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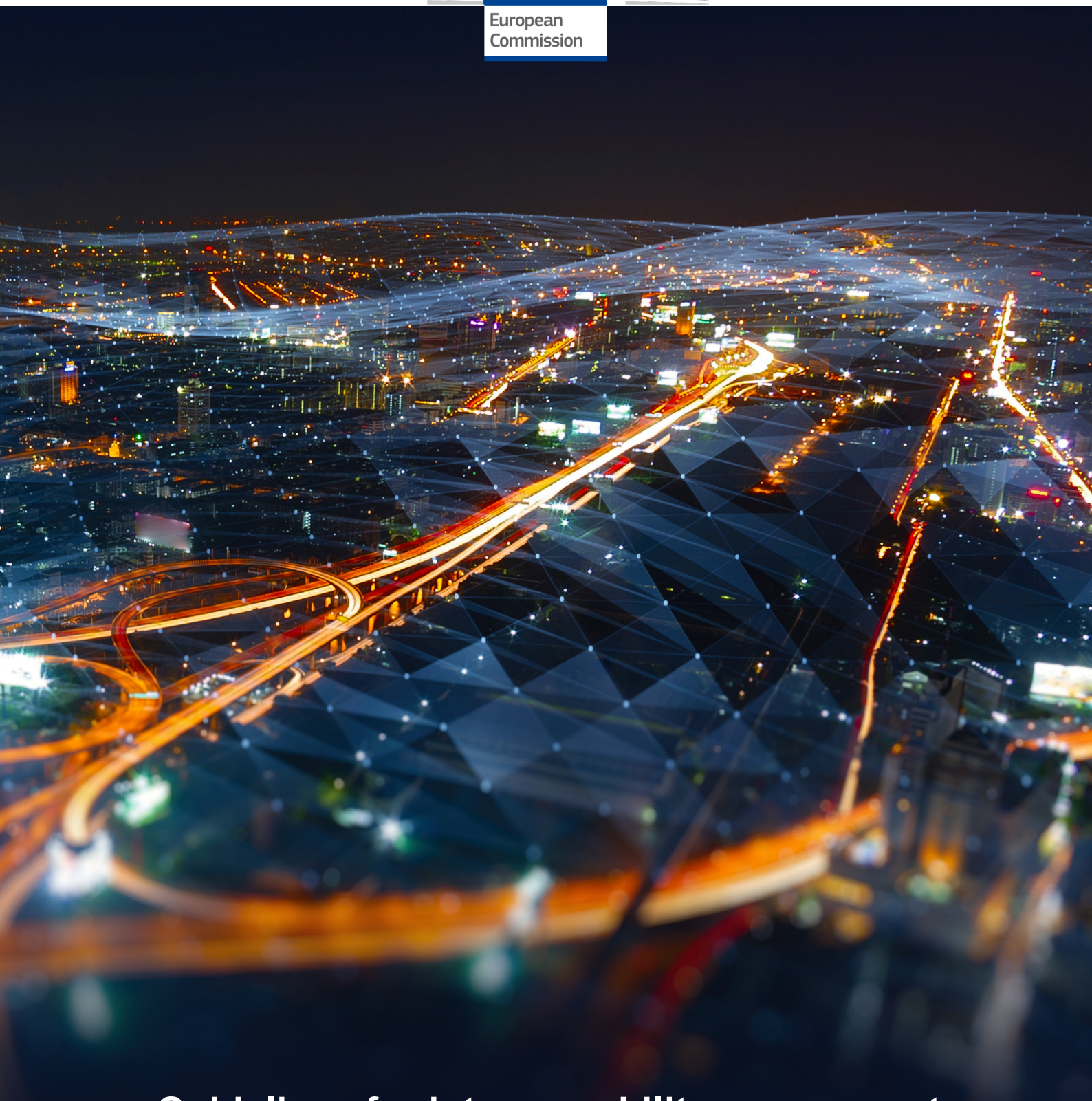

Guidelines for interoperability assessments

Version 1.0

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Executive Summary

Interoperability assessments, as mandated by the Interoperable Europe Act, ensure that cross-border digital public services function seamlessly and efficiently across the EU. These assessments address legal, organisational, semantic, and technical dimensions, facilitating mobility of citizens and businesses across the Union. Required when binding requirements impact cross-border interactions, the process includes preparation, stakeholder identification, initial analysis, and detailed assessment using the European Interoperability Framework (EIF) as a support tool. Reports must be comprehensive, machine-readable, and both published publicly and shared with the Interoperable Europe Board. Effective governance is essential, with clear roles, integration into existing workflows, and continuous improvement through reflection and sharing of best practices, aligning with the European Commission's commitment to the reduction of administrative burden and increased competitiveness.

Chapter 1: What are Interoperability Assessments and Why are They Relevant?

Interoperability assessments are evaluations required by Article 3 of the Interoperable Europe Act. They ensure that binding requirements for trans-European digital public services consider cross-border interoperability issues before implementation. These assessments are crucial because they facilitate seamless digital interactions among public organisations, which is essential for the mobility of citizens and businesses across the EU. Interoperability assessments cover legal, organisational, semantic, and technical dimensions, addressing challenges such as different legal frameworks, organisational structures, languages, and technical resources among Member States. They help reduce administrative burdens and promote peer learning, ultimately enhancing the quality and accessibility of trans-European digital public services.

Chapter 2: When is an Interoperability Assessment Legally Required?

This chapter clarifies when interoperability assessments are mandatory under the Interoperable Europe Act. It defines key concepts like trans-European digital public services and binding requirements. A decision tree is provided to help determine whether an assessment is required. Examples illustrate scenarios where assessments are or are not required, such as adapting national solutions for EU data exchange or procuring digital services that do not involve cross-border interactions. The chapter emphasises the importance of early assessments and clarifies that assessments may build on previous evaluations without needing repetition unless significant modifications occur.

Chapter 3: How to Carry Out an Interoperability Assessment?

This chapter provides a step-by-step guide to conducting an interoperability assessment. It includes preparation steps such as identifying the need for assessment, defining scope and objectives, assembling a team, and identifying stakeholders. The initial analysis involves reviewing documentation, identifying binding requirements, mapping affected services, and conducting stakeholder interviews. The core assessment examines the impact of binding requirements on cross-border interoperability across legal, organisational, semantic, and technical aspects. Best practices and examples, such as using the European Interoperability Framework (EIF) and specialised tools like interoperability maturity assessments, are provided to guide the process.

Chapter 4: How to Document an Assessment in a Comprehensive Report?

The assessment report is a critical deliverable, summarising binding requirements, affected services, and identified interoperability effects. It must be published on an official website, be machine-readable, and include specific content as mandated by the Interoperable Europe Act. The chapter outlines the minimum content required, such as general information, identified effects, and relevant interoperability solutions. It provides recommendations for ensuring machine readability and advises on safeguarding sensitive information. The report should be shared electronically with the Interoperable Europe Board to aid in decision-making and monitoring.

Chapter 5: How to Establish a Sound Governance of the Interoperability Assessment Process in Your Organisation?

Effective governance is essential for the success of interoperability assessments. This chapter discusses the importance of a variety of factors such as context dependency, organisational setup, sustainability, and refinement of the assessment process. It recommends integrating assessments into existing administrative workflows while highlighting first steps to take as well as the need for continuous improvement through reflection and sharing of best practices. This further helps to enable a digital-ready policy-making approach, i.e., formulating digital-ready policies and legislation by considering digital aspects from the start of the policy cycle, ensuring that they are ready for the digital age, future-proof and interoperable.

Chapter 6: Further resources and further development of these guidelines

This chapter outlines existing and future resources for conducting interoperability assessments. The Interoperable Europe portal serves as a central hub for knowledge exchange and resources, including information on the European Interoperability Framework (EIF) and its toolbox, as well as links to the Interoperable Europe Academy. Future tooling and online resources, also developed by the European Commission, will be available to assist in carrying out assessments and publishing reports. The guidelines themselves will continue to evolve, adapting to new circumstances and mandatory assessments, and are expected to be frequently revised to reflect current practices and user experiences.

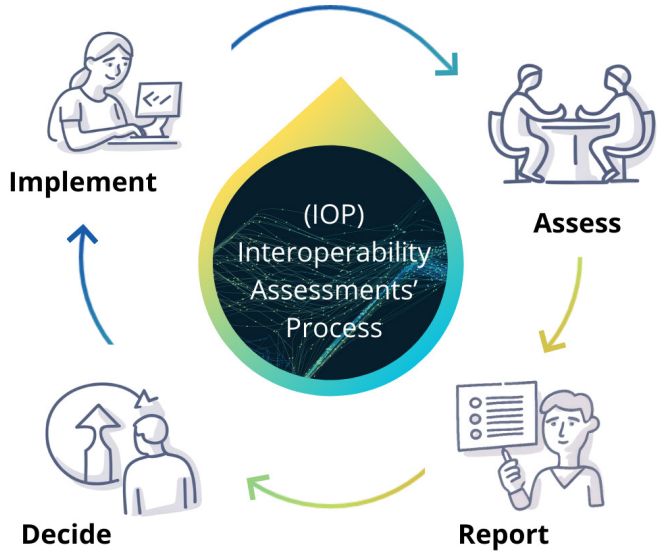
About these guidelines

In an era marked by rapid digital transformation, the Interoperable Europe Act (IEA)[1] aims at boosting the seamless delivery of digital public services across the European Union. Essential to this is interoperability – the ability of diverse organisations and systems to interact effectively, exchanging data and ensuring that public services are not only technologically advanced but also accessible and user-centric. In this context, interoperability assessments are not just a technical necessity but also a strategic imperative.

These guidelines do not provide a magic formula for ensuring full interoperability but rather a **generic starting point for a journey towards more interoperability.** They therefore aim to explain in a non-binding manner[2]:

- why an interoperability assessment is useful and how it can help public organisations provide better digital public services at lower cost and with greater effectiveness (Chapter 1)
- when an interoperability assessment is mandatory according to the IEA (Chapter 2);
- the different ways to perform an interoperability assessment (Chapter 3);
- what to take into account for the report on the interoperability assessment (Chapter 4);
- the critical factors for the successful implementation and governance of the processes related to interoperability assessments in your public organisation (Chapter 5);
- further resources and information on how to contribute to the further development of the guidelines (Chapter 6).

Different groups have different stakes in the interoperability assessment process. These guidelines aim to cater to the varying needs of those different audiences:



Assess:
- decide if assessment is necessary in a particular case
- conduct the assessment
- participate in the assessment

Report:
- document the outcome of the assessment in the assessment report
- publish the assessment report

Decide:
- decide on binding requirements based on the assessment report
- decide on the governance of interoperability assessments

Implement:
- implement the binding requirements with the help of the assessment report

1 Regulation (EU) 2024/903 of the European Parliament and of the Council of 13 March 2024 laying down measures for a high level of public sector interoperability across the Union (Interoperable Europe Act), OJ L, 2024/903, 22.3.2024, ELI: http://data.europa.eu/eli/reg/2024/903/oj

2 The binding interpretation of EU legislation is the exclsive competence of the Court of Justice of the European Union.

FAQs on interoperability assessments and where to find the answers

1. What is an interoperability assessment? Chapter 1
2. What are the binding requirements that may have an impact on cross-border interoperability? Chapter 2
3. What are the trans-European digital public services to which these binding requirements will apply? Chapter 2
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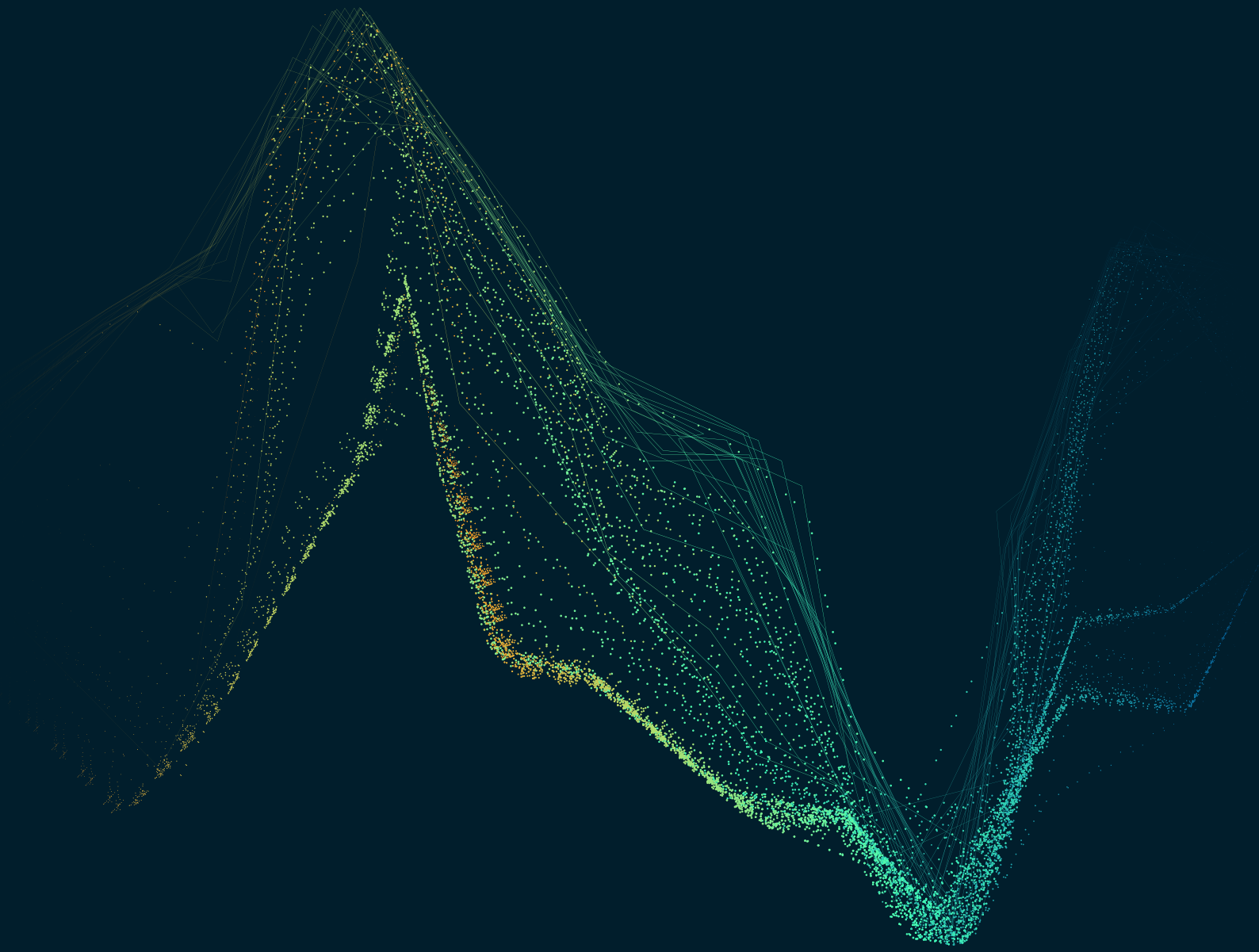
1 What are interoperability assessments and why are they relevant?



1.1 What the Interoperable Europe Act states

Article 3(1) IEA establishes the obligation to carry out an interoperability assessment:

> 'Before taking a decision on new or substantially modified binding requirements, a Union entity or a public sector body shall carry out an interoperability assessment.'

According to Article 3(2) IEA, the interoperability assessment therefore has to identify and assess:

- the effects of the binding requirements on cross-border interoperability, using the European Interoperability Framework (EIF) as a support tool;
- the stakeholders to which the binding requirements are relevant; and
- the Interoperable Europe solutions that support the implementation of the binding requirements.

These guidelines explain not only what has to be done but also why it has to be done.

1.2 What is interoperability?

To understand interoperability assessments, it is important to understand what is meant by interoperability in general. The EIF is the guiding document on interoperability of public services in the EU. A fundamental feature of the EIF is that it defines interoperability as more than just a technical issue. In fact, there are other important dimensions that challenge the interoperability of digital public services across borders: (i) Member States have different legal frameworks, which may result in incompatible rules; (ii) differences in the organisation of competent authorities and levels of government make it difficult to understand who is responsible for what and to understand how national processes can interact in cross border scenarios; (iii) Member States have different languages, cultures and legal concepts, which make it a challenge to ensure that common terms are understood consistently throughout the EU; and (iv) Member States use different technical resources, which may be incompatible and thus hinder interconnection.

The IEA's scope is specifically **cross-border interoperability as it applies to trans-European digital public services** (i.e. the ability to meaningfully share data across borders):

> 'cross-border interoperability' means the ability of Union entities and public sector bodies of Member States to interact with each other across borders by sharing data, information and knowledge through digital processes in line with the legal, organisational, semantic and technical requirements related to such cross-border interaction; Article 2(1) IEA

What does this mean in practice, looking at the four layers (legal, organisational, semantic and technical) of the EIF?

Legal interoperability assesses whether public organisations operating under different legal frameworks are able to work together for the provision of trans-European digital public services (e.g. the provision of a national disability card that can be used as legally valid proof in other Member States).

Organisational interoperability assesses whether public organisations align in their business processes, responsibilities and expectations to achieve high-quality provision of trans-European digital public services (e.g. clearly designating a public authority that is allowed to issue national disability cards that are valid in another Member State).

Semantic interoperability assesses whether the precise format and meaning of exchanged data and information is preserved and understood throughout exchanges between public organisations that are required for the provision of the trans-European digital public services (e.g. ensuring that the content and structure of the national disability card can be understood by authorities in other Member States).

Technical interoperability assesses whether different public organisations' network and information systems can be securely and properly interconnected, as required for the provision of the trans-European digital public services (e.g. ensuring that national disability cards are issued in a digital format that can be processed by other Member States)

The latest version of the EIF was adopted by the European Commission in 2017 and has become a fundamental basis for many national interoperability frameworks (NIFs) and interoperability policies. In the future, the development of the EIF will be steered by the Interoperable Europe Board. If you are interested in further details, the Interoperable Europe Academy offers training on the EIF.

The EIF is a good starting point for understanding what an interoperability assessment is.

1.3 The key trigger for interoperability assessments

Every day, public organisations impose or change binding requirements [3] (i.e. obligations, prohibitions, conditions, criteria or limits) that impact the interaction with public organisations in other countries or at EU level, which, in turn, is necessary for the provision of trans-European digital public services. Interoperability assessments target precisely these decision processes. They aim at raising awareness about cross-border interoperability and the possible effect of binding requirements on it before these requirements are decided on. The entities that prepare such decisions containing binding requirements (e.g. a legal proposal or a procurement procedure) are therefore legally obliged to perform an assessment. They can nevertheless delegate the assessment to others, because Member States are free to decide on internal resources and the cooperation between its public sector bodies necessary to carry out interoperability assessments (Recital 16 IEA).

[3] The concepts of the IEA are explained in depth in Chapter 2.

1.4 How can assessments help provide better digital public services at lower cost?

Seamless digital interaction between public organisations is essential for the mobility of citizens and businesses across the EU – and therefore for the completion of the Single Digital Market and increasing the competitiveness of the EU's economy. It is also a condition for high-quality trans-European digital public services. In all this, interoperability is an important enabler for seamless digital interaction and therefore reaching these goals. However, enabling such interactions is often overlooked in the early stages of policy and IT project development, especially for issues other than technical interoperability of networks and information systems.

Interoperability assessments raise awareness on cross-border interoperability as early as possible – in order to enhance mobility and competitiveness and to avoid costly interoperability barriers.

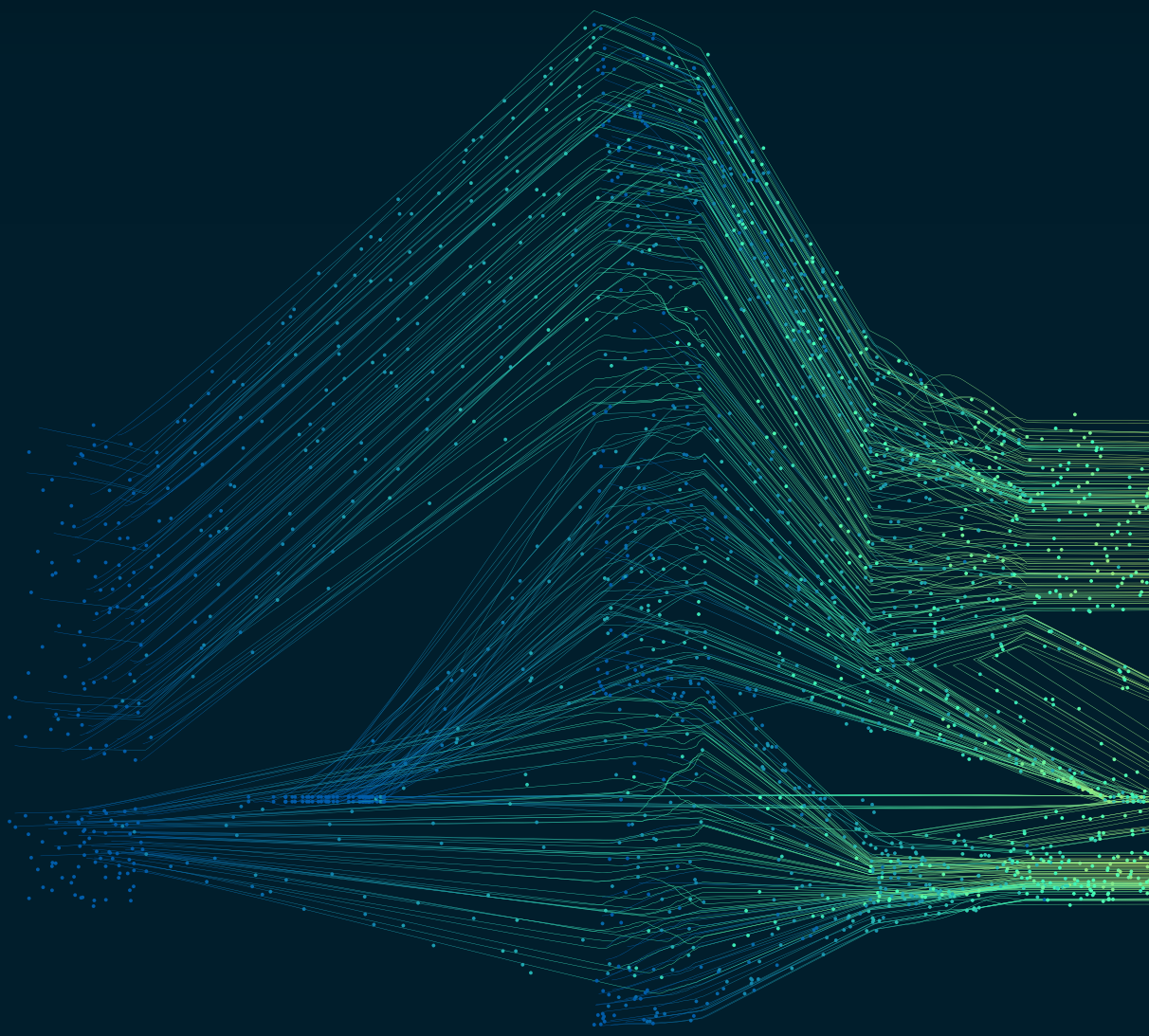
Beyond highly harmonised niches (e.g. the exchange of vehicle and driving licence information) the (joint) delivery of high-quality digital public services across Member State borders can be particularly challenging because of specific cross-border issues across all dimensions of interoperability (legal, organisational, semantic and technical). The interoperability assessment helps to ensure that these challenges are properly considered, and possible solutions are identified for later implementation, thus reducing administrative burden and facilitating access to digital public services for citizens and businesses in the EU. The process of performing an assessment also helps public administrations discover reusable solutions and avoid having to start from scratch.

The interoperability assessment makes it easier to properly consider all the dimensions of cross-border interoperability present in the delivery of trans-European digital public services, thus avoiding the creation of unnecessary administrative burden.

In addition, publishing interoperability assessments is intended to communicate the lessons learnt between EU public organisations, thereby helping them improve their decisions on binding requirements and enhance reuse. This is envisioned not only through mechanisms such as peer reviews but also through a repository where previous assessments can be accessed. The mandatory interoperability assessment alone cannot prevent cross-border interoperability issues, but it does help to identify the need for new legal, organisational, semantic or technical solutions and agreements at EU or national level to remove or reduce cross-border barriers.

The benefits of interoperability assessment go beyond the benefit of a single assessment, because they can promote peer-learning between public organisations and can help identify those issues that are best addressed in a joint effort.

2 When is an interoperability assessment legally required?



This chapter aims to help those that are responsible for interoperability assessments within their public organisations to decide whether they are legally obliged to carry out an interoperability assessment.

It specifically unpacks the IEA concepts that trigger the obligation to conduct the interoperability assessment. Building on an in-depth explanation of these key concepts, a decision tree summarises the steps to take to understand whether an interoperability assessment is required. The concepts are further illustrated with a number of examples in the form of cases where one may or may not be obliged to undertake an assessment.

2.1 The main concepts in the context of interoperability assessments

Interoperability assessments aim at a well-managed change process in which impacts on cross-border interoperability are identified as proactively as possible. Article 2 of the IEA defines the main concepts:

2.1.1 Binding requirements?

The concept of 'binding requirements' is defined in Article 2(15) IEA as:
- an obligation, prohibition, condition, criterion or limit;
- of a legal, organisational, semantic or technical nature;
- which is set by a Union entity or a public sector body;
- concerning one or more trans-European digital public services; and
- which has an effect on cross-border interoperability.

What the IEA says
Recital 18 IEA further specifies what a binding requirement is and how it can be set:
Binding requirements can be set within 'a law, regulation, administrative provision, contract, call for tender, or another official document. Binding requirements affect how trans-European digital public services and the network and information systems used for their provision are designed, procured, developed, and implemented, thereby influencing the inbound or outbound data flows of these services. Tasks such as evolutive maintenance not introducing substantive change, security and technical updates, or simple procurement of standard ICT equipment do usually not affect the cross-border interoperability of trans-European digital public services and do therefore not result in a mandatory interoperability assessment within the meaning of this Regulation'[4].

When assessing if a requirement is 'binding' according to the IEA, one essential factor is whether the requirement has consequences for other organisations taking part in the provision of the public service (i.e., an effect on cross-border interoperability). For instance, a technical requirement that becomes mandatory only for the deciding party but **still limits the choices left to others** can be considered a binding requirement.

Binding requirements will usually arise from legislation. A binding requirement in a law could, for example, concern:

- the collection, processing, generation, exchange or sharing of data between Union entities or public sector bodies (e.g. a regulation on public registries);
- the automation or digitalisation of public services or their underlying processes (e.g. the use of AI in a public service or providing a driving licence in a digital format (as data) instead of a physical card);
- the use of new or existing network and information systems (e.g. the use of the 'once-only' technical system[5]).

4 Recitals 10, 15-17 and 21-22 IEA are also relevant.
5 See Article 14 of the Single Digital Gateway Regulation: Regulation (EU) 2018/1724 of the European Parliament and of the Council of 2 October 2018 establishing a single digital gateway to provide access to information, to procedures and to assistance and problem-solving services and amending Regulation (EU) No 1024/2012, OJ L 295, 21.11.2018, p.1.

For example, EU legislation that obliges Member States to coordinate the execution of different national government tasks will often require to develop – or modify significantly – as well as integrate information systems or other digital solutions such as APIs[6] in order to support the new requirements. EU legislation that contains binding requirements includes, e.g., the Single Digital Gateway Regulation (requirement for additional layer to be added on the top of national infrastructure), the eIDAS Regulation (requirement to adjust national services) and Schengen legislation (requirement to fully harmonise systems).

Spending on significant development of information systems often requires a mandate through a budget allocation. Moreover, new data flows between authorities will often require a legal basis for the exchange of data. **It will therefore generally make sense to pay careful attention to any requirements that are part of a decision by a legislator.** It is nevertheless important to keep in mind that public sector bodies or Union entities may in some cases decide to establish binding requirements outside legislation (e.g. requirements in procurement procedures, large scale pilots or in bilateral agreements between two or more Member States).It is also possible that, after the binding requirements from the initial legislation have been assessed, additional requirements may be set (e.g. specifying the digital public service delivery). Such decisions might limit the choices left to others and would therefore need an interoperability assessment as well.

Generally, no assessment will be needed for instances that concern tasks such as evolutive maintenance that do not introduce substantive change, security or technical updates, or the simple procurement of standard information and communication technologies (ICT) equipment (Recital 18 IEA).

Going beyond the binding nature, a 'binding requirement' in the meaning of the IEA would also need to **be set by a Union entity or a public sector body**, concern one or more trans-European digital public services and have an effect on **cross-border interoperability**. These concepts are explained further below.

2.1.2 Public sector bodies and Union entities?

The binding requirement(s) assessed need to be set by a public sector body or a Union entity. Article 2(6) of the IEA defines a 'public sector body' in the same way a public sector body is defined by Article 2(1) of the Open Data Directive, namely:

- State, regional or local authorities;
- bodies governed by public law ; or [7]
- associations formed by one or more such authorities or one or more such bodies governed by public law.

This definition is used not only in the context of the Open Data Directive but also for the eIDAS Regulation. Consequently, a public organisation that falls within the scope of those legislative acts also falls within the definition of a public sector body according to the IEA.

Article 2(5) of the IEA defines 'Union entities' as 'the Union institutions, bodies, offices and agencies set up by, or on the basis of, the Treaty on the European Union, the Treaty on the functioning of the European Union or the Treaty establishing the European Atomic Energy Community'.

6 Application Programming Interfaces are software intermediaries that allow two applications to communicate, i.e., enable data transmission.

7 See the definition in Article 2(2) of the Open Data Directive: 'bodies that have all of the following characteristics: (a) they are established for the specific purpose of meeting needs in the general interest, not having an industrial or commercial character; (b) they have legal personality; and (c) they are financed, for the most part by the State, regional or local authorities, or by other bodies governed by public law; or are subject to management supervision by those authorities or bodies; or have an administrative, managerial or supervisory board, more than half of whose members are appointed by the State, regional or local authorities, or by other bodies governed by public law.'

2.1.3 Concerning trans-European digital public services?

Services are to be considered trans-European digital public services when they fulfil the cumulative requirements set out in Article 2(2) of the IEA. In other words, the services are:

> 'Digital services provided by Union entities or public sector bodies to one another or to natural or legal persons in the Union, and requiring interaction across Member State borders, among Union entities or between Union entities and public sector bodies, by means of their network and information systems.' - Article 2(2) IEA

Only binding requirements concerning such trans-European digital public services have to undergo an interoperability assessment. This means the requirement should **affect how** the trans-European digital public services or their networks and information systems are designed, procured, developed, implemented and delivered, thereby influencing the inbound or outbound data flows of those services. In other words, the requirement should affect the data involved, considering from whom it goes to whom and by which digital solution. Incoming data flows can be composed of:

- the data needed to deliver the digital public service,
- from whom it is received,
- and the digital channel by which it is received

Outbound dataflows can be composed of:

- the data delivered by the digital public service
- to whom it is delivered,
- and the digital channel by which it is provided

2.1.3.1 What is a digital public service?

In order to further understand the concept of trans-European digital public service, it is important to understand the underlying concepts on which it builds. The IEA applies only to **digital public services** but does not define which services are to be considered public services. Article 1(3) specifies that 'This Regulation applies without prejudice to the competence of Member States to define what constitutes public services or to their ability to establish procedural rules for or to provide, manage or implement those services.' This means that not all public services will be the same across all Member States.

However, there are some shared characteristics: digital public services within the meaning of the IEA are **only services provided either by Union entities or by public sector bodies of Member States.** For instance, private companies may manage a carpark on a public ground and a parking app supporting such a service. The mere fact that the physical space is owned by a public sector body and that these private companies rent it from this public sector body does not automatically mean that the digital parking applications are digital public services provided by a public sector body. In other cases, private sector bodies may perform an auxiliary role which does not impact the public nature of a service (for example, a public service may use cloud services provided by private sector bodies, but the public sector body or Union entity retains overall responsibility for providing the service).

Trans-European digital public services are limited to services that are **provided either to another public sector body or Union entity, or to a natural or legal person in the EU.** This means that requirements that concern services that are available only for internal use within a public sector body or a Union entity do not fall within the definition (e.g. booking a table in an open office space) and nor do services that only involve interaction with a country or citizens and businesses **outside the EU.**

2.1.3.2 What makes a digital public service trans-European?

If the concerned service or services meets the requirements for being a digital public service, it is then possible to assess whether it also constitutes a trans-European digital public service. This involves meeting two conditions: (i) the service must involve interaction across Member State borders, among Union entities or between Union entities and public sector bodies, i.e., across their jurisdictions and (ii) it must do so by means of their network and information systems.

Examples of **interaction across Member State borders** could be interactions needed for the mutual recognition of academic diplomas or professional qualifications; exchanges of vehicle data for road safety; access to social security and health data; and exchange of information related to taxation, customs and in general all those services that implement the 'once-only' principle.

Interaction among Union entities could, forexample, include interaction between a Commission service and an agency to manage a project or a funding programme or the interaction between the co-legislators.

Interaction between Member State public sector bodies and Union entities could, for example, happen in the context of single window systems, public procurement above the threshold or different reporting mechanisms. Interactions that happen through systems that are provided by Union entities but support interaction across Member States borders would fall into both categories (e.g. interaction through the 'once-only' technical system).

The service must also require interaction **between the network or information systems** of two or more public sector bodies or Union entities. If the provision of a digital public service does not require interaction with networks or information systems of other public sector bodies or Union entities, then the service is not to be considered a trans-European digital public service. This is the case, for example, when evidence is exchanged by normal post.

2.1.4 Cross-border interoperability?

The binding requirements in terms of scope will need to have an effect on cross-border interoperability as defined in Article 2(1) IEA. The question of how it has such an effect will be part of the assessment itself, but the question of its potential effect is part of the pre-assessment. If the requirements to be assessed concern trans-European digital public services (and, with this, interaction between public sector bodies in different Member States and Union entities), they will normally also affect cross-border interoperability, because they will determine the way in which the public sector bodies and Union entities interact with each other.

2.2 Decision tree

The decision tree on the following page can be used as a basis for assessing whether an interoperability assessment is needed. If the authority arrives at 'Yes' in the decision tree, an interoperability assessment is mandatory. If it does not, an interoperability assessment is not mandatory but may still provide value (see Chapter 1).

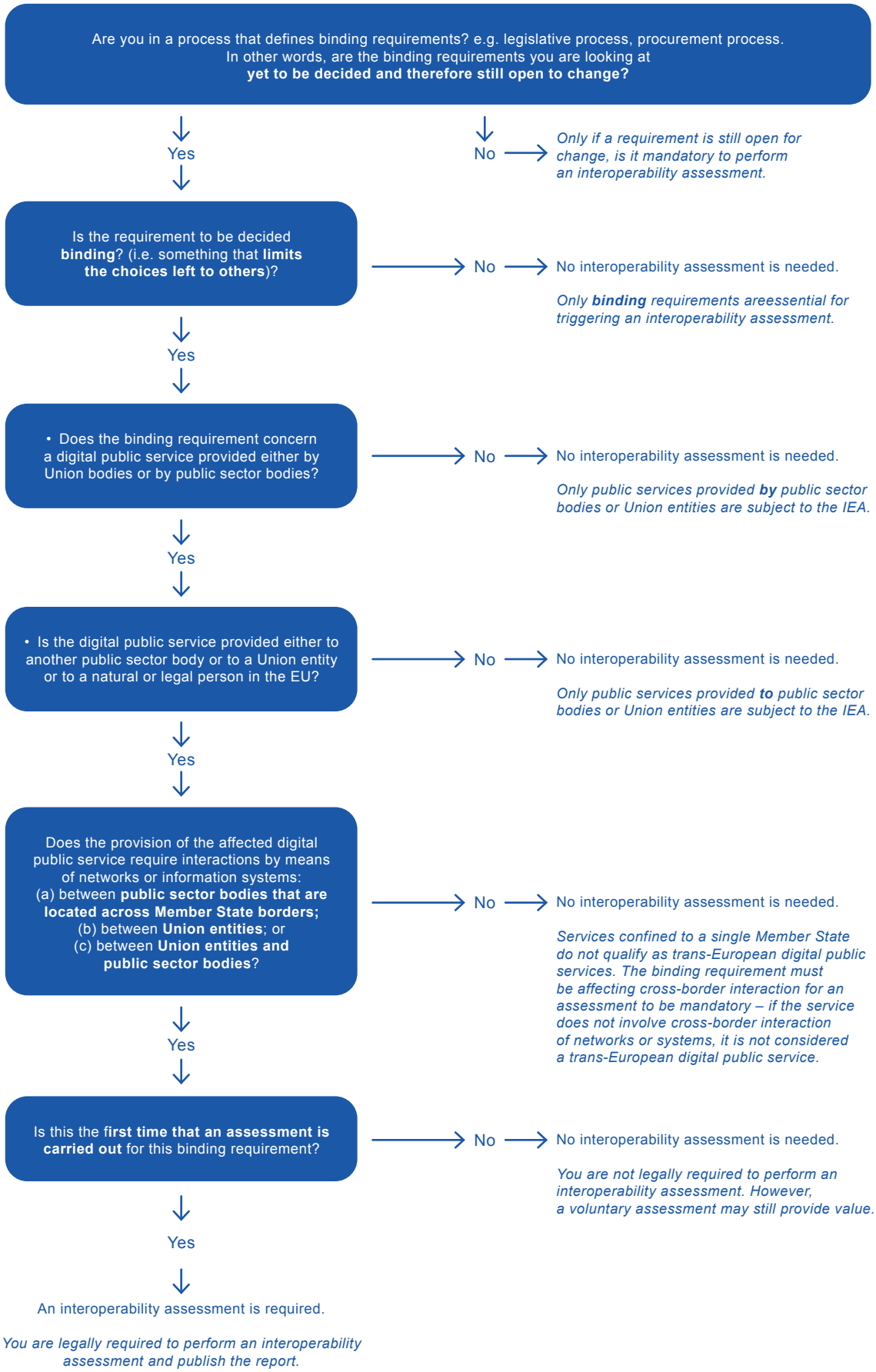


Figure 1. Decision tree for an interoperability assessment

Irrespective of the result of the decision tree, it is important to consider the following three points:

No need to repeat

Only the public organisation that is planning a decision on a requirement is obliged to carry out the assessment. This is true for requirements at any stage of the life-cycle of a digital public service and might mean different entities, depending on whether the requirements are introduced in a legal proposal or specified later on (by setting new ones) during implementation or management of the service. If a file is under shared responsibility, the entities must agree on the roles and collaborate (see also Chapter 5). The obligation does not concern any public organisation that is simply implementing a requirement and is bound by the decision of another public organisation (see also Questions 1 and 2 in the decision tree). If a decision is taken jointly (e.g. in the context of a cross-border project), the assessment can also be performed jointly.
The rule that there is no need to repeat assess-ments is further clarified by the exemption in Article 3 IEA: there is no need to repeat the mandatory interoperability assessment for a previously assessed binding requirement. However, while there is no need to repeat assessments, different versions can certainly be related.

Related assessments

Specifically, assessments can build on each other, when one public organisation (e.g. a Union entity) sets high-level binding requirements that are then further defined by the implementing entities. This could, for example, happen during the transposition of an EU directive into national legislation or when a previously assessed binding requirement adopted in a legal text is further refined in a public procurement procedure for its implementation. If this is done by deciding on new binding requirements, barriers to cross-border interoperability can also be introduced at this later stage, so the newly added requirements will need to be assessed. However, these assessments can reference previous assessments and build on their findings.

Following the same rule, no assessment at the implementation stage is needed when a binding requirement is to be implemented by solutions provided by Union entities. Here, it is assumed that all solutions provided by Union entities are interoperable by default as they are provided for a wide variety of contexts across the EU. In this case too, however, an interoperability assessment may be carried out voluntarily in order to verify that all the potential cross-border interoperability issues are addressed by these solutions in the specific context.

No retroactive assessments

The legal obligation to perform interoperability assessments enters into force on 12 January 2025. Many binding requirements affecting the cross-border interoperability of trans-European digital public services may already have been decided upon but not yet transposed or implemented. A retroactive assessment is not mandatory but is highly recommended for cases with high stakes, because it can help the transposition or implementation, as explained above.

2.3 Examples

Case #1
Adapting a national solution to enable data exchange with other Member States

A big city in a Member State needs to further develop its technical system to support extended requirements for data exchange with other Member States' authorities that result from a new EU regulation.

However, the responsible directorate-general in the Commission has carried out a detailed interoperability assessment in connection with the submission of the proposal and this describes the expected consequences for the Member States. There is no need to carry out a new interoperability assessment if the intended change stems directly from the need to comply with the new regulation. In other words, a new assessment is not mandatory in this case because the city is not **taking** the decision but merely **implementing** a decision on binding requirements (see Question 1 (Q1) in Decision tree).

However, a new assessment would be mandatory if the city were to decide to implement additional requirements that do not stem from an obligation under the new regulation but would be set in the same context (data exchange across borders) or likely to affect it (change in data format or ownership).

Case #2 Need for IT support for new EU legislation.

A government agency in a Member State needs to have its reporting solution further developed in order to support new binding requirements that result from a recently adopted regulation. The regulation obliges actors that are active on the domestic market for product X to regularly submit digital reports on the sales of their product.

No assessment is required because the agency is not taking the decision but just implementing a decision on binding requirements (see Q1).

The situation would be different, however, if the regulation merely set a high-level requirement and the agency were planning to decide on further new binding requirements for implementation that have not yet been assessed. For example, the agency might have to decide on requirements regulating the sharing of the digital reporting of the sales and would then need to assess the effect of such a requirement on cross-border data-sharing.

The agency could still conclude that it is not obliged to carry out an interoperability assessment. The new requirement does not concern a digital public service (specifically not the interaction of such a service with others) but merely changes the threshold for the number of companies to be reported on (Q3). In this case, a voluntary assessment may nevertheless bring value.

Case #3
Tender for a framework contract for maintenance and further development of technical systems

A government agency in a Member State is about to put out to tender a framework contract for the maintenance and further development of its information systems. The agency is deciding on a binding requirement and not just implementing a decision (Q1).

Binding requirements may include a call for tender. However, the tendering of a framework contract for the operation, maintenance and further development of professional systems will not in itself contain binding requirements for digital public services, but rather 'evolutive maintenance' (Q2). There is therefore no need for an interoperability assessment.

An assessment will usually be needed if a specific system development is requested within the framework of the contract (e.g. a new national or organisation-specific requirement is introduced to support new legislation – this could have consequences for the cross-border interoperability of trans-European digital public services, perhaps because it changes (aspects of) the business logic of a system).

Case #4
Procuring a solution for a service used by cross-border users

A municipality in the border region of a Member State is considering acquiring a digital self-service solution to enable payment for parking in the municipality's designated areas. In connection with the procurement decision, the municipality will set new binding requirements for an information system to provide this service.

However, the requirements do not affect cross-border interoperability (Q3), because the solution is intended to request payment from the party, who wants to pay the fee for parking directly. No data exchange between authorities in Member States or with EU institutions is necessary in the transaction. Therefore, because the delivery of the service does not necessitate the interaction of network or information services across borders, the municipality is not obliged to carry out an interoperability assessment before procuring the proposed solution.

Case #5
New EU rules requiring national digital support are proposed

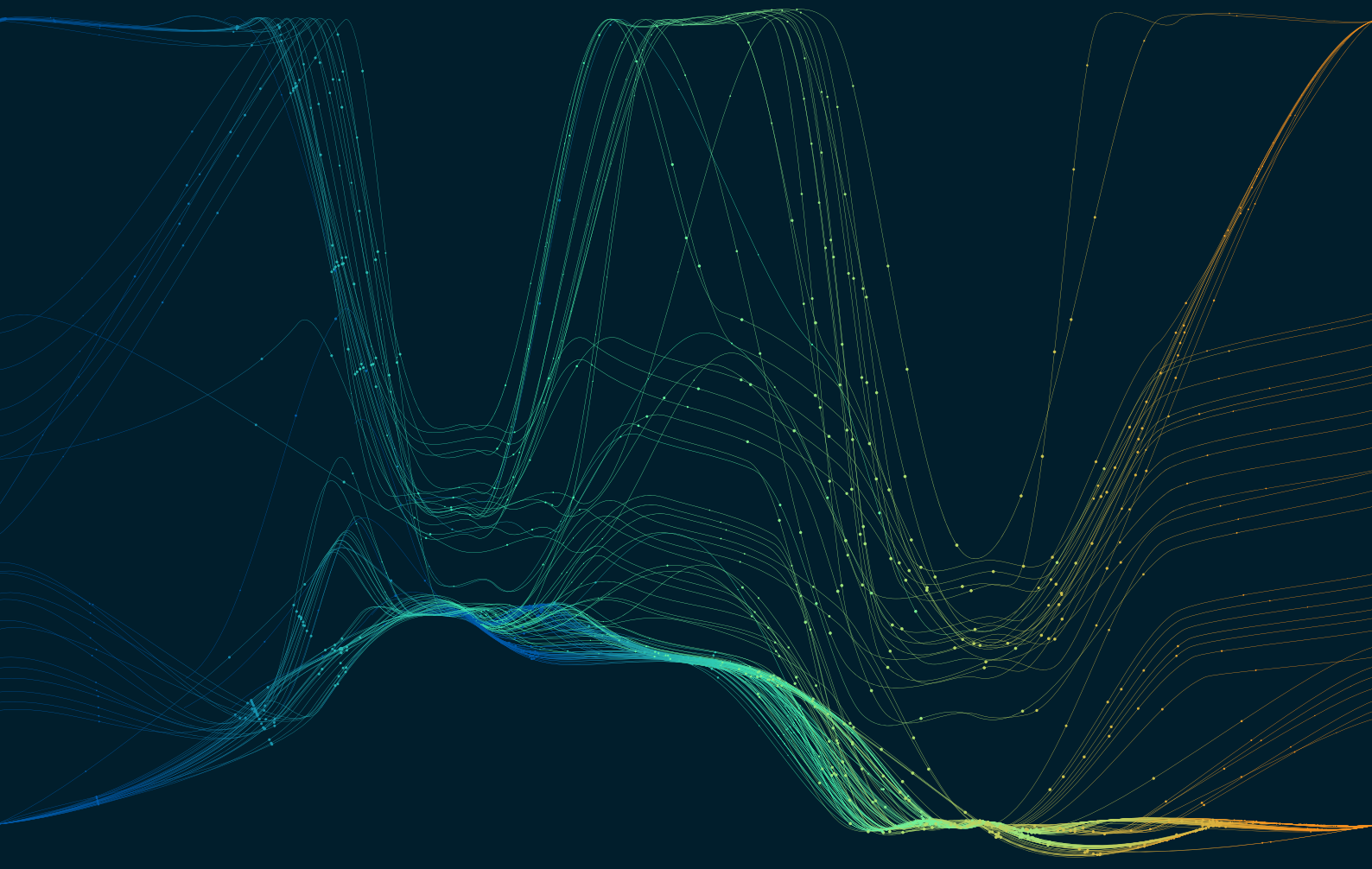
A directorate-general of the Commission has drafted a legislative act to further regulate the agricultural sector by introducing new delimitations and data types for CO2 emission reporting. Several Member States already introduced national solutions for reporting two years ago. If adopted, the legislative act would require those Member States to further develop their existing legal frameworks and information systems so that they can support the new delimitations and data types described in the legislative act.

The directorate-general will have to carry out an interoperability assessment for the proposal because it is still open for discussion (Q1) and concerns a trans-European digital public service (Q2 and Q3) (i.e. it concerns data flows between public organisations). This interoperability assessment would then need to consider the existing solutions and how they can be (re)used and thereby avoid duplication of efforts and resources.

Apart from these concrete examples, the following instances are also good indicators for when an assessment is likely to be valuable, if not mandatory:

- setting new tasks for authorities
- changes in disclosure of information
- changes in rights to obtain information
- new way to provide the public service

3 How to carry out an interoperability assessment?



Having used the decision tree in Chapter 2 to determine that an interoperability assessment is required, this chapter will guide you through the process of conducting the assessment itself.

This chapter aims to provide you with a clear step-by-step guide on how to conduct an interoperability assessment in accordance with the IEA. By the end of this chapter, you will know:

- the key steps involved in an interoperability assessment
- how to identify and document binding requirements
- how to detect effects on cross-border interoperability
- how to identify and consult with relevant stakeholders
- how to identify applicable Interoperable Europe solutions

The IEA clearly states that the approach to conducting interoperability assessments should be **proportionate and tailored** to their level and scope. This means that different methodologies and tools will provide different value in different contexts (see subsection 3.4 of this chapter). This chapter does not aim to provide a one-fits-all approach but to make you familiar with different options. These options differ according to circumstances that are linked to the overall interoperability governance of a public organisation. Such a governance could, for example, entail the existence of national or organisational assessments or IT/interoperability frameworks (see Chapter 5). If there is no specific guidance on the approach for interoperability assessments in a specific organisation, the person leading the assessment should choose the approach that brings most value while creating least burden.

The process outlined in this chapter represents a comprehensive **'best practice' approach** to interoperability assessments, but we recognise that organisations vary in size, structure, resources and maturity levels. This process can and should be tailored to fit your specific organisational context and constraints.
The key is to maintain the core principles[8] of the assessment while scaling the process so that it is both manageable and meaningful within your particular circumstances. As you progress through this guidance, consider how each step can be adjusted to align with your organisation's capabilities and requirements – ensuring that the assessment remains valuable and actionable, regardless of your starting point or available resources.

The first step is to explore the general recommen-dations for conducting an interoperability assessment, before diving into each step of the process in more detail.

8 The assessments were conceived to enable cross-border interoperability while ensuring the inclusion of all relevant stakeholders and thus creating sustainable, future-proof digital policies. In order to reach these objectives, it is necessary to understand the magnitude of the impact of the planned requirements and to propose measures to reap the benefits and address the potential costs (Recital 17) as well as choosing a proportionate and differentiated approach in accordance with the level and scope at which the assessments are undertaken (Recital 19).

3.1 General recommendations

General recommendations to find the right approach:

Start early. The greatest returns are obtained when assessments are performed early in the design of new binding requirements (e.g. as part of policy design, legal proposals, or the design of new IT solutions) and, at the latest, before taking binding decisions.

Be fit-for-purpose. The more precise and unique the decision that contains the requirements (e.g. a single project implementation of a local authority), the more pragmatic and therefore narrower the focus of the assessment can be. Try to clearly define your scope and objectives, and to adapt the assessment to them.

Build on existing frameworks. The assessment should be aligned with existing organisational and administrative frameworks, thereby ensuring that they complement the administrative workflow. Where applicable, legal frameworks regarding digital policies should be considered as well. If the assessment is linked to a prior (EU or national) assessment, reuse that prior assessment and build on it.

Consult with stakeholders. Conducting an interoperability assessment should involve consulting the directly affected service recipients (including citizens or their representatives). It would also be advisable to consult implementers as well as other actors involved in the provision of the service. Keep in mind that such assessments may involve individuals that do not have a background in information management or IT.

3.2 Preparation

This stage sets the foundation for the process, helping to define the scope, assemble the right team and establish a clear plan of action. By investing time in this initial phase, you can streamline the subsequent stages of the assessment, avoid potential pitfalls and ensure that the final results are both relevant and implementable.

3.2.1 Identify the processes that would trigger an interoperability assessment

The decision-making procedure for this step is described in detail in Chapter 2. In particular, the decision tree in that chapter sets out a structured approach to evaluating whether an interoperability assessment is required in your specific case. You should only proceed with the subsequent steps outlined in this chapter if the Chapter 2 preliminary evaluation indicates that an assessment is needed. Nevertheless, even if you are not legally obliged to carry out an assessment, you can still do one voluntarily.

3.2.2 Define the scope and objectives of the assessment

Defining the scope and objectives of the interoperability assessment shapes the rest of the process. The scope determines the boundaries of what will be assessed (including which instance(s) of data exchange, systems, processes or services will be examined and in what depth). Objectives clarify what you aim to achieve with the assessment (e.g. identifying specific interoperability gaps or evaluating compliance with certain standards).

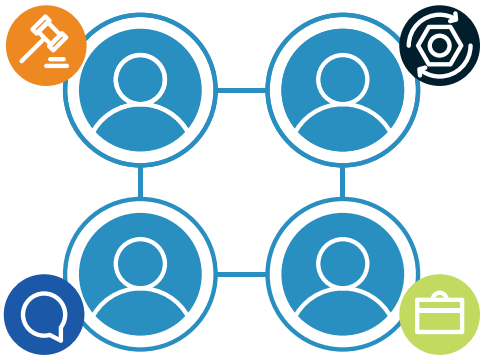
It is important to remember that the scope and objectives should be tailored to the specific context of your project and organisation. Consider the nature and complexity of the project being assessed, as well as the organisational structure and available resources. A large-scale cross-border initiative may require a comprehensive assessment. A smaller, localised project may benefit from a more focused approach.

When defining scope and objectives, reflect on your organisation's capacity to conduct the assessment. This includes not only financial resources but also time, expertise and access to necessary information. The goal is to strike a balance between thoroughness and practicality, ensuring that the assessment is both meaningful and manageable within your constraints. Given all this and while the assessment must always concern a trans-European digital public service, be aware that the scope and objectives can therefore vary greatly not only between Member States and Union entities, but also within your Member State and within your organisation.

3.2.3 Assemble a multidisciplinary assessment team

Assembling the right team is crucial for conducting an effective interoperability assessment. The ideal scenario would involve a diverse group of experts, but we recognise that organisations may have limited available skills and resources. The key is to strive for the best possible combination of competencies within your constraints.

In an ideal scenario, your assessment team would combine multiple sets of skills and perspectives. Consider including team members with expertise in areas such as.



- legal and regulatory aspects of data exchange (interoperability)
- business process analysis
- data management, including semantic expertise and governance
- IT architecture and systems integration
- specific domain knowledge relevant to the binding requirements being assessed and services affected

Remember that one person may be qualified in multiple areas of expertise. If resources are limited, prioritise the most critical skills for your specific assessment context. You might also consider temporarily bringing in external experts or consultants to fill any crucial gaps in your team's expertise.

The size of your team should be proportionate to the scope of your assessment. A small focused team might be sufficient for a limited-scope assessment. A larger and more complex project may require a more extensive team.

3.2.4 Identify relevant stakeholders

Start identifying the stakeholders for whom the binding requirements could be relevant, e.g. by asking yourself who might be affected by it in:

- implementation, e.g., who is involved for which part of the process?
- service provision, e.g., which organisations are necessarily involved for successful delivery?
- delivery itself, e.g., who must interact with whom?
- or management, e.g., who is involved to ensure consistency?

They can be public or private stakeholders (businesses), citizens or Union entities. These stakeholders will need to be consulted at a later stage. If such stakeholders are identified early, they might even already contribute to carrying out the next step (e.g. identifying the binding requirements). It is not required to identify each individual stakeholder but rather to identify the categories (e.g. all citizens or just a particular group, all businesses or just specific sectors).

3.3 Initial analysis

The next stage involves examining existing documentation, policies and services in order to identify and understand the key elements that will shape your assessment.

This stage has three purposes:

- to gather and review relevant documentation and policies that describe the requirements affecting interoperability;
- to identify and clearly document the binding requirements that are central to your assessment;
- to map out the trans-European digital public services that are affected by these requirements.

As you progress through the following three subsections, remember that the depth and breadth of your analysis should be proportionate to the scope of your assessment as defined in the preparation phase. The goal is to create a solid foundation of knowledge that will inform the rest of your assessment process.

3.3.1 Review documentation and policies describing requirements

The primary purpose of this stage is to gather and analyse all documents that are relevant to understanding the new or modified requirements (whether they are explicitly stated or merely implied). This review is the basis for identifying the binding requirements central to your assessment in the next step.

It is important to note that the nature and extent of available documentation can vary significantly, depending on the current phase of the project or initiative being assessed (whether that is in the legislative preparation phase, the concept and design phase or a later phase).

Depending on your current stage of the process leading to the development of a digital public service, the following might be an outline of possible steps to take.

- Identify and collect all relevant documents. These can include not only the legal acts that set the requirement, but also secondary sources such as technical documentation or communication about the document containing the requirements. Cast a wide net initially in order to ensure that no crucial information is missed, e.g. go beyond the binding document describing the requirements and consider

the context in which they are set or will be implemented. This can include other, existing obligations on data exchange that are not currently being regulated on;
- Categorise the documents based on their type and relevance to interoperability.
- Perform an initial review to understand the scope and content of each document.
- Create a summary or index of key documents and their relevance to interoperability requirements.
- Identify any gaps in documentation that may need to be addressed.

Other considerations:
- consider both internal and external sources of documentation;
- pay attention to version control, ensuring that you are working with the most up-to-date information;
- look for references to standards, or other external requirements that may impact interoperability
- take note of any ambiguities or inconsistencies you find in the documentation for further investigation.

Remember, the goal at this stage is not to analyse the requirements in depth, but to create a reasonable overview of the documented landscape. This will serve as the basis for the more detailed analysis in the following steps.

3.3.2 Identify relevant binding requirements

The purpose of this step is to **identify and document the binding requirements** that you are planning to assess (please refer to Chapter 2 for more information on what a 'binding requirement' is). Please note that a single interoperability assessment may also be carried out to address a set of binding requirements (usually when they are all to be set by the same decision-making process).

You will need to document the requirements because they will help you in the discussion on the impacts of these requirements, which is the aim of the interoperability assessment. Keep in mind that this exercise is not always straightforward. Some requirements might not directly be obvious and explicit but may only be identified after a thorough and expert analysis.

Examine the documents you have already identified and extract the binding requirements that:

1. concern a digital public service:
- they have a digital dimension, i.e. when their underlying processes are digitalised or automated; they deal with data; they involve the setting or use of digital solutions; they offer a digital channel for service delivery; or are provided via network and information systems
- they involve interaction between public organisations, i.e., they are provided by Union entities or public sector bodies to one another or to natural or legal persons in the Union

2. have a trans-European dimension:
- they require interaction across Member state borders, among Union entities or between Union entities and public sector bodies

Be thorough in your considerations: If the existence of a binding requirement is missed in the assessment process, it can sometimes lead to cross-border interoperability issues for implementers later on[9].

After you have identified the requirements, you can choose the method that works best for you to document the identified requirements[10]. In general, avoid using the passive form when documenting requirements, because this often results in the actors (i.e., those who are involved) not being clearly identified. Make sure that the extract includes the information necessary for it to qualify as a binding requirement because your assessment may have involved information gathered from the context of the binding document (not the document itself).

9 For example, missing interoperability requirements were in the past a trigger for rethinking the policy approach for eInvoicing: Report on the effects of Directive 2014/55/EU on the Internal Market and on the uptake of electronic invoicing in public procurement – European Commission (europa.eu).

10 The EU open data portal offers a detailed Data Visualisation Guide which includes diverse techniques from charts to graphs and storytelling.

Depending on the stage of a project in which the requirements are set, different methods to identify and document requirements can be valuable (e.g. looking to user stories or use cases at the beginning of the legislative cycle). So, when documenting your identified requirements, consider the expected audience for the interoperability assessment. While the assessment must be published on an official website, e.g. be publicly available, it will most likely also inform the subsequent processes within the life-cycle of a digital public service. Therefore, consider whether the assessment report will be shared with others as is or whether you will draw up a different document for e.g., stakeholder consultations, procurement or implementation. If yes, adjust your methods accordingly. Your documentation will also depend on the type of binding requirements you are describing (e.g. business, functional and non-functional requirements, or technical requirements).

As mentioned above, your requirements will generally be part of a larger process, of which they regulate only certain parts. It therefore makes sense to look at the wider overall process and adapt your documentation to its specificities. To this end, you can:

1. translate the requirements into a process diagram;
2. list the requirements in a form that is reusable (e.g. for a call for tender)[11].

3.3.3 Map affected trans-European digital public services

To assess where and how the identified binding requirements will affect the trans-European digital public service, it makes sense to concentrate on visualising the service itself, including its trans-European dimension (e.g. the connection across Member State borders, among Union entities or between Union entities and public sector bodies, by means of their network and information systems). The purpose is to identify and visualise the cross-border data exchanges and interactions required for the public service to be provided effectively. This way, you can prepare the way for an assessment of the effects of the requirements on cross-border interoperability., i.e. precisely on the data exchanges and interactions identified before.
There are many ways to approach this task, but the following section outlines one possible way to understand both the service itself and the interactions across borders which then give rise to considerations regarding interoperability:

First, visualise the service itself by considering the following:

- What is the overall goal of the linked decision? (relevant context and orientation point)
- Who is involved? (actors such as businesses, citizens, etc.)
- What happens? (Checking data? Issuing evidence?)
- When does it happen? (temporal dependency? Process dependency?)
- Where does it happen? (back office? Databases? Specific (physical) location?)
- Why does this happen? (legal basis, incl. possible subsidiarity)

You can do this visualisation in different ways (e.g. as a user journey, a decision tree or a process diagram). You can also map the requirements in a tool to visualise service architecture (e.g. using the European Interoperability Reference Architecture (EIRA)).
For the trans-European dimension of the digital public service (e.g. the cross-border connection needed between public organisations in order to provide the service in question), consider the following points in order to map the identified requirements to the service:

[11] In cases where the interoperability assessment is linked to the procurement of ICT systems, technical specifications of the procurement files should meet the requirements defined in ICT technical specifications to be eligible for referencing in public procurement, which can be considered interoperability solutions.

1 Identify required data exchanges:

- attempt (based on the service description and binding requirements) to map specific cases where data needs to be exchanged or shared with services in other Member States or with Union entities;
- specify the information needs that exchanging data would meet in each case (e.g. natural person identification, product safety information or organisations' administrative data).

2 Identify collaborating services:

- for each data exchange, determine the relevant public service(s) in other Member States or Union entities that the service needs to interact with;
- note the responsible authorities or institutions for these partner services.

3 Characterise the interactions:

- describe the nature of each interaction (e.g. data retrieval, data submission and verification);
- Identify the type of data that is part of the interaction and consider defining data groups to reach a level of granularity that allows for reuse of existing data.
- identify the direction of the data flow (unidirectional or bidirectional);
- note any specific requirements for these interactions (e.g. real-time vs batch, and frequency).

You can then also map the connections as well.

4 Create a visual representation of these interactions:

Such visualisations, e.g. an architectural diagram, will also add significant value to the further assessment process. For the first step, you can use flow diagrams, user journeys or other methods of visualisation.

After mapping these connections, it is also important to consider what implementing the binding requirement would mean specifically. You should therefore also pay attention to the following points.

5 Identify dependencies:

- note any dependencies on specific systems, standards or protocols required for these interactions;(e.g. when part of the data is held in base registers, consider the dependencies to the relevant base register to ensure reuse of such data)
- highlight any existing interoperability solutions that are already in use or planned.

6 Identify dependencies:

- assess the potential for reuse of the service with the specific requirements – could it be reused in other use cases?
- consider potential changes in data exchange requirements over time (e.g. the type or volume of data or the frequency of interaction might change).

The output of these efforts might be a map or diagram showing how your public service interacts with other services across borders. This could include:

- a visual representation of the service connections (this could detail the types of data exchanged and the nature of each interaction);
- a list of partner services and responsible authorities;
- noted dependencies and interoperability requirements.

These mappings could serve as a reference point for the assessment process, helping to identify potential interoperability challenges or requirements. For example, you could use them to consult with stakeholders and together find inconsistencies (logical, legal or formatting/documentation), open ends or duplications. They will also show dependencies on other services, organisations or processes that could be affected when deciding on the binding requirement in question.

3.3.4 Involve stakeholders

The list of stakeholders put together in the preparation phase should be refined at this stage of the assessment. Consultations can be used for several purposes: they can help refine the documentation of the requirements and the concerned services (as mentioned above). They can also help you to better explain the issue at stake to the stakeholders and can help assess opportunities for better cross-border interoperability in the future.

As the focus is on trans-European digital public services and their cross-border interoperability, two stakeholder groups are particularly relevant for the assessment:

Users of digital public services: service recipients (natural or legal persons) that rely on the interaction of digital public services across borders to effectively use these services.

Conducting an interoperability assessment requires consulting these service recipients (including citizens or their representatives) in order to assess possible impacts. This provides valuable feedback on the proportionality of the binding requirement in relation to the original goal of its introduction (i.e., is this requirement proportionate to the expected benefit of its introduction?). It also makes it possible to gauge the effectiveness of the requirement (i.e., will the binding requirement help achieve what it was set for?). The requirements can therefore be adapted accordingly before a binding decision is taken. Keep in mind, however, that such assessments may involve individuals who do not have a background in information management or IT, and to adjust your communication accordingly.

Public organisations in other Member States or at EU level are Union entities or public sector bodies that regulate, provide, manage or implement trans-European digital public services.

They include stakeholders from the entire lifecycle of the service (e.g. policy officers, IT implementers and other affected user groups inside the public organisation, such as service providers). If you are not sure how to consult these stakeholders, you can also consult Chapter 7 in the European Commission's Better Regulation Toolbox. Be aware that to ensure interoperability, it might be necessary to deep dive into specific policy fields. Another example of stakeholder consultation could therefore be to consult experts in these fields.

Also keep in mind that the requirement of Article 3 IEA to carry out consultations does not mean that those consultations have to be conducted in addition to consultations that are part of other processes. Integration with existing processes is possible and, indeed, very much encouraged in order to exploit available synergies (see Chapter 5). The stakeholders' involvement can go beyond this initial phase and you can also validate the outcome of the next step (assessment) with stakeholders.

3.4 Assessment of cross-border interoperability

Having established the basis for your assessment, we now move to the core of the interoperability assessment process. This stage involves an evaluation of the effects of the binding requirements on cross-border interoperability from multiple perspectives in accordance with the EIF.

In the following subsections, we will explore how to analyse the effects on cross-border interoperability – considering legal, organisational, semantic and technical aspects – and provide best practice examples for how to approach this task.

3.4.1 Analyse effects on cross-border interoperability

The IEA does not prescribe one mandatory method, but it does state that the EIF is a supporting tool (Art. 3 (2) IEA).

As explained above, it is necessary to keep in mind that **the assessment does not need to show the way towards full interoperability, but it should help detect ways towards more interoperability.** If your public organisation has already decided to use one method for assessments, please follow this decision (see Chapter 5).

Taking the EIF as the main starting point for your assessment means considering the extent to which the proposed requirements enable or hinder interoperability. This could also show whether additional requirements are needed. Recital 21 states that the assessment should evaluate the effects of the planned binding requirements having regard to the origin, nature, particularity and scale of those effects. In order to pay attention to these, the four dimensions of the EIF can be a first starting point.

3.4.1.1 Assess legal aspects

The aim is to assess the extent to which the binding requirements allow public organisations operating under different legal frameworks, policies and strategies to work together to provide trans-European digital public services. This assessment should consider factors such as the consistency of the requirement with existing laws and regulations; the potential for conflicts or inconsistencies with other legal frameworks, including EU digital policies; and the feasibility of implementation and enforcement.

3.4.1.2 Assess organisational aspects

The aim is to assess the extent to which the binding requirements do or do not help public organisations in aligning their business processes, responsibilities and expectations to achieve a high-quality, seamless provision of the trans-European digital public services. To what extent do the binding requirements create opportunities or risks for organisations and the way they work? Are they for example setting new tasks that need to be incorporated or are they (re-) allocating responsibilities?

3.4.1.3 Assess semantic aspects

The aim is to assess the extent to which the binding requirements ensure that the precise format and meaning of exchanged data and information are preserved and understood at all stages of the exchange needed for the provision of the affected trans-European digital public services. To what extent do the binding requirements create opportunities or risks for the meaningful exchange of data across borders? Are they for example encouraging the use of controlled vocabularies or are they using new concepts?

3.4.1.4 Assess technical aspects

The aim is to assess the extent to which the binding requirements help the different parties to securely and properly interconnect so that they can provide the trans-European digital public services.

As of this version of the guidelines, there is not one tool that would cover all these aspects. Currently, there is a first version on the Interoperable Europe Portal with which your results can be reported in the format prescribed in the annex of the regulation.

For now, the following example can give a first idea of the necessary questions to enable cross-border interoperability and therefore the first intervention points for identifying possible effects of the binding requirements on cross-border interoperability.

Example: Citizens with disabilities are still facing issues when using their national disability card in other EU countries. It is clear that these issues must be overcome. National disability cards should ideally become digital, but this raises some difficult interoperability questions.
For example:

1. Legal:
- How to ensure that any proof of disability (e.g. a digital card) issued by a competent authority in a Member State is also legally valid in another Member State?
- How to check that the content of a digital proof of disability is sufficient to prove compliance with procedural requirements in another Member State?
- Can the content of a cross-border proof of disability be exchanged cross-border in compliance with the General Data Protection Regulation?

2. Organisational:
- Which public organisation is entitled to issue proof of disability in a cross-border context (e.g. for a person living and working in different Member State)?
- How do public organisations request a proof of disability in a cross-border context?

3. Semantic:
- How to ensure that all the contents of this proof of disability are understandable?
- How to ensure that they have the same meaning for all participants?

4. Technical:
- Is the proof of disability issued in a format that can be processed by any requesting public organisation?
- Is there a technical system for the cross-border exchange of a proof of disability that is interoperable for all the parties involved in the exchange?

3.4.1.5 Best practices for detecting effects on cross-border interoperability

We present below some different approaches that are all based on the EIF and can be used as supporting tools when performing the assessment on cross-border interoperability. All these approaches comply with the legal requirement to perform the assessment in an 'appropriate manner'.

3.4.1.5.1 Best practice 1: binding requirements in policies (digital checks)

Binding requirements in legal texts are often not written within a multidisciplinary team, so knowledge of some aspects of digital implementation may be lacking. In such cases, the assessment is more of a discovery exercise in which the actors find out that the policy contains binding requirements and they become aware of subsequent implementation consequences that they might not have considered before. Furthermore, policies can be implemented in very different ways and are in many cases not even intended to be prescriptive as to the manner of implementation. This means that interoperability assessments on policies face two additional challenges:

- the people drafting the requirements might have little knowledge of digital implementation;
- many questions on digital implementations might still be very open because the process is still at its very beginning.

To address these challenges, the Commission and several Member States have in recent years translated the EIF into practical checklists that are easier for policymakers to understand and answer.[12] These questionnaires can be a starting point for policymakers wishing to discover how a policy can improve cross-border interoperability or risks that create new challenges for cross-border data flow. They can also guide policymakers on further steps to take when diving deeper into open issues (e.g. by involving experts with other professional backgrounds).

3.4.1.5.2 Best practice 2: specialised interoperability framework as reference

The work related to the single assessment can be easier if the organisation already has an overall interoperability governance aligned with the EIF. In this case, it is not necessary to take the EIF as a starting point to perform the assessment. Using the specialised interoperability frameworks (e.g. a NIF or a sectorial interoperability framework) to perform the assessment allows more value to be created and might make the approach more straightforward. The following are examples of interoperability governance processes that are aligned with the EIF and that you might recognise from your own experience.

- Some Member States have 'transposed' the EIF into a **national interoperability law** and added requirements that are specific to their Member State's context[13]. In such cases, the assessment can examine how the binding requirements would fit into this set-up.
- Some Member States have introduced **national interoperability reference architectures** that are aligned with the EIF (some of them are based on EIRA)[14]. The assessment could examine how the requirements fit into such national architectures.
- Some Member States have introduced **data governance frameworks** that incorporate the recommendations of the EIF. The assessment can be based on such practices.
- Some international organisations, like the World Bank, have used the EIF as a guiding principle for their initiatives, such as ID4D (Identification for development)which aims to help practitioners design and implement identification (ID) systems that are inclusive and trusted.

[12] Examples include practices in the Commission Tool #28 in the European Commission Better Regulation Toolbox; Denmark Digital-ready legislation (digst.dk); and Germany Digitalcheck: Refining the beta version step by step | DigitalService (bund.de).
[13] Examples can be found in the National Interoperability Framework O NIFO - National Interoperability Framework Observatory
[14] Examples include Poland, as well as Malta

Questions related to alignment with a national or specialised framework could include:

- how do the requirements fit into the interoperability governance in my organisation?
- how do the requirements fit into the architectural set-up?
- have we documented the affected data flows, as required by our national interoperability set-up?

3.4.1.5.3 Best practice 3: reusable tools

This starting point is relevant for all organisations that do not have a dedicated method for (interoperability) assessments or do have such a dedicated method but not one that is aligned with the EIF. It is also a valuable approach to assess the binding requirements more specifically (e.g. for checking compliance with a standard).

Several solutions have been developed to support an EIF-based assessment for different purposes. All these solutions will need to be adapted in order to fully support the interoperability assessments in the future, but they can already provide some helpful guidance today. If the assessment shows a high score, the effect on cross-border interoperability should be positive; a low level of alignment should trigger a low score. The following are examples of such tools.

- For assessments that concern a change to an existing digital public service: the Interoperability Maturity Tools (IMAPS, SIQAT and GIQAT). These are self-assessment tools to evaluate the interoperability maturity of digital public services at all government levels. They therefore offer valuable starting points but would need to be adapted as interoperability assessments are concerned with binding requirements, not specific digital public services. If choosing such a solution, online questionnaires to score interoperability maturity should be provided along with recommendations for the report.
- For assessments that concern a standard or a specification: CAMSS is a self-assessment tool to evaluate the interoperability support of chosen standards and/or specifications. An online questionnaire to score interoperability should be provided for the report.

3.5 Solution identification

A key principle emphasised in the IEA is the importance and value of reusing existing interoperability solutions (e.g. standardised building blocks or core vocabularies) to promote interoperability, harmonisation and effective use of public resources. This approach not only enhances cross-border interoperability but also contributes to cost-efficiency and consistency between public services in the EU.

The IEA states that organisations must, during the interoperability assessment process, evaluate the applicability and therefore reusability of existing solutions, and particularly those designated as ‘Interoperable Europe solutions’. These are interoperability solutions (e.g. standards, building blocks and core vocabularies) that have been vetted and recommended by the Interoperable Europe Board for their potential to improve or establish (cross-border) interoperability where needed.

The following are the primary objectives of this stage:

- to identify relevant Interoperable Europe solutions that could address the interoperability needs identified in your assessment;
- to evaluate how these solutions could be integrated into your service in order to enhance interoperability;
- to consider other catalogues of reusable solutions, whether at EU or national level, that might offer suitable approaches.

By prioritising the reuse of existing solutions, the development of interoperable services can be accelerated, duplication of effort can be reduced, and alignment with established standards and practices across the EU can be ensured.

In the following subsections, we will explore how to effectively identify, evaluate and potentially adapt these solutions in the context of your specific service and interoperability requirements.

3.5.1 Research and evaluate relevant Interoperable Europe solutions

As briefly mentioned above, **Interoperability Europe solutions** can be any reusable asset concerning legal, organisational, semantic or technical requirements to enable cross-border interoperability. Examples would include conceptual frameworks, guidelines, reference architectures, technical specifications, standards, services and applications, as well as documented technical components such as source code. **Interoperable Europe solutions** are interoperability solutions that have been recommended by the Interoperable Europe Board (expected in 2025).

3.5.2 Research relevant interoperability solutions

The Interoperable Europe portal (formerly Joinup) will eventually give access to all Interoperable Europe solutions, which will be marked accordingly and accompanied by corresponding search functionalities. The portal will further facilitate the search for other relevant solutions, including open-source solutions. However, many solutions are already available on the portal.

National portals can also serve as entry points where you can look for reusable solutions that enhance interoperability. If you want to keep yourself informed about solutions that might become relevant in the future, consider joining relevant communities where you will also find more information and can join discussions.

3.5.3 Evaluate and select relevant Interoperable Europe solutions

When evaluating and selecting from the identified solutions, the concrete objectives of the assessment identified in the first stage should be recalled. In general, this part of the assessment is performed in order to **increase the chances for interoperability** in the future when the requirements are implemented.

A common feature of Interoperable Europe solutions and interoperability solutions is that they can both be reused. Identifying reusable solutions early in the process can help to design requirements or adapt them in a way that would allow the reuse of these solutions and thus allow cost savings when implementing the requirements.

However, the assessment can in this step follow quite different agendas, including:

- **exploration**: keep things open enough to reuse (e.g. an Interoperable Europe solution);
- **information**: inform implementers through the assessment report of existing solutions that are potentially usable for implementation;
- **planning**: document the need to develop a reusable tool.

The solutions that are listed in an assessment report are not automatically binding for implementers. However, they can help implementers align and connect in their implementation efforts, save resources and automatically contribute to higher interoperability throughout the EU. To this end, you should not only assess whether and where reuse is possible but also, depending on the case, either make clear which solution(s) could or should be reused or if a new solution has to be developed. If possible, you could also contact your stakeholders again to check your results and get their feedback on possible solutions.

3.6 Reporting

Having completed your assessment of interoperability implications and identifying potential solutions, your next step is to document your findings and recommendations in an assessment report. This report is a key deliverable of the interoperability assessment process. On the Interoperable Europe Portal, it will be possible to fill in your report based on the information mandated by the Annex of the Act.

The specifics of drafting, reviewing and finalising the report are important, but they fall outside the scope of this chapter. For a detailed guide on how to structure and compile your interoperability assessment report (including specific requirements for content and format), please refer to Chapter 4 of this guide, where you will find instructions on creating a clear and informative report that can be acted upon and that meets the requirements set out in the IEA.

3.7 Follow-up

The completion of the interoperability assessment and the production of the report fulfil the mandatory requirement to perform an interoperability assessment. To draw the maximum benefit from performing the assessment, however, the conclusions and findings should be followed up – by making recommendations, communicating information on findings or taking concrete action.

The follow-up phase may also reveal new challenges or opportunities that were not apparent during the initial assessment. It is therefore important to remain flexible and to be prepared to adjust the action plan to reflect on actual real-world results and emerging insights.

Following through on the assessment findings allows organisations to ensure that interoperability assessments lead to meaningful improvements in the delivery of trans-European digital public services.

Summary

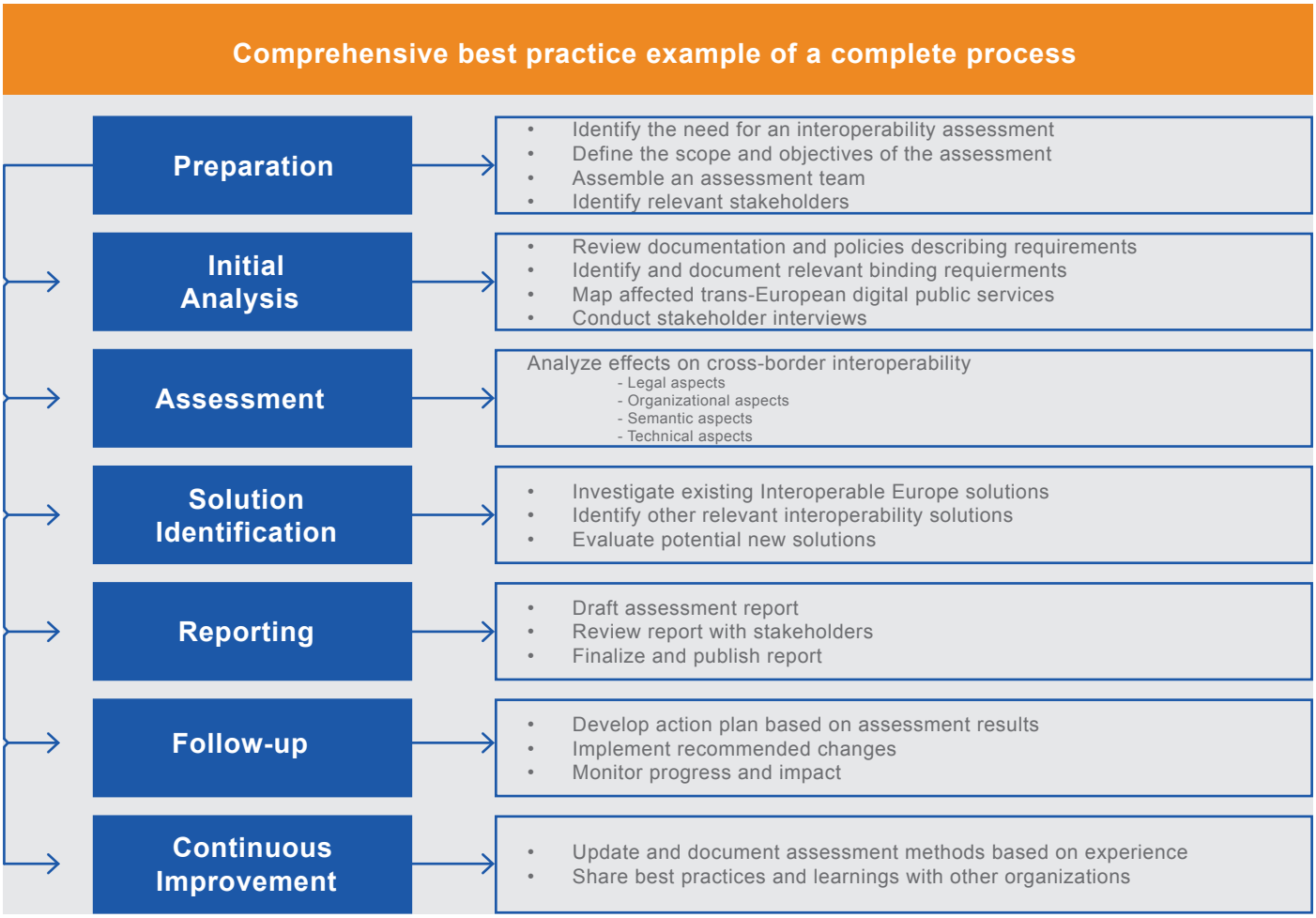
This chapter has outlined a comprehensive process for conducting an interoperability assessment, providing a detailed roadmap from initial preparation through to continuous improvement. The process described is a best practice approach that is suitable for complex projects that require a thorough evaluation of interoperability implications.

It is important to recognise that this detailed process serves as an ideal framework that provides a complete picture of what a full-scale interoperability assessment might entail. We nevertheless understand that not all projects or organisations will require or have the resources for such an extensive assessment.

As emphasised at the beginning of this chapter, the interoperability assessment process should be adapted to suit the specific needs, constraints and characteristics of your organisation and project. The scope and depth of your assessment should be proportionate to the scale and potential impact of the initiative you are evaluating.

Organisations should feel free to scale and tailor this process to meet their particular circumstances. This might mean focusing on certain phases more than others, combining steps or adjusting the level of detail in the analysis based on available resources and the complexity of the service being assessed. The key is to respect the core principles of the assessment while ensuring that the process remains manageable and delivers valuable insights within your specific circumstances.

An unpacked example of a best practice process is summarised in the following figure.



4 How to document an assessment in a comprehensive report?

This chapter aims to provide support on how to document the outcome of an interoperability assessment in a comprehensive report. The report has an important function in the assessment cycle: it is a relevant basis for decision-making and can then support implementation by providing, based on the report, suggestions for improving the cross-border interoperability of trans-European digital public services. Last but not least, it informs monitoring not only of the IEA but potentially also of other related digital government monitoring schemes.

Assessment report requirements of the Interoperable Europe Act

Public organisations can decide themselves how to organise the assessment process, but the legal text of the IEA sets very clear requirements for the assessment report[15], which:

- has to be published at least on an official website;
- has to be machine-readable;
- has to present the outcome of the assessment (including the items listed in the Annex to the IEA);
- has to be shared electronically with the Interoperable Europe Board;
- must not contain sensitive information.

The following subsections explain these re-quirements in further detail.

4.1 Publication on an official website

The assessment report must inform not only decision makers and implementers but also anyone else who might need to carry out related assessments in the future. It should therefore be publicly available on at least one official website. An official website in this case means a public website that is under the permanent responsibility of a public organisation, but it does not have to be the website of the organisation performing the assessment. The **national competent authorities designate such a public location**.

There is no legal requirement to set up a new website for this purpose. The report will also be available on the Interoperable Europe portal. Ideally, there should be links to the report on all websites where those that can benefit from reading the assessment report would usually go and find such information. Additional publication can also happen in other forms (e.g. in paper or specific journals).

4.2 Machine-readability

Machine-readable means that the information is **provided in a way that machines can easily process and understand.** This means that it is not enough for this information to be open and digitally accessible. Machine-readable data conforms to specific structures or formats that allow automated systems to interpret it without requiring human intervention.

Machine-readability for the purposes of assessment reports can be ensured using an appropriate **metadata schema**. In addition, comparability and reusability of the data reported can be enhanced by reusing standardised ways of representing the data (e.g., aligning it with corresponding semantic models currently under development). Using the tools offered by the Commission can help ensure machine-readability in the future. Such tools will include an online tool to **provide the report** directly on the Interoperable Europe portal. **An API and its documentation** could also be developed to exchange machine-readable data by plugging this API into any server.

Keep in mind that the requirement to issue the report in a machine-readable format does not cancel the obligation to make the report **accessible on a website in a human-readable format** designed to allow people to understand it directly.

[15] See Article 3(2), second sentence, and recital 22 IEA.

4.3 Machine-readability

The minimum content of the report is set out in the Annex to the IEA. This present guide only covers minimum content and does not cover any other elements. As one of the supporting tools for interoperability assessments, the Commission is also preparing a data model for assessment reports to be published on the Interoperable Europe portal. The table below contains some suggestions to help you issue the information in a machine-readable format. As already mentioned, this does not exclude simultaneous publishing in other formats.

Item		Usable data models
General information		
EU entity or public sector body providing the report and other relevant information		Core Public Organisation Vocabulary
Initiative, project or action concerned		This item should help the user understand the context of the interoperability assessment. It can, for example, provide links to other official websites where a legislative proposal or a call for tender will be published. EU institutions can, for example, link to the Have Your Say portal. For legal resources a relevant solution is About ELI - EUR-Lex (europa.eu).
Requirements		
Trans-European digital public services concerned		Core Public Service Vocabulary Application Profile
Binding requirements assessed		There are different practices for documenting requirements (e.g. user stories or use cases). These add value in different contexts (see also Chapter 3). A potential starting point: Core Criterion and Core Evidence Vocabulary, Core Assessment Vocabulary
Public and private stakeholders affected		In this item, it might be enough simply to state the category of stakeholder rather than each specific stakeholder. The tools currently under development by the Commission will provide a structured way to capture this information. As a semantic interoperability solution, one could use controlled vocabularies on public and private entities (e.g. core business vocabularies) and a domain ontology such as NACE[16] or COFOG[17].
Identified effects on cross-border interoperability		The tools provided by the Commission will capture this information by interoperability layer to follow the logic of the EIF.
	Identified effects on **legal** cross-border interoperability	Use the NIF or the EIF as a baseline and tick the most appropriate, providing an explanation if necessary (at least for the human-readable format): - Benefical - Negligible - Risky
	Identified effects on **organisational** cross-border interoperability	Use the NIF or the EIF as a baseline and tick the most appropriate, providing an explanation if necessary (at least for the human-readable format) - Benefical - Negligible - Risky
	Identified effects on semantic cross-border interoperability	Use the NIF or the EIF as a baseline and tick the most appropriate, providing an explanation if necessary (at least for the human-readable format) - Benefical - Negligible - Risky
	Identified effects on technical cross-border interoperability	Use the NIF or the EIF as a baseline and tick the most appropriate, providing an explanation if necessary (at least for the human-readable format) - Benefical - Negligible - Risky

Results	
Interoperable Europe solutions identified for use	These are not yet available but are planned to come with unique identifiers as well as links to the relevant pages on the Interoperable Europe portal. The report should include a list of Interoperable Europe solutions that have been identified as relevant when implementing the requirements. If no solution is assessed as relevant, this should also be noted.
Other relevant interoperability solutions, where applicable (including machine-to-machine interface)	The report should include a list of interoperability solutions other than identified Interoperable Europe solutions. The report should ideally include links to respective solutions on the Interoperable Europe portal, national or other relevant portals.
Remaining barriers to cross-border interoperability	The report should include a list of the remaining detected barriers to cross-border interoperability linked to the assessed binding requirements. Structured information could be combined with a brief explanation of why they cannot be addressed and what would be needed in order to overcome them.

4.4 Sharing with the Interoperable Europe Board

The data in reports is not only relevant for the decision that they prepare and for implementers of such decisions but is also very interesting steering data for the Interoperable Europe Board. If the reports contain high-quality data, this can be used to take data-based decisions on the coming priorities (e.g. through the Interoperable Europe agenda).

The IEA therefore requires reports to be sent electronically to the Board. Reports shared through the online tool for assessment reports provided on the Interoperable Europe portal will be considered as sent to the Board. The shared data would feed monitoring and become available to other interested parties through the Interoperable Europe portal. In the future, the data could be improved by API-driven data in order to provide updated assessment statistics (as shown in this example from France).

The version shared with the Board electronically should not contain sensitive information.

4.5 Protect sensitive information

Before publishing the report, public organisations should make sure that publication would not compromise protected personal data, intellectual property rights or trade secrets, public order or security. If binding requirements concern critical systems of Member States, the content of the report should remain sufficiently high-level that it does not contain information that could compromise the security of such systems (e.g. the description of the requirements could be relatively high-level and written in a way that does not compromise security). Another option would be to simply omit sensitive information. If the mere existence of a requirement is already sensitive information, then the report need not be published in its entirety and could instead be published in a redacted form together with an explanation of the legal basis for the exclusion (e.g. the reason why it is considered sensitive). The report nevertheless needs to be produced and securely shared with the concerned parties.

16 NACE (Nomenclature des Activités Économiques dans la Communauté Européenne) is a European industry stan-dard classification system to encode business classifications.

17 Classification of the functions of government, was developed in its current version in 1999 by the Organisation for Economic Co-operation and Development and published by the United Nations Statistical Division as a standard classifying the purposes of government activities.

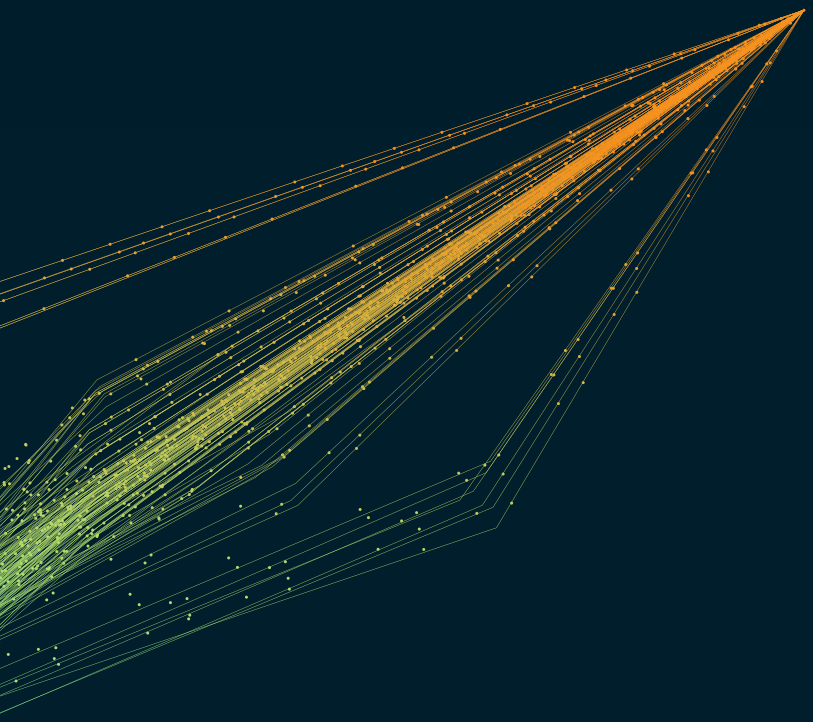
Summary

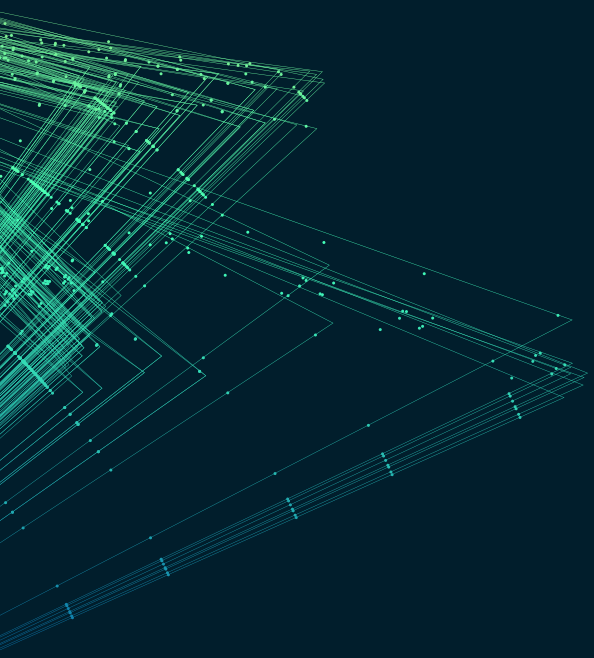
The report should summarise the binding requirements that have been assessed; the trans-European digital public services that have been identified; the identified effects on cross-border interoperability; and the recommended Interoperable Europe solutions or other interoperability solutions. It should also highlight any remaining barriers to interoperability that were identified during the assessment.

The Commission is required to provide technical tools to support the interoperability assessment, including an online tool to facilitate the completion of the report and its publication on the Interoperable Europe portal. All tools are planned to be based on an open data model derived from the common checklist for interoperability assessment reports (provided in the Annex of the Act).

The use of the tools is not mandatory but is highly recommended because they will also be embedded in the wider context of the Interoperable Europe portal, where the reports are published – thus making them accessible to more stakeholders such as public organisations and thereby increasing mutual learning and the reuse of data, concepts and solutions.

5 How to establish sound governance for the interoperability assessment process in your organisation?





The following chapter gives advice on governance for different aspects of creating, implementing and managing interoperability assessments for the first time in an EU entity or a public sector body. Given the diversity of structures and processes in public organisation and the diversity of topics that can be addressed in an interoperability assessment (legal, technical, semantic and organisational questions), this chapter cannot offer a one-fits-all solution but it does highlight general messages. These are non-binding because it is up to EU and national competent authorities to establish or help establish the governance regime around the assessment processes as well to issue any additional guidance that might be desired. This chapter will dive deeper into:

1. constituting a sound governance for assessments
2. taking the specific context into account
3. ensuring the sustainability of the process and mutual learning
4. (soft) enablers for interoperability assessments

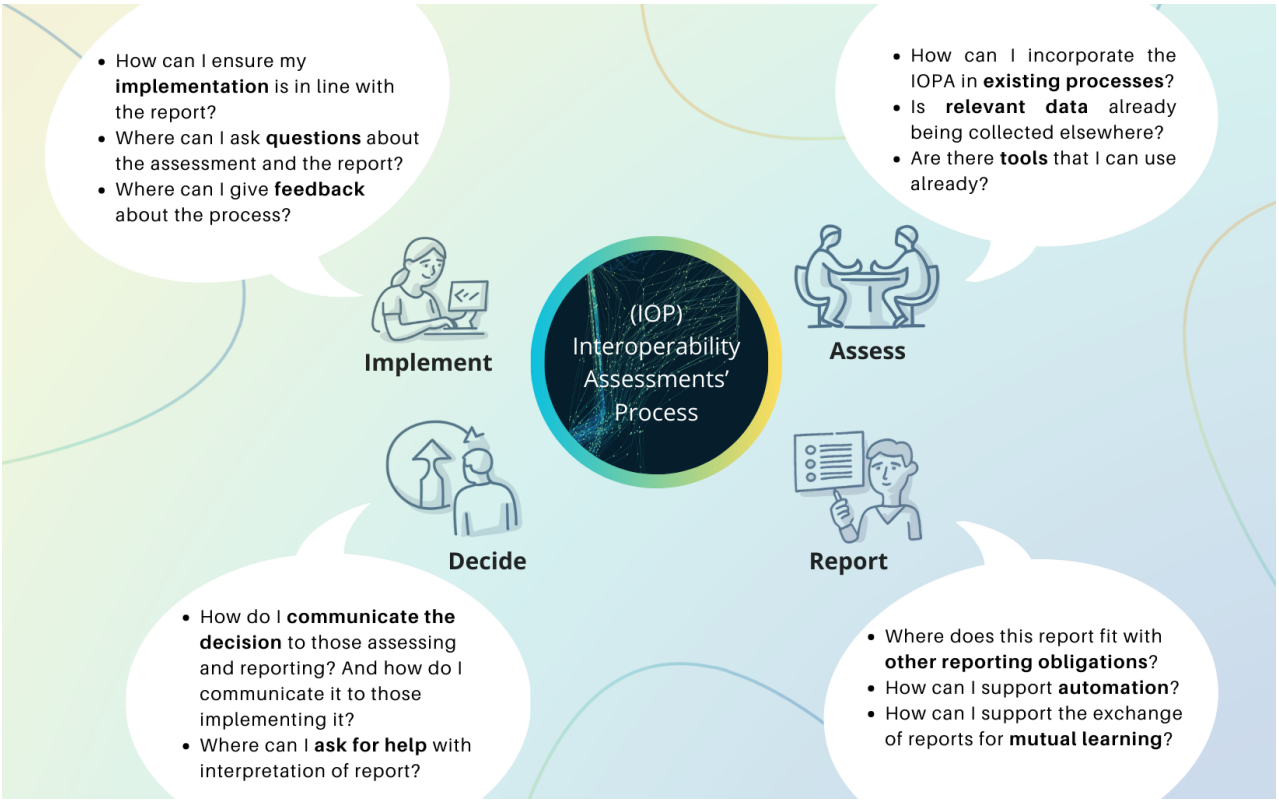
5.1 Constitution of sound governance

The IEA leaves the implementation of interoperability assessments to the administrative discretion of the public organisations concerned. This means that entities that conduct interoperability assessments can decide on the best process and its specificities – provided that they respect the common requirements set in Article 3 IEA.

When thinking about the governance of interoperability assessments in general, it is crucial not to view the interoperability assessment as an isolated exercise but rather as part of a larger ecosystem within the overall functioning of a public organisation (including policymaking processes, evaluation processes and the lifecycle of digital public services) and, in doing so, to link it to the governance of these processes and of the IT lifecycle.

This is part of the digital-ready policy-making mindset[18]– the process of formulating digital-ready policies and legislation by considering digital aspects from the start of the policy cycle, ensuring that they are ready for the digital age, future-proof and interoperable. For example, in the cases mentioned in these guidelines, the cultural divide between the legal and the digital world may cause unexpected implementation costs since the effects of binding requirements were not considered early enough. Here, the digital-ready policymaking approach aims at reducing this divide by helping the best use of digital technologies and data to smoothly implement new requirements to their intended effect.

The starting point should therefore be to integrate the interoperability assessment into any existing processes. These can include consultation with stakeholders, digital checks or already existing assessment processes. Keep in mind that, the earlier the assessment is performed, the easier it will be to address any potential cross-border interoperability issues and thus improve the quality of the affected services. Therefore ensure, when establishing the process, that the assessment is conducted as early as possible.



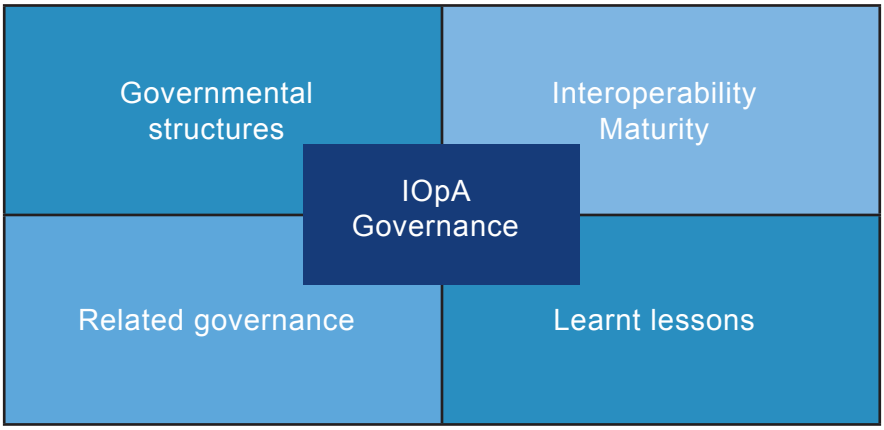
[18] More information can be found here: Digital-ready Policymaking | Interoperable Europe Portal, as well as in the practical examples mentioned in Chapter 3: practices in the Commission Tool #28 in the European Commission Better Regulation Toolbox; Denmark Digital-ready legislation (digst.dk); and Germany Digitalcheck: Refining the beta version step by step | DigitalService (bund.de).

Continuous governance of individual assessments might also be needed. Efficiently aligning personnel efforts with governance processes (involving various organisational levels) can significantly reduce the work required. To this end, Member States can decide themselves how to allocate internal resources and shape collaboration[19].

According to Article 17 IEA, each Member State's single point of contact (SPOC) must support public sector bodies within the Member State in setting up or adapting the processes by which they carry out interoperability assessments. The interoperability coordinators in the Union entities have a similar task (Article 18 IEA)[20]. If you are unsure how to integrate the assessment process or about governance in general, consider contacting your SPOC to see if they have information on how other public organisations have chosen to set up the process. The Commission is also planning to collect good practices, training materials and other opportunities to exchange information on the Interoperable Europe portal.

5.2 Context dependency

The future setting of the assessment process depends very much on the context within which it is to be integrated. There are nevertheless some general points to be aware of.



5.2.1 Governmental structures

Each public organisation will have to integrate the interoperability assessment into different governmental structures – some more centralised, some more decentralised. Especially in Member States with a federal state structure, there might be several competent authorities that will need to work together with their SPOC so that information can flow consistently. It is therefore important, when establishing the processes in a public organisation, to understand the particular government setting and to follow the guidance of the respective SPOCs or interoperability coordinators.

[19] 'To ensure the effectiveness and efficiency of this task, a Member State can decide on the internal resources and the collaboration between its public sector bodies necessary to support carrying out those interoperability assessments'. (recital 16 IEA).

[20] 'The single point of contact shall have the following tasks (…) to support public sector bodies within the Member State to set up or adapt the processes by which they carry out interoperability assessments referred to in Article 3 and in the Annex'; and Article 18 IEA 'The interoperability coordinator shall provide support across that Union entity with regard to setting up or adapting internal processes to implement the interoperability assessment.' (Article 17 IEA).

5.2.2 Interoperability maturity

An organisation's interoperability maturity also influences the interoperability assessment process. Organisations with higher levels of interoperability maturity may require fewer resources for these assessments due to existing strategies and tools. These can include the implementation of NIFs, IT strategies, reference architectures, core vocabularies or established consultation processes. If there are already interoperability assessment processes in place (e.g. you are using tools to assess the interoperability maturity of existing digital public services), consider how these processes and/or their results can be integrated into the interoperability assessment process. If this does not apply to you, see if you can combine the implementation of interoperability assessments with measures that would strengthen your organisation's overall interoperability maturity.

5.2.3 Lessons learnt from previous cases

You may identify certain processes within your organisation that are already highly interoperable. Regardless of whether the interoperability applies to the cross-border level or not, you should make sure to learn from these cases because the same mechanisms might be applicable to other use cases. It does not matter if a specific case does not match your use case perfectly; you can still adapt some parts of the process or examine these cases in order to gain a better understanding of interoperability and its related processes. Related assessments could also be found in the field of IT security or data protection, and serve as helpful examples.

5.2.4 Existing related governance

Article 17(4) IEA requires Member States to set up the necessary cooperation structures between all national authorities involved in implementing the IEA. These can be based on existing mandates and processes. There may already be processes in place to take some decisions that legally, contractually or technically bind public organisations, and these processes may be subject to existing governance structures and procedures such as impact assessments. Try to identify the place of the interoperability assessment in these processes, e.g. by identifying other relevant assessments in order to find the most relevant entry point for interoperability assessments and to identify 'sibling assessments'. Learning from similar assessments would also help you to determine whether it is necessary to conduct an interoperability assessment in your case or if the obligation has been fulfilled by a sibling or preceding assessment.

5.3 Sustainability, continuous improvement and mutual learning

Like any organisational process, the interoperability assessment process and its governance must be sustainable and improved over time. Methods such as the OODA (Observe-Orient-Decide-Act) loop or the PDSA (Plan-Do-Study-Adjust) cycle can help with this.

As you gain experience with interoperability assessments, take time to reflect on and document the lessons learnt for the entire process as well as the individual steps. What worked well? What challenges did you face? How can the assessment methods be refined? This reflection might prompt you to update your assessment approach so that future evaluations benefit from past experience. Consider creating a 'lessons learnt' document or updating your internal assessment guidelines to capture these insights.

To this end, also consider the implementation of the binding requirement. Even if you are developing your master plan of implementation very precisely, you might overlook aspects which could in practice

impair implementation and the overall process. Install feedback loop mechanisms to communicate this information to the people who are actually carrying out the assessments. A welcome by-product is that you will spread the ownership of the whole assessment to everybody in the process chain. This should increase motivation and boost the quality of the results of the assessment. Feedback loops are also the basis for a continuous improvement of the process and should therefore go beyond individual interoperability assessments.

More advanced organisations can also use methods such as the OODA loop or the PDSA cycle. For example, the interoperability assessment governance could include a mechanism to observe the implementation of the adopted interoperability assessment process at each individual stage, the interrelationship of these different stages and one observation of the overall process (including its governance). These methods should be continuously examined with a view to improving the effectiveness and efficiency of the interoperability assessment process.

It is also important to share best practices and lessons learnt with other organisations. Interoperability is a collective endeavour and the exchange of knowledge can accelerate improvements across the entire EU public sector. Consider contributing to the Interoperable Europe Community[21] or engaging in peer exchanges with other public administrations. The SPOCs and interoperability coordinators at national and EU level can play a facilitating role (especially in larger government structures that include several competent authorities).

5.4 (Soft) enablers

Some more general measures can also make a difference when implementing interoperability assessments.

5.4.1 Organisational culture

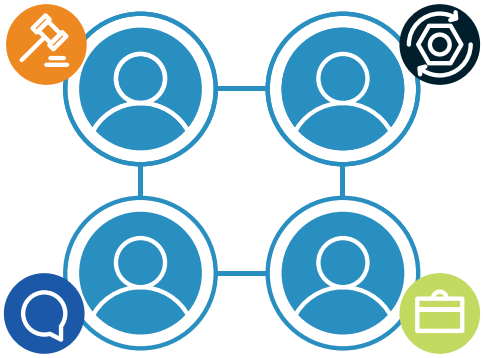
When it comes to working on interoperability, the cultural aspect of organisations is also crucial. Interoperability is about working together, breaking down not only technical silos but also organisational silos. A specific mind-set is needed in order to recognise the value of interoperability. In this sense, interoperability assessments are more than technical processes because they can be pivotal in driving organisational change. Through these assessments, organisations gain a deeper understanding of how various systems interact and can make more informed decisions not only about IT developments but also about policy developments in general. When considering how to conduct an interoperability assessment, you should therefore also consider your organisation's mind-set – and the extent to which its members are aware of and open to interoperability considerations.

[21] Information on the Community will be increasingly provided on the Interoperable Europe portal.

5.4.2 Skills for interoperability assessments

Performing interoperability assessments requires specific skills that should be available in the team(s) that will carry out the specific assessment. In general, we recommend that you have multidisciplinary teams, because assessments might raise issues from different fields – ranging from policy matters to IT or legal questions[22]. A multidisciplinary team consists of individuals with varied expertise who work on the tasks at hand collectively. It can include experts on the specific subject (e.g., health, taxation, or education), legislative drafters, service designers, business rules specialists, etc. As a starting point for determining which profiles you might need, you can consider the different interoperability dimensions (legal, organisational, semantic and technical).

It might be difficult for smaller public organisations to find suitable experts. It is therefore important to plan flexible support measures, which could go as far as the delegation of carrying out the interoperability assessments. However, the delegation does not imply the transfer of legal responsibility.



5.4.3 Explore possibilities for reuse and automation

Also make sure that only relevant data are collected for the interoperability assessment in order to minimise data processing effort and resources. Make sure that the collected data can be reused as much as possible for related assessments and processes.

Reuse as much as possible the tools provided by the Commission to automate these tasks. Complement them where necessary to maximise their automation.

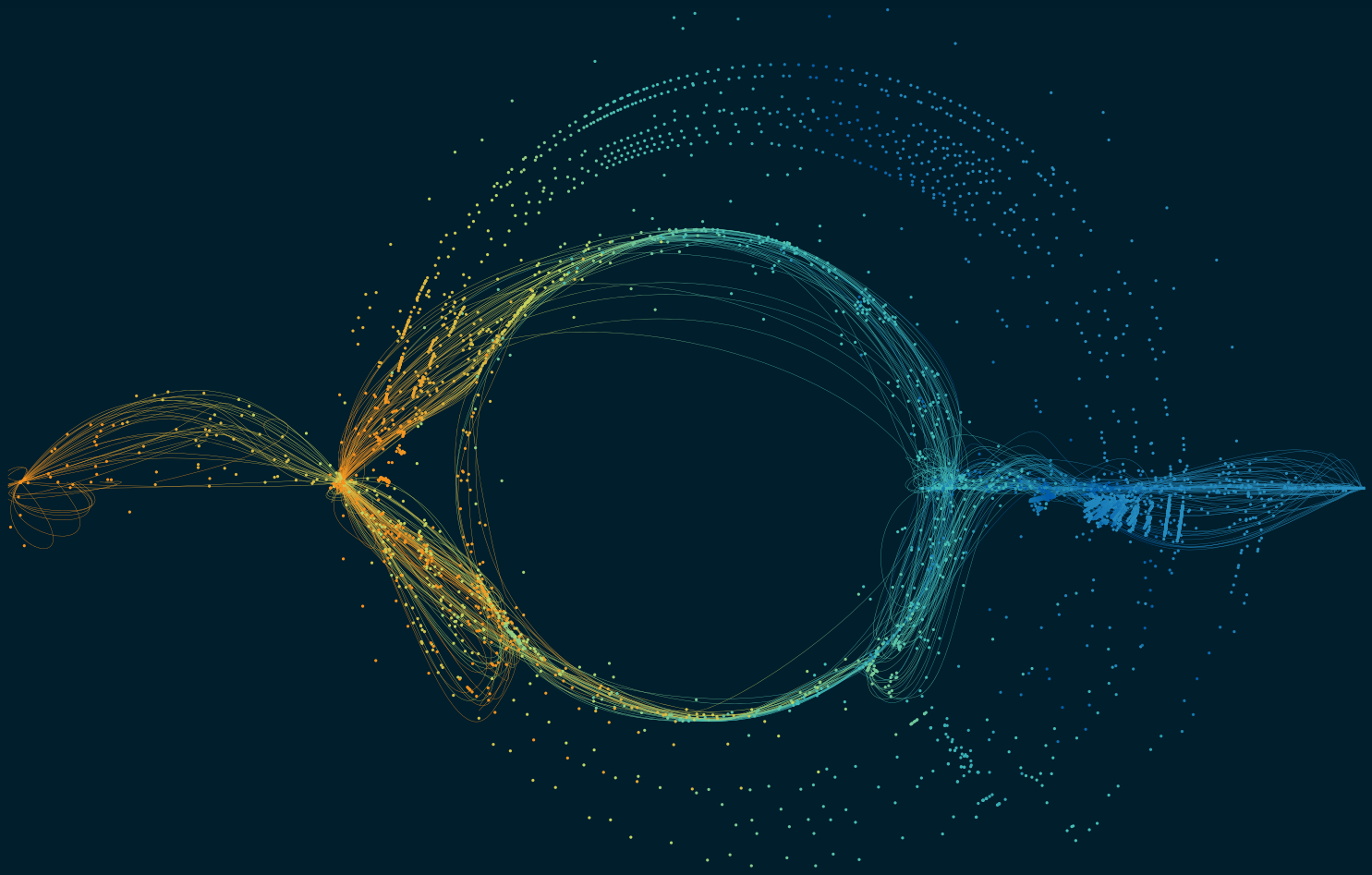
Summary

In order to harvest the full value of interoperability assessments, it is necessary to establish a sound governance regime for the entire process. This should build on the integration of assessments in existing processes (whether these are well-established and obvious, or require some exploration). The SPOC in a Member State or the interoperability coordinator in an EU entity can facilitate the exchange of knowledge with other public organisations that are also establishing processes.

It is important to consider the context in which these assessments take place because the government structure, existing governance processes that are related to the assessments or existing use cases might offer valuable insights as well as possibilities for reuse. It is also advisable to consider the organisational culture in which the assessment will be set as well as the existing skills.

[22] For inspiration, see Issue paper on multidisciplinary teams.

6 Further resources and further development of these guidelines



These guidelines are supposed to be a first starting point when dealing with interoperability assessments. Some additional resources are already available. Others are in development or will be developed in the coming months. This chapter provides a short overview of the available and future resources and ends with a short elaboration on the future development of the guidelines.

6.1 Constitution of sound governance

Interoperable Europe portal
The Interoperable Europe portal is the central point for knowledge exchange, both for the IEA in general and for specific topics (e.g. interoperability assessments and even individual interoperability solutions).

EIF
The European Interoperability Framework is the guiding document on interoperability of public services in the EU. A fundamental feature of the EIF is that it defines interoperability not only as a technical issue but also as an issue that consists of four dimensions (legal, organisational, semantic and technical). It makes 47 recommendations around 12 principles and its further development will be steered by the Interoperable Europe Board.

A short overview can be watched here: New European Interoperability Framework (youtube.com)

EIF Toolbox
The EIF Toolbox has been designed to be guidance for national public administrations and to equip them with the tools they need to align their NIF with the EIF in order to promote interoperability at national and EU level. You can also find solutions grouped by principles.

Better Regulation Guidelines and Better Regulation Toolbox
The Better Regulation Guidelines set out the principles that the Commission follows when preparing new initiatives and proposals, and when managing and evaluating existing legislation. The Guidelines apply to each phase of the legislative cycle. They are accompanied by the Better Regulation Toolbox, which puts the guidelines into practice and presents guidance, tips and best practices.

Interoperable Europe Academy
The Interoperable Europe Academy (IOPEU Academy) is an educational initiative promoted by the Commission. Its main objective is to boost public administrations' advanced digital skills in the interoperability field. It does this by offering online, self-paced massive open online courses (MOOCs) (including courses on interoperability in general, the EIF and the European Interoperability Reference Architecture).

6.2 Future tooling

Online tools provided by the Commission , which are to be used voluntarily, can assist in carrying out the interoperability assessment, and in producing and publishing the corresponding report. It is highly recommended to use the Commission's tools because they will also be embedded in the wider context of the Interoperable Europe portal where the reports are published – thus making them accessible to more stakeholders (such as public organisations) and thereby increasing mutual learning and reuse of data, concepts and solutions. If you want to contribute to the development of these tools by sharing your experience and ideas, you could consider joining the workshops promoted on the Interoperable Europe portal (e.g. the Interoperable Europe portal user group meetings).

6.3 Future development of guidelines

This current edition of the guidelines is intended to guide you not only in conducting the assessments themselves but also in setting up the assessment processes and including them in your existing processes. The assessments have not yet become mandatory, so we cannot say for certain what these processes will look like in your particular case. The guidelines will therefore continue to evolve, adapting to the new circumstances once the assessments have become mandatory, i.e., the first assessments have been conducted and we can learn about them in your reports. We therefore encourage you to document your experience not only in following the guidelines but also with carrying them out, and to let us have your feedback. You can do so by joining our collection on the Interoperable Europe portal, where you can always find the latest version of the guidelines and additional useful information, and where you can join discussions with other practitioners.

Your experiences will, together with the feedback gathered from the Interoperable Europe Board and its working groups, help us produce the next edition of these guidelines. Assessments can vary greatly in scope and objectives and the guidelines should reflect current practices. The guidelines will therefore be frequently revised so that they remain as relevant and useful as possible.

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