Also, how to handle data and requirements related to data, data models and services themselves.

EIRA covers all LOST perspectives, ensuring a seamless transition from legal requirements to their technical execution, providing a structured approach to interoperability and implementation. In relation to the availability of interfaces, the specification can be key, as it the first step to identify what should solutions include in terms of data and functional requirements. They have to be aligned from legal to technical aspects. In this sense, EIRA can help to provide different mechanisms to access and use these digital public services from these different perspectives as they are the end-user or the public organisations internally.

- **Reusability**
The EIRA is a domain agnostic reference architecture that can be used to develop solutions in multiples domains. Some examples of that reusability across domains are the specialisations that the Interoperability Architecture solutions have: eGovERA Business Agnostic, eGovERA Tax, eGovERA Health, eGovERA Custom. These are specialisations based in EIRA, which demonstrates that it is domain agnostic and can be reused across domains.

- **Technological neutrality and data portability**
The European Interoperability Reference Architecture is based on ArchiMate, an open standard. Also, it is modelled using Archi[11], an open-source tool that is also based on ArchiMate and TOGAF[12]. It provides Open Exchange Formats (xml based) that allow users to use it in out of Archi tool.

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[10] eGovERA: https://interoperable-europe.ec.europa.eu/collection/european-interoperability-reference-architecture-eira/solution/egovera-business-agnostic-0

[11] Archi - Archimate Modelling Tool: https://www.archimatetool.com/

[12] Open Group ADM: https://www.opengroup.org/architecture/togaf7-doc/arch/p2/p2_intro.htm

EIRA is the basis for the creation of digital public services, and it provides the common and basic components for it, but any Solution Architecture Template or Solution can extend them to ensure that their needs are covered. The Interoperability Architecture Solutions Validator can help to ensure that extensions are aligned with modelling guidelines and requirements of EIRA. Examples of extensions of EIRA are any of the eGovERAs, from the Business Agnostic to the Domain Specific.

EIRA as the reference architecture for developing digital public services in the European context, it covers horizontally from legal to technical aspects, going through organisational and semantic aspects. This way, the specification allows to approach data portability from different perspectives: 1) any possible legal conditions or requirements; 2) organisational limitations and agreements that help overcome transitions between systems; 3) data related requirements and limitations; and last but not least 4) technical requirements that ensure the reuse of best practices and components, as well as international standards that reduce risks.

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

- **User-centricity**
  The specification has an holistic perspective that goes from Legal to Technical aspects following the LOST approach from the European Interoperability Framework (EIF). This implies that EIRA can help Public Administrations to analyse and design digital public services that considers interoperability across views as requirements and also specifically the reuse of relevant information. The EIRA can help also with the user centric approach from design, as it can help to establish the precise requirements that could later on extended by eGovERA and solutions focused on guaranteeing that users do not need to provide additional information.

- **Inclusion and accessibility**
  As a Reference Architecture, EIRA is meant to be used in early stages such the analysis, where the requirements for solutions developments are sets. In this sense, the EIRA provides a set of architecture building blocks, and also flexibility to extend it, ensuring that an e-Accessibiilty from design can be followed, ensuring that Digital Public Services that start from EIRA to its implementation can be accessible.

- **Privacy**

  The specification can help to ensure the privacy by design, as EIRA foresees and includes specific ABBs related to guarantee that privacy is considered as requirements in the analysis of solutions that will lead to privacy in the implementation phase. To be more specific, EIRA provides the set of specific ABBs in a viewpoint that are key to achieve privacy, and to consider it from the very beginning. Additionally, which the flexibility that provides the specifications, it can be extended and specialised as needed to ensure that specific needs and requirements are covered.

EIRA has been successfully used together with eGovERA in several initiatives at national level, and in some of them, included privacy aspects. These privacy aspects come from EIRA, and as the process of analysis and design evolve, the building blocks are specialised making use of the flexibility. This fact helps these initiatives to ensure their specific needs are covered. Some of these projects can be found in the Interoperability Architecture Solutions collection in the Interoperable Europe Portal[13].

- **Security**

EIRA includes a whole set of enablers related to security at different levels. In this line, the specification includes specific set of requirements oriented to ensure data management, data exchange and collaboration upon data, while ensuring privacy and security. By providing specific perspectives and viewpoints related to security and privacy and how they include the data exchange, EIRA helps users when working on analysing the requirements for digital public services.

There are specific enablers related to data exchange and data collaboration, such as Data Space related. These are related and complemented by security and privacy components.

Additionally, elements such Trust enablers or blockchain can be consider assets and components that can help to ensure data integrity and data authenticity.

EIRA includes mechanism to ensure that security and privacy is ensured when designing digital public services. It is done by providing architecture building blocks that address these specific topics, and also by considering all LOST views, ensuring traceability from legal requirements to technical.

To go further in detail, there are specific enablers related to identify the requirements for identity and access management, which are the building blocks that will ensure that access to data is controlled. Additionally, elements such Trust enablers or blockchain can be consider assets and components that can help to ensure data integrity and data authenticity.

- **Multilingualism**

The specification is delivered in English, therefore here it is limiting multilingualism of itself. However, EIRA foresees some components that are in line with ensuring that digital public services can be provided in different languages. An example is the "machine translation" components.

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[13] Interoperability Architecture Solutions Success Stories: https://interoperable-europe.ec.europa.eu/collection/european-interoperability-reference-architecture-eira/success-stories

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

- **Administrative Simplification**
  The simplification of the delivery of public services is not on how they are deliver, it starts with the analysis and design phase of these services. There is where EIRA is meant to focus and support the simplification of European public services.

  The holistic approach of the specification ensures that there is a translation between legal requirements into the technical implementations. By providing different perspectives to different aspects such identification and access management, EIRA can help public administrations to develop services considering simplification by design.

- **Preservation of information**
  The holistic approach of the specification ensures that there is a translation between legal requirements into the technical implementations. In the context of public administrations and the services they provide, the long-term preservation is sometimes subject to strict legal requirements. EIRA allows Public Administrations to identify the needs that will be needed at organisational, semantic, and technical to achieve the long-term preservation in the provision of services. Even it is not implementing in itself a feature saving files, EIRA plays a key role on identifying the requirements and components needed.

- **Assessment of effectiveness and efficiency**
  Even though there have been several implementation at different levels of EIRA and its specialisations, there are no studies so far evaluating the effectiveness or efficiency of the specification.

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'.

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

- **Interoperability governance**
  The specification is the basis for this question, therefore, it means that there is a 1 to 1 mapping with all components.

The Interoperability Test Bed (ITestBed) is used to allow the conformance of any model developed from EIRA. It is called the Interoperability Architecture Solutions Validator[14], that not only can validate models from EIRA but also the different specialisations such eGovERA models.

The EIRA is not just included in a repository of standards, it is included within the Interoperability Architecture Solutions in the Interoperable Europe Portal, the site that the Interoperable Europe Act foresees as the place where interoperability solutions should be published, and where Member States and their different administrative levels can go to find reusable solutions.

- **Legal Interoperability**
  At this moment, even though the specification is developed by the European Commission, since it is not developed by any of the European Standardisation Bodies, it cannot be considered a European Standard.
  However, since the European Commission works and develops specifications under the standardisation regulation, the EIRA meets the requirements set under the regulation, which make it a good option to use in procurement process and in the public sector in general.

- **Organisational interoperability**
  Even though EIRA is not a business process modelling tool, withing the organisational view, Public Administrations are able to identify which is the delivery model, the agents, the capability, services and information involved. By establishing the traceability with other views, users can establish the relationship between elements at different levels such as semantic or technical, helping to provide a comprehensive approach of how are services going to be provided and the different components involved.

  The specification is place in the very beginning of the Digital Public Service Life-cycle, specifically in the analysis where requirements are set. At this stage, the solution includes and remarks the need for the Organisational Agreements and the Organisational Interoperability Agreements. The Organisational includes a set of relevant aspects and agreements that are key to ensure interoperability at organisational level, these building blocks are, for instance, agreements on privacy, agreements on reuse of infrastructure, agreement on data sharing amongst others. By providing this granularity, the EIRA helps public administrations on the process of defining solutions and the organisational agreements that will need to be put in place.

- **Semantic Interoperability**
  The EIRA is in the Interoperable Europe Portal, where solutions related to interoperability and the creation of digital public services are published. Apart from being publicly available there, EIRA can play a crucial role approaching semantic interoperability from the analysis phase, where requirements are set at all levels of the solutions, from legal requirements to technical.

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[14] Interoperability Architecture Solutions Validators: https://www.itb.ec.europa.eu/eira/upload

By addressing semantic interoperability by design, EIRA can contribute to work towards finding common solutions and can also leverage from other solutions at European or national level related to data management or exchange.

3. ASSESSMENT RESULTS

This section presents an overview of the results of the CAMSS assessments for **EIRA**. 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 (20%)	100%	Ad-hoc
Core interoperability principles	1680/1700 (98%)	100%	Seamless
Principles related to generic user needs and expectations	1160/1200 (96%)	100%	Seamless
Foundation principles for cooperation among public administrations	340/500 (68%)	100%	Sustainable
Interoperability layers*	920/1000 (92%)	100%	Seamless
Overall Score	4120/4500 (92%)[15]	100%	

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

With a 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 92% (4120/4500) demonstrates that the specification supports the European Interoperability Framework in the domains where it applies.

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[15] See the "results interpretation" section of the CAMSS Assessment EIF Scenario Quick User Guide:

https://interoperable-europe.ec.europa.eu/collection/common-assessment-method-standards-and-specifications-camss/solution/camss-assessment-eif-scenario/results-visualisation-and-interpretation