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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

Accompanying the document

**Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE
COUNCIL**

**laying down measures for a high level of public sector interoperability across the Union
(Interoperable Europe Act)**

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Table of Contents

1. INTRODUCTION.....	6
1.1. Societal context	7
1.2. Political context.....	7
1.3. Legal context	9
2. PROBLEM DEFINITION	10
2.1. What is the problem.....	11
2.2. What are the problem drivers?	15
2.2.1. Inefficient governance of interoperability efforts	15
2.2.2. Lack of common minimum interoperability specifications, shared solutions, standards	17
2.2.3. Lack of an ‘interoperability by default’ approach in the design and implementation of EU policies	19
2.3. How will the problem evolve in the future?	21
3. WHY SHOULD THE EU ACT?	21
3.1. Legal basis	21
3.2. Subsidiarity: Necessity of EU action.....	23
3.3. Subsidiarity: Added value of EU action.....	23
4. OBJECTIVES: WHAT IS TO BE ACHIEVED?	24
4.1. General objective.....	24
4.2. Specific objectives.....	25
5. WHAT ARE THE AVAILABLE POLICY OPTIONS?	28
5.1. What is the baseline from which options are assessed?	28
5.2. Option 1: Non-legislative	28
5.3. Option 2: Legislative initiative - New legal framework for an interoperable EU public sector infrastructure and strengthened EU policy coordination.....	29
5.4. Option 3: Legislative initiative - New legal framework introducing a common European Interoperability Architecture for all public services.....	32
5.5. Options discarded at an early stage	33
6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?.....	33
6.1. Impacts of Option 0 - baseline scenario	34
6.2. Impacts of Option 1: Non-legislative actions	35
6.3. Impacts of option 2: New legal framework for an interoperable EU public sector infrastructure	39
6.4. Impacts of option 3: Legal interoperability requirements for public sector bodies	42

7. HOW DO THE OPTIONS COMPARE?	44
7.1 Coherence	46
7.2 Effectiveness.....	47
7.3 Efficiency	48
7.4 Subsidiarity.....	50
7.5 Stakeholder support expected.....	51
8. PREFERRED OPTION.....	51
9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?	54
ANNEXES	60
Annex I. Procedural information	60
Lead DG: Directorate General for Informatics	60
Organisation and timing.....	60
Consultation of the RSB	60
Evidence, sources and quality	63
Annex II. Stakeholder consultation	65
Summary of the stakeholder strategy.....	65
Summary of the feedback on the Inception impact assessment.....	66
Consultation activities for the EIF evaluation and Impact assessment.....	67
Results: EIF Evaluation	70
Results: Impact Assessment.....	73
Input of the Expert Group co-design process	81
Annex III. Who is affected and how?.....	85
Citizens	85
Businesses and SMEs	85
Public sector authorities	86
Annex IV. Methodology.....	86
Overview of information and data sources	86
Primary data	87
Secondary data	90
Data validation	91
Methods.....	92
Main limitations	98
Annex V. Recommendations of the Expert group on interoperability of public services.....	98
Introduction.....	98
Purpose and scope of these policy recommendations	99

We share a common vision for the next interoperability policy	100
Chapter I: Reinforce the European cooperation on interoperability	100
Chapter II: Make the most of interoperability for better EU policies	102
Chapter III: Upgrade the current EU interoperable solutions offering	105
Annex VI Political and policy context	106
History of Interoperability Policy	110

Glossary

Acronym	Meaning
AI	Artificial Intelligence
CEF	Connecting Europe Facility
CEMR	Council of European Municipalities and Regions
CEPS	Centre for European Policy Studies
CIO(s)	Chief Information Officer(s)
COVID-19	Coronavirus disease
CPSV	Core Public Services Vocabulary
DESI	Digital Economy and Society Index
DG	Directorate-General
DG DIGIT	Directorate-General for Informatics
DIF	Domain-specific interoperability framework
DIGIT.D2	Directorate-General for Informatics, Directorate D Digital Services, Unit D2 Interoperability
DSM	Digital Single Market
EC	European Commission
EDIH	European Digital Innovation Hubs
EEA	European Economic Area
eID	Electronic identification
EIF	European Interoperability Framework
EIF4SCC	European Interoperability Framework for Smart Cities and Communities
EIRA	European Interoperability Reference Architecture
EIS	European Interoperability Strategy
EQ	Evaluation question
EU	European Union
GDPR	General Data Protection Regulation

HORIZON 2020	The EU funding programme for research and innovation (2014 - 2020)
HORIZON Europe	EU's key funding programme for research and innovation (2021 to 2027)
ICT	Information communication technology
IMAPS	Interoperability Maturity Assessment of a Public Service
ISA ²	Programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens
LORDI	Local and Regional Digital Indicators Framework
NGOs	Non-governmental organisations
MIMs	Minimal Interoperability Mechanisms
NIFs	National Interoperability Frameworks
NIFO	National Interoperability Framework Observatory
OECD	Organisation for Economic Co-operation and Development
OSLO	Open Standards for Linked Organisations
PSI Directive	Directive on the Reuse of Public Sector Information (subsequently revised and renamed as the Open Data Directive 2019)
ROI	Return on Investment
RFS	Request for Services DIGIT/1/2020
SDG	Single Digital Gateway
SMEs	Small and medium-sized enterprises
SRSP	Structural Reform Support Programme
TSI	Technical Support Instrument
UN	United Nations

1. 1. INTRODUCTION

This Impact Assessment accompanies the legislative proposal for an Interoperable Europe Act. The initiative aims to **address the issues and capitalise on the opportunities** arising from the ever-increasing digital transformation of the public sector in Europe. It focuses on interoperability, which is a cross-cutting enabling factor and a key precondition for digital transformation to work across borders and sectors.

In addition, in the context of the European Strategy for Data, it will contribute to unleash the potential of the new existing and proposed instruments (namely the Data Governance Act and the proposal for Data Act) by facilitating their **implementation through** the setup of an **interoperability governance** and an **ecosystem of interoperability resources**.

Interoperability is the ability of systems and organisations to cooperate, share information and knowledge across functional, sectorial and physical borders. It goes beyond technical means; it needs **agreements between different organisations**, agreed data descriptions, **laws** that allow for those data exchanges and a culture of cooperation¹. Moving beyond its technical aspects, it expresses a powerful concept: interoperability enables to have **solid common digital foundations on which it is possible to build better digital services**.

Digitisation is reshaping all aspects of society, including the way public administrations work with one another and how public services are delivered to citizens, business, and to one another across borders and sectors. In the same way, EU citizens' and businesses' expectations of their governments are shifting. When travelling, submitting their tax declarations, accessing healthcare services, enrolling in a foreign university, setting up a business in another EU country, citizens and businesses want the same user-friendly, secure, seamless experience from their public services as from any other digital service. The role of interoperability in enabling the achievement of public values should not to be underestimated.

The aim of strengthening interoperability in this area is to ensure digital public services work across borders for all in Europe, by fostering a coherent, **human-centric approach** to interoperability built in by design from **policymaking** to policy **implementation** all over Europe, establishing a clear governance and an ecosystem of solutions and specifications.

Interoperability is fundamental in making this a reality. A human-centric approach is what allows, for instance, a Swedish citizen to have her academic title - acquired in Germany - automatically recognised and valid in Italy, where she can work, and then retire - in Spain - where she enjoys her pension benefits and health coverage. Along the same lines, without interoperability across all Member States of the European Digital COVID certificates, we would not have been able to re-open so fast safe travel across borders in Europe². Interoperability determines the effectiveness of the emerging – virtual and physical – data infrastructures across Europe³.

Regulating public **sector interoperability** is also a fundamental prerequisite for enhancing and completing the Digital Single Market. This initiative aims to focus on improving the digital infrastructure⁴ supporting interoperability cross-borders in Europe in line with the European Strategy for Data.

In summary, the proposed Interoperable Europe Act would focus on the following areas:

¹ The four core layers of the European Interoperability Framework: legal, organisational, semantic and technical.

² [EU Digital COVID Certificate | European Commission \(europa.eu\)](https://ec.europa.eu/digital-story/eu-digital-covid-certificate).

³ For example, transport networks, energy, justice and home affairs, health.

⁴ Digital public service infrastructure is understood in very broad terms and underlines legal, organisational, semantic, technical requirements.

- Ensure a coherent, human-centric EU approach to interoperability from policymaking to policy implementation;
- Establish an interoperability governance structure designed to enable public administrations from all levels and sectors as well as private stakeholders to work together — with a clear mandate to agree on shared interoperability solutions (e.g. frameworks, specifications, applications, or guidelines); and,
- Co-create an ecosystem of interoperability solutions (open standards, data and services) for the EU's public sector, so that public administrations at all levels in the EU and other stakeholders can contribute to and re-use such solutions, innovate together and create public value.

1.1. 1.1. Societal context

Member States and the European Union have been working for more than two decades⁵ to support the modernisation of administrations through digital transformation and foster the deep interconnections needed for a truly European digital space. The European Commission in particular has had five dedicated financing programmes to support the development of interoperability (including the ISA and ISA² programs) and will continue to develop it through the Digital Europe Programme. A European Interoperability Framework (EIF) has been in place for more than 15 years to support governments in building integrated public services.

Member States have increasingly called for strengthened EU level cooperation and coordination of interoperability relevant aspects across policies⁶. The COVID-19 pandemic increased the speed of digitalisation, pushing public administrations to adapt to the online paradigm, lockdown after lockdown⁷. The digital transformation of the public sector enabled by interoperability is therefore seen as integral to the post-COVID recovery⁸.

While resilience is the capacity to act under stress and sovereignty is the capacity to act independently, interoperability is an enabling factor for both of them, as the pandemic has exposed and Member States have recognised⁹. Interoperability is mentioned repeatedly in the key reform areas around digital transformation included by Member States in their plans for the Recovery and Resilience Facility¹⁰ where an unprecedented EUR 50 billion¹¹ are set aside for digital transformation of the public sector.

1.2. 1.2. Political context

The importance of ensuring interoperability of network and information systems supporting digital public services and data has been mentioned and recognised by the European Council and Member States on numerous occasions over the last few years. The Tallinn Declaration of

⁵ See more in Annex VI: History of interoperability policy.

⁶ The Member States' network of CIOs repeatedly discussed the need of an 'EU Government interoperability platform' to improve coordination and support implementation of data and data exchange related EU legislation (for instance Open Data Directive, Single Digital Gateway Regulation).
⁷ A [McKinsey survey](#) suggests that COVID-19 has accelerated digitalisation by 7 years globally. The European Council and the European Parliament both recognised the pivotal role of digitalisation to relaunch and modernise the EU economy following the COVID19 crisis (see Annex VI).

⁸ Europe's moment: repair and prepare for the next generation ([COM\(2020\) 456](#), 27 May 2020).

⁹ See the '[Berlin Declaration](#)' signed by ministers of government digitalisation in December 2020.

¹⁰ [Regulation \(EU\) 2021/241 - 'Recovery and Resilience Facility'](#).

¹¹ Calculations based on the Recovery and Resilience Plans as approved on 1 December 2021 on the basis of the methodology for digital tagging set out in Annex IV of the RRF, which includes specific fields for e-government, digital public services and local digital ecosystems. These are temporary and without prejudice to the final figures that will only be available once the 27 plans have been adopted.

6 October 2017 on eGovernment¹², the conclusions of the European Council conclusions of 9 June 2020 on ‘*Shaping Europe’s digital future*’¹³, or of October 2021¹⁴ or the 2020 Berlin Declaration on ‘*Digital Society and Value-Based Digital Government*’¹⁵ all point to the need to ensure interoperability to support the exchange of data, ensure digital sovereignty, and strengthen resilience of the public sector.

Strengthening the interoperability of public services in Europe is part of the work on the Commission’s priority to create ‘*A Europe fit for the digital age*’.

It is one of the initiatives announced in the 2020 digital strategy ‘*Shaping Europe’s Digital Future*’¹⁶, where the Commission promises to present a reinforced interoperability strategy ‘*to ensure coordination and common standards for secure and borderless public sector data flows and services*’. At the same time, in the connected European Data Strategy¹⁷, one of the actions identified is ‘*(as regards public services) a strengthened European Interoperability Framework*’.

The Commission, in its Communication ‘*2030 Digital Compass: the European way for the Digital Decade*’ (9 March 2021)¹⁸ pointed out the need to establish a strengthened EU interoperability policy to support the digitalisation of public services which is one of the four cardinal points of the Digital Compass. Consequently, the Commission included the initiative in its **2022 work programme**, aiming to present a legislative proposal by Q2 2022 (see REFIT annex)¹⁹.

The European Council²⁰ and the European Parliament²¹ both recognised the pivotal role of digitalisation in helping to relaunch and modernise the EU economy following the COVID-19 crisis. Interoperability is key to the digitalisation of public sector.

In October 2021, the expert group on Interoperability of European public services²², which consists of representatives of digital transformation leaders in the Member States’ national administrations, unanimously endorsed the **recommendations for the next interoperability policy** (see Annex V) and called on the Commission to take concrete actions through:

- A reinforced shared governance of EU interoperability (Member States / Commission);
- Interoperability and digital-ready by-default rules to improve EU policymaking;
- A better offering of interoperability ‘products’ for reuse by public administration.

¹² Tallinn Declaration on eGovernment at the ministerial meeting during Estonian Presidency of the Council of the EU - 6 October 2017.

¹³ [Council conclusions on shaping Europe’s digital future - 9 June 2020.](#)

¹⁴ [European Council conclusions of October 2021.](#)

¹⁵ [Ministerial Declaration ‘Digital Society and Value-Based Digital Government’ Berlin 2020.](#)

¹⁶ [Shaping’s Europe Digital Future - COM\(2020\)67 February 2020.](#)

¹⁷ [European Data Strategy - COM\(2020\)66 final.](#)

¹⁸ [Digital Decade.](#) The point is also mentioned in the related proposed Decision establishing the 2030 Policy Programme ‘Path to the Digital Decade’, COM/2021/574 final.

¹⁹ [COM\(2021\) 645 page 7.](#)

²⁰ [A roadmap for recovery – towards a more resilient, sustainable and fair Europe, endorsed on 23 April 2020.](#)

²¹ [Resolution of 17 April 2020 on EU coordinated action to combat the COVID-19 pandemic and its consequences.](#)

²² [Registry of expert groups - Interoperability of European public services.](#)

1.3. 1.3. Legal context

Although interoperability has been explicitly mentioned as a precondition for numerous EU policies²³, the topic has not been addressed by binding overarching EU policy provisions.

Past EU interoperability programmes helped find a common understanding on interoperability and to build and test solutions in cooperation with Member States that are today part of many EU policies, for example INSPIRE (Directive 2007/2/EC)²⁴ and eIDAS (Regulation (EU) No 910/2014)²⁵.

The non-binding European Interoperability Framework has been part of the EU interoperability policy since 2010 and has been revised last in a communication issued in 2017 (COM/2017/134). The EIF encompasses a set of principles, models and recommendations aimed at guiding the EU public administrations, as well as all levels of administration, in the design and provision of key digital and **interoperable public services**. The implementation of the EIF has been supported by different funding instruments, like the ISA² programme and, more recently, by the Digital Europe Programme.

However, the recent evaluations of the ISA² programme and the EIF show that the goal of having ‘interoperable European digital services’ is still far from being achieved and the informal approach to collaboration is not enough to allow Member States to deliver on the high level of ambition for digital public services set out in the Digital Decade communication and expected by citizens.

Furthermore, recent initiatives further demonstrate that a coherent approach towards interoperability is key to most EU policies but especially relevant for the successful implementation of EU digital policies²⁶ and funding programmes:

- 2018 – the **Single Digital Gateway**²⁷ and the once-only principle; Regulation on the **free flow of non-personal data** (FFD)²⁸;
- 2019 – the **EU Cybersecurity Act**²⁹ and the **Open Data Directive**³⁰;
- 2020 – **Digital Services Act**³¹ and the **Data Governance Act**³²;
- 2021 – proposals for a framework for a **European Digital Identity**³³; the **EU Digital COVID Certificate Regulation**³⁴; a Regulation laying down **harmonised AI rules**³⁵;
- 2021 – Proposal for a Regulation (**Data act**); Proposal for the 2030 Policy Programme ‘**Path to the Digital Decade**’³⁶; and,
- **Funding programmes**: Digital Europe Programme, Recovery and Resilience Facility, Horizon Europe, Technical Support Instrument and other instruments (regional development, agriculture, etc.).

²³ See pp. 139-140, CEPS (2021), [Study supporting the evaluation of the implementation of the EIF](#).

²⁴ [ISA² action: Improving cross-border exchange location information](#), more examples can be found in the ISA² programme evaluation, COM(2021)965.

²⁵ [Final Sustainability Action Plan](#).

²⁶ It is also relevant for ‘older’ policies like the Web-accessibility Directive, Directive (EU) 2016/2102, and GDPR (Regulation (EU) 2016/679) that set requirements (also) for public sector IT infrastructures.

²⁷ [Regulation \(EU\) 2018/1724](#).

²⁸ [Regulation \(EU\) 2018/1807](#).

²⁹ [Regulation \(EU\) 2019/881](#).

³⁰ [Directive \(EU\) 2019/1024](#).

³¹ Proposal for a Regulation - ‘[Digital Services Act](#)’.

³² Proposal for a Regulation - [Data Governance Act](#), COM/2020/767 final.

³³ Proposal for a Regulation - [European Digital Identity](#), COM/2021/281 final.

³⁴ Regulation (EU) 2021/953.

³⁵ Proposal for a Regulation - [Artificial Intelligence Act](#) COM/2021/206 final.

³⁶ COM(2021) 574 final. European public services targets: 100% online key public services; 100% access to electronic health records for citizens, at least 80% of citizens use a digital identification (ID) solution.

Most of the current EU legislation with an impact on digital transformation, ranging from legislation around data, digital identity, to sectorial proposals like for the digitalisation of cross-border justice systems have included measures on interoperability. Some have referred to the EIF but not all. When it comes to the implementation of these policy proposals by the EU public sector there is often a lack of coordination across sectors.

The **proposed Interoperable Europe Act** is designed to facilitate the interoperable implementation of those policies and programmes, to enable their coherent implementation as well as that of future initiatives by setting up a persistent structured cooperation around public sector interoperability. Due to the cross-cutting nature of interoperability, this proposal also aims to facilitate the digital implementation of European policies both across borders and across sectors. The aim is to foster the take-up of interoperable solutions in future policy developments, and equally enhance consistency with not only the proposed policy, but also consistency among policies and specifically their general digital implementation.

In this context, we are assessing the impacts of different policy options for the EU public sectors interoperability policy. This assessment includes the results of the evaluations of the implementation of the European Interoperability Framework (EIF - [COM\(2017\) 134](#))³⁷ and of the ISA² funding programme (2016-2020), which supported the EIF implementation measures.

2. 2. PROBLEM DEFINITION

The evaluations of the current interoperability policy – the EIF - and its main implementation mechanism - the ISA² programme – show that Member States have issued digital strategies and laws that are to a high degree aligned with the EIF. A number of solutions supporting interoperability at EU level have been put in place with their support.

However, the results of the evaluations show clearly that the EIF, as a communication therefore not binding, has only supported voluntary implementation of interoperability. This is **not sufficient** to help remove cross-border and cross-sector barriers for the EU public sector and has led to persistent limited interoperability of public services in Europe.

This problem is affected by the three following drivers:

- **Inefficient governance of interoperability efforts** between EU policies, the European Commission and Member States for all administrative levels (national, regional, local) and sectors.
- **Lack of common minimum interoperability specifications**, shared solutions, standards
- **Lack of an ‘interoperability by default’ approach in the design and implementation of EU policies**

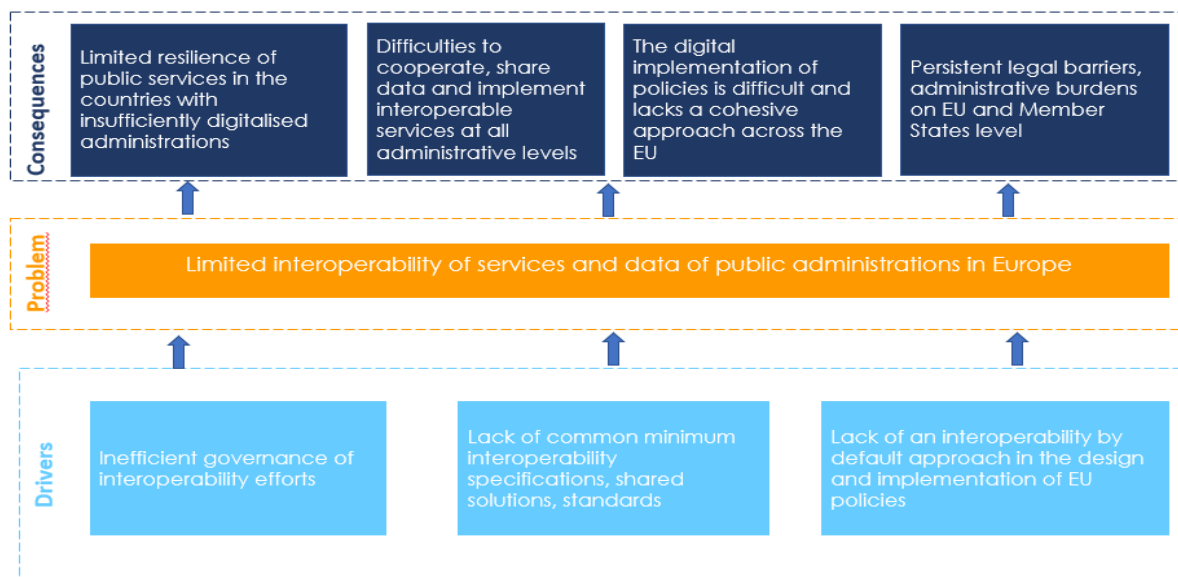
Both the problem and problem drivers show that the current policy approach, based solely on voluntary measures at Member States level and no coordination at EU level, is not fit for purpose. They increase costs and reduce efficiencies at all levels of public administrations in the European Union³⁸, add administrative burdens on citizens, businesses and administrations themselves, delay the implementation of European policies by the Member States and the accomplishment of the Digital Single Market, limit the potential to innovate and hinder the EU’s digital sovereignty.

³⁷ The results of the EIF evaluation are presented in SWD(2022)720 final.

³⁸ See Table 2. Summary of the key findings for time and cost savings estimations *Table 2. Summary of the key findings for time and cost savings estimations.*

The above problem, along with its causes and consequences, is summed up in the problem tree (Figure 1), which shows the issues faced when implementing interoperability of European public services in the current policy context.

Figure 1. Problem tree



2.1. 2.1. What is the problem

The main problem this initiative aims to tackle is the **limited interoperability of network and information systems supporting digital public services in the EU**.

Interoperability is defined as ‘the ability of organisations to interact towards mutually beneficial goals, involving the sharing of information and knowledge between these organisations, through the business processes they support, by means of the exchange of data between their ICT systems’. **Interoperability is crucial in the implementation of digital government policies.**

‘Building a digital state without interoperability is like building a house without a foundation – it will not work’ (Keegan McBride, 2021³⁹).

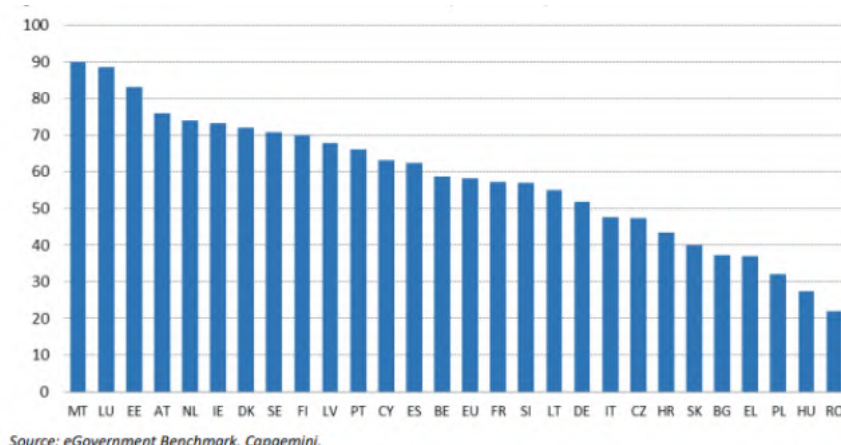
Currently there are no studies that differentiate precisely the impact of interoperability from the one of the overall digital transformation of the public sector, but numerous sources highlight interoperability as a key enabling factor and a pre-condition for success on the path to successful digital public sector transformation. This is even more the case when we look at cross-border interoperability of digital public services.

Thus, **limited interoperability** of services and data of public administrations in EU **leads to limited digital public services**, incapable of reaching their full potential and deliver on European goal of having a Digital Single Market.

This problem is quite visible when looking at both the level of implementation of digital public services in EU and the results of the evaluations of the EIF and ISA² programme, which show there is still an important gap to fill. In the latest [Digital Economy and Society Index](#) (DESI) the EU average for cross-border digital public services is below 60 out of 100.

³⁹ Keegan McBride – Hertie School of Governance – ‘[Ohne Interoperabilität kein digitaler Staat](#)’.

Figure 2. DESI 2020 for cross-border services status in Member States

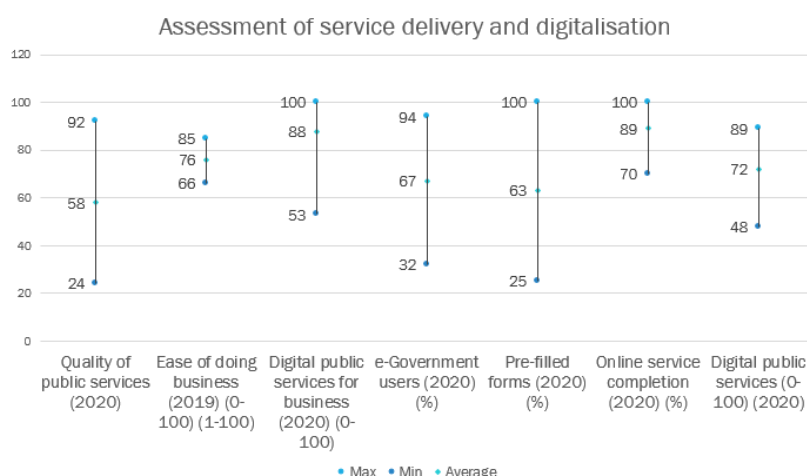


Looking at the situation of EU border regions in 2021 a Commission report 43 underlines that ‘in the 2020 public consultation, **respondents identified** difficulties in accessing reliable public transport as the main obstacle to using cross-border public services, closely followed by the **lack of joint digital services.**’ It also highlights that the lack of cross-border interoperability of digital systems in border regions, particularly of those dealing with employment services, leads to difficulties in identifying available jobs or reaching out to potential employees due to the lack of job market integration and of coordination amongst services.

In the latest EUPACK study of 2021⁴⁰, we can see a big gap between in Digital public services provision between Member States, varying from a low of 48 to a high of 89 out of 100 with an average at 72. This hampers their overall societal and state resilience.

Figure 3. EUPACK study 2021 first conclusions on digitalisation

DIGITALISATION AS THE MEANS TO SOCIETAL AND STATE RESILIENCE



The JRC report that has analysed in depth Digital Government transformation in the EU found that the provision of digital public services across the EU is hampered by several

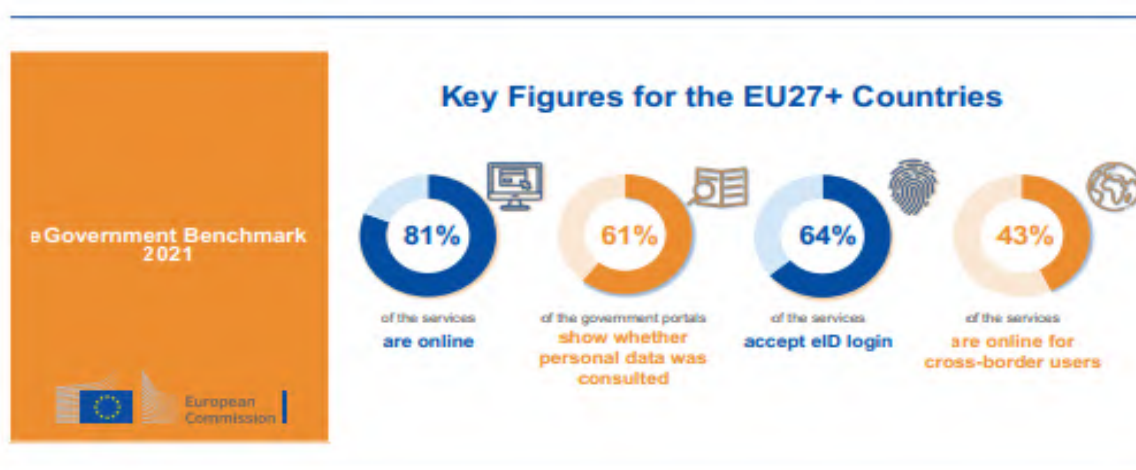
⁴⁰ Will be publicly available in the [country reports](#) made by DG REFORM.

factors, many of which, like administrative silos, fragmented decision-making and lack of coordination⁴¹, can be linked to insufficient interoperability.

The stakeholders consulted in the context of the evaluation of the EIF report that the framework's voluntary nature and the scope of its recommendations contribute only to a limited extent to the establishment of the Digital Single Market (DSM), most likely due to the limited amount of interoperable cross-border services available.

A higher ranking on digital performance does not always mean that a Member State's digital services will be available in cross-border cases. The numbers of the 2021 eGovernment Benchmark report⁴² confirm this: only 43% of services are online for cross-border users. Currently, only a quarter of the services (24%) enable access with eIDs from multiple European countries. Even though since 29 September 2018, all EU citizens of countries who have notified their eID scheme to the Commission pursuant to the eIDAS regulation should be able to use them in other Member States. This is both a question of availability of eID for citizens but also an interoperability issue as was pointed out in the impact assessment for the new proposal on Digital Identity⁴³.

Figure 4. eGovernment benchmark 2021 - Key figures (EU27+ biennial average)



Although the EIF has given value to the EU, **cross-border interoperability remains limited and driven by sectoral needs**. It has been driven by specific EU legislation like the eIDAS and now the Single Digital Gateway regulations. For example, several studies⁴⁴ assessing how ready Member States are to connect to and exchange data ‘once-only’⁴⁵ showed a lack of legal and semantic interoperability alignment (different data models and evidence⁴⁶ types implemented in the Member States).

From the EIF evaluation, we also see that countries that have aligned their National Interoperability Framework with the European one have more citizens interacting with public administrations online. There is a visible positive correlation between the overall performance

⁴¹ [Exploring Digital Government Transformation in the EU - Understanding public sector innovation in a data-driven society](#) - Misuraca, G., Barcevičius, E. and Codagnone, C. (JRC).

⁴² [eGovernment benchmark 2021 | Shaping Europe's digital future \(europa.eu\)](#).

⁴³ [COM\(2021\)281](#).

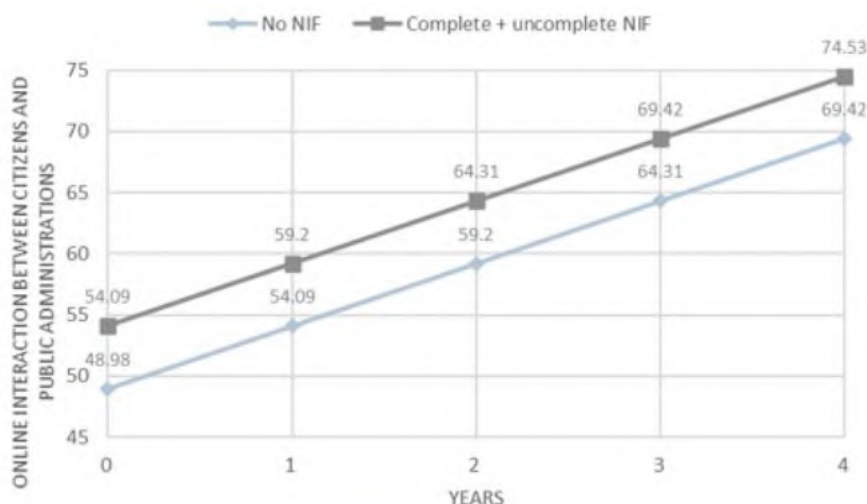
⁴⁴ [Final Sustainability Action Plan](#).

⁴⁵ Article 14 of the Single Digital Gateway Regulation (SDGR) establishes the ‘once-only-principle’ (i.e. users should not have to submit to authorities documents or data already held by other authorities) will be applied to cross-border exchanges of evidence for a range of procedures.

⁴⁶ SDGR article 2: ‘evidence’ means any document or data, including text or sound, visual or audiovisual recording, irrespective of the medium used, required by a competent authority to prove facts or compliance with procedural requirements referred to in point (b) of Article 2(2).

in the maturity of digital public administrations and their adoption of an EIF-inspired framework. The lower ranked Member States (e.g. Romania) have not put in place a robust interoperability framework, while the frontrunners (e.g. Spain, Estonia, the Netherlands) have well established frameworks that make a difference.

Figure 5. Average effects of having a ‘complete’ and ‘incomplete’ EIF based NIF vs. countries that did not adopt an EIF-based NIF on the level of Internet use to interact with public administrations



Note: The results (i.e. when NIF “complete”=1 and NIF “incomplete”=1) consider countries that have endorsed a complete and incomplete adoption of an EIF-inspired NIF against countries that have not adopted an EIF-based NIF or similar strategies. The results are also presented under the assumption of linearity over time, i.e. the average effect of having a NIF on the online interaction between citizens and public administrations is assumed as constant over time.

Source: [Study supporting the evaluation of the implementation of the EIF](#).

The next step in the path to fully digitalised governments is to move towards providing proactive services to citizens and businesses, services which bring state support when it is needed. For instance Estonia, where digital public services are amongst the most advanced in the world, enables citizens to complete tax forms, renew a passport, and access family benefits in only a few clicks assisted by the app [Bürokratt](#) which they define as an ‘interoperable network of AI applications’. These types of proactive services are currently used by only 6% of the examined government services and are not possible without interoperability⁴⁷. With limited interoperability at national and European level, citizens and businesses will be stuck exchanging PDFs as evidence, which is a common practice in the digitalisation of sectorial policies for instance, instead of moving to fully automated end-to-end digital processes and services.

The described **problem persists** even though the European Commission has been continuously working to address the issue **for more than 25 years**⁴⁸. The stakeholders consulted during the EIF evaluation perceive that the policy has brought limited benefits to the development of a coherent European public services ecosystem and the achievement of interoperable, user-centric public services in the EU⁴⁹. The current EIF recommendations,

⁴⁷ [eGovernment benchmark 2021 | Shaping Europe’s digital future \(europa.eu\)](#).

⁴⁸ Objective of the IDA programme (Decision (95/468/EC)): ‘To improve the efficiency of the internal market by allowing administrations to exchange essential information via interoperable telematics networks. It is aimed at coordinating the development and implementation of telematics applications and services that enable national and European level administrations to transfer information in a number of critical areas.’

⁴⁹ See Annex II.

principles and the conceptual model have only partially helped meet the goals established when the framework was created in back 2005, then revised in 2010 and 2017⁵⁰.

Even **within countries** and **across sectors** interoperability is not ensured. For example, less than half of the services (44%) participate in a single sign-on scheme, meaning that users often need to re-authenticate when switching between websites of different competent authorities even within the same ‘Life event journey’⁵¹.

As citizens’ expectations and upcoming requirements (like the ones brought by the Single Digital Gateway Regulation), are difficult to meet because of limited interoperability, the **EU foregoes the benefits** of interoperable digital public services. This translates into a loss of significant time savings for citizens and businesses. Two examples can be highlighted:

- through the implementation of the Estonian interoperability platform X-Road it is estimated that Estonians are saving 844 person-years of working time annually;
- further digitalising public services in Germany, which has one of the lowest levels of interoperability amongst Member States, is estimated to potentially enable cuts of over 80 million hours per year for citizens in their interaction with public authorities, help save up to EUR 1 billion in administrative costs for businesses and 64 million hours per year for public administrations themselves⁵².

2.2. 2.2. What are the problem drivers?

The problem of limited interoperability of services and data of public services in Europe described above is driven by a number of factors analysed further below.

2.2.1. 2.2.1. Inefficient governance of interoperability efforts

The evaluation of the EIF emphasizes the **inefficiency of current governance of interoperability efforts** between EU policies, the European Commission and Member States for all administrative levels (national, regional, local) and sectors.

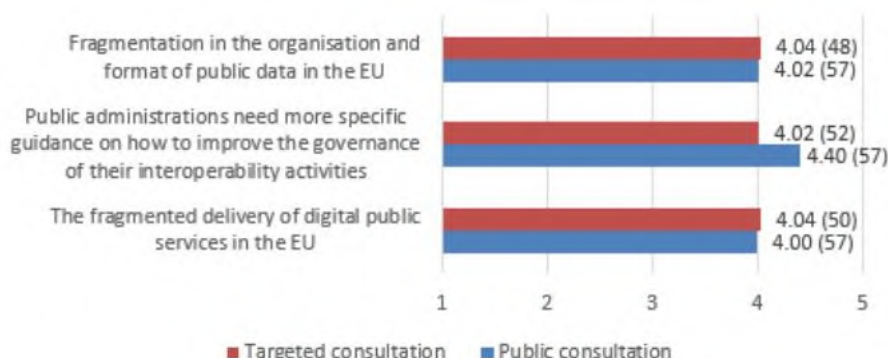
Limited coordination and cooperation on interoperability efforts between and within Member States and with the EU level, when introducing digital solutions for public services is one of the identified drivers of the limited interoperability persisting at EU level.

⁵⁰ See [timeline of Interoperability initiatives and EIF](#).

⁵¹ ‘Life event journey’: Life events are events that have a significant impact in a citizen’s/stakeholder’s life and that warrant government awareness or involvement, for instance birth of a child, divorce, buying a house. A journey is the path the user needs to go through in his/her interaction with the government services to manage the life event.

⁵² More detailed in Chapter 6: Impacts of policy options.

Figure 6. Extent to which the following needs and problems are currently experienced by European public administrations, businesses and/or citizens (breakdown by type of consultation, average score and number of respondents)



Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Source: Study supporting the evaluation of the implementation of the EIF

Cross-border projects face particular challenges that affect the timing and efficiency of delivery. The involvement of more than one Member State, and often of multiple regional and/or local authorities, can particularly impact the timely delivery of digital public services.

Any delay or obstacle on one side of a border will necessarily impact project delivery and the implementation of EU policies. We have seen this time and time again with the delays in the development of the implementing act on the ‘once-only-principle’ for the Single Digital Gateway or the issues with sharing data.

Policy support measures often include digital solutions and specifications which are inscribed in EU or national laws before being taken up by the teams that have to implement them (often services equivalent to DG DIGIT at Member State level). And when cross-borders or cross-sectoral exchanges of information or services are needed, interoperability is automatically at play.

At European Commission level, we estimate that **47.2% of policies⁵³ have a digital impact**. Today there is no systematic coordination or cooperation to ensure solutions and specifications (and in general everything that can be grouped together as ‘interoperability resources’) are shared and reused when implementing EU policies. Nothing similar to the governance structure for IT in the European Commission⁵⁴ exists for the work with the Member States. The EIF evaluation shows that **the governance of the selection and adoption of standards and specifications is currently not sufficient⁵⁵**.

Various models of interoperability governance exist within Member States between different levels of government. In some cases, interoperability is mandated through legislation, in others coordination mechanisms exist with cities and/or regions working together to develop common standards, templates and models, promoting interoperability between them, and with central government.

The EIF evaluation showed that in some cases a lack of internal interoperability coordination within Member States further enhances the disconnect between the high-level guidance and actual execution. Often Member States, even at national level in centralised states, have more

⁵³ [Digital ready policymaking](#).

⁵⁴ [COM\(2018\)7704 - Streamlining and strengthening corporate governance within the European Commission](#).

⁵⁵ [State of Play of Interoperability Report 2020](#), p. 40.

than one entity (e.g. Ministry or Agency) leading digital transformation efforts⁵⁶, which sometimes leads to a lack of coordination.

The EIF evaluation shows a further disconnect between **the high-level guidance provided by the EIF and actual execution**, particularly at the regional and municipal levels. Cross-border interoperability is not solely a matter for the national level of the administrations in the Member States. Data and services are routinely interacting between regional and local administrations in different Member States. Thus, interoperability between national administrations is not sufficient if interoperability at the local level does not work. Signatories of Living-in.EU⁵⁷ emphasized that due to this inefficient governance investments in digital transformation at local level have a low impact and lead to sub-optimal outcomes for citizens in the quality of public service delivery⁵⁸.

The coordinated digital response to the COVID-19 pandemic within and amongst Member States is a topical example of the advantage of governance, coordination and cooperation on interoperability across public and private organisations in the face of major shared challenges. This coordinated response, however, was emergency-driven and not based on established and structured joint approaches. Indeed, the absence of such structures does not necessarily prevent successful crisis response or the digitalisation of individual public services per se. However, analysis finds that not addressing interoperability ‘by design’ in upstream coordination risks building disconnected data and operational islands across administrations. Using non-compatible specifications, standards and tools in an uncoordinated way, risks leading to costly and/or isolated ad-hoc solutions, lock-in situations and missing out on scale effects. Negative consequences may be felt by administrations themselves but more so by end-users, who increasingly expect the same kind of seamless service experience when dealing with public administrations which they are used to from private sector offers.

2.2.2. 2.2.2. Lack of common minimum interoperability specifications, shared solutions, standards

The OECD states that ‘**one of the most frequently cited barriers to data sharing and reuse is the lack of common standards**, or the proliferation of incompatible standards’⁵⁹. This is confirmed by the 2020 public consultation for the European strategy for data, where 91.5% of the respondents agreed that standardisation is necessary to improve interoperability and ultimately data reuse across sectors. 91.1% of respondents agreed that future standardisation activities need to better address the use of data across sectors of the economy or domains of society⁶⁰.

Meanwhile, the limited availability and take-up of common minimum interoperability specifications, shared solutions and standards for the public sector particularly at the levels of regional and local administrations has been confirmed as a key challenge in the evaluations of ISA² and the EIF. This challenge has not been addressed by the Open Data Directive (Directive (EU) 2019/1024). Also, the future EU Data act limits its scope to commercial data held by public authorities. This implies that Member States would not be supported with concrete guidelines, solutions or specifications to ensure interoperability of their public data.

⁵⁶ More details in: [Digital Public Administration factsheets - 2021 | Joinup \(europa.eu\)](#).

⁵⁷ [Living-in.EU](#) is a 2019 declaration of European cities and communities, supported by the European Commission and other partners. It has set up a governance which aims to boost the sustainable digital transformation of cities and communities.

⁵⁸ Living-in.EU Signatories’ [Meeting of 28 October 2021](#) and the workshop on Multilevel interoperability governance supporting digital transformation of European public administrations at the [Fit for recovery and transition](#) - Online Conference, 25 November 2021.

⁵⁹ OECD (2019). [Enhancing Access to and Sharing of Data: Reconciling Risks and Benefits for Data Re-use across Societies](#).

⁶⁰ European Commission (2020b). [Outcome of the online consultation on the European strategy for data](#).

The Proposal for a European Interoperability Framework for Smart Cities and Communities (EIF4SCC) is a first initiative that gives guidance to interoperability specifications.

While the principles, the layered interoperability model, and the conceptual model for integrated public services in the EIF provided sufficient high-level conceptual guidance, there is still a gap when it comes to the practical implementation of the EIF at the service level with reusable common interoperability solutions and specifications⁶¹. Stakeholders commenting on the inception impact assessment provided several concrete ideas on how to achieve this goal⁶²: *‘all EIF recommendations should be provided with a reference implementation standard’*, another stakeholder goes further and asks that *‘all EU policy should come with a reference solution to guide its digital implementation’*.

Missing interoperability specifications and standards can also hinder the development and use of **innovative technologies**, such as blockchain, AI or APIs⁶³. That then can help also public administrations that are already highly digitalised without an ‘interoperability by default’ approach because they need to overcome the **challenge of legacy⁶⁴ solutions** (e.g. the difficulties experienced in the implementation of the Single Digital Gateway Regulation by the more digitally advanced Member States).

Another important factor contributing to the lack of development and uptake of common interoperability solutions consists of the **limited incentives and capacities for public administrations**. An important finding from the ISA² final evaluation in this regard is that EU funding instruments today do not contain sufficient incentives to ensure the development of solutions in line with the EIF⁶⁵.

The Expert group on interoperability of European public services particularly highlighted that **EU policies often come with competing and non-interoperable standards**. For instance, Estonia highlighted in a contribution to the expert group that 8 different cross-border data exchange protocols are being used or enforced in just one domain from different Commission initiatives⁶⁶. The current EU policy agenda contains a substantial number of initiatives that provide the Commission with a mandate to adopt standards or technical specifications for IT systems used by public administration. For example, technical specifications for the renewed digitalisation of judicial cooperation⁶⁷ or a future European Social Security Pass announced in the European Pillar of Social Rights Action Plan⁶⁸. Even though all of the mentioned initiatives aim to align with each other, there is no mechanism today to ensure that the solutions proposed are interoperable, which can lead to new barriers to interoperability.

Therefore, **cooperation and effective alignment between sectorial and cross-domain public sector data, standards and specifications is needed**. Such cooperation mechanism should ideally involve the experts from the Member States’ administrations already involved in implementing the parallel work strands listed above. This is an explicit call from the Expert group policy recommendations to ensure consistency, prevent creation of sectoral silos and reduce implementation burdens on their side.

⁶¹ In the context of the ISA² programme, interoperability solutions were defined as ‘common services and generic tools facilitating cooperation between disparate and diverse organisations, either autonomously funded and developed under the ISA² programme or developed in cooperation with other Union initiatives, based on identified requirements of European public administrations’, building also on common specifications and standards. See: Article 2, Decision (EU) 2015/2240.

⁶² Input can be found on the Have Your Say Portal, a summary of input is provided in Annex II.

⁶³ [JRC Policy for Science report](#) gives insides on how APIs can help overcome legacy issues.

⁶⁴ [Legacy IT systems](#) refers to solutions, specifications, technologies outdated but still in use.

⁶⁵ See ISA² programme evaluation in COM(2021)965

⁶⁶ Expressed in position paper from December 2020 on a future interoperability policy (not public)

⁶⁷ COM(2021) 759 final.

⁶⁸ [European pillar of social rights action plan](#)

2.2.3. 2.2.3. Lack of an ‘interoperability by default’ approach in the design and implementation of EU policies

Member States have prominently called upon the Commission and other institutions, most recently in the Berlin Declaration, to ensure that ‘policies and legislative acts proposed by the European Commission are digital-ready and interoperable by default’⁶⁹. The consultation activities and the work with the Member States experts showed that public administrations are struggling to translate requirements from EU policies into concrete interoperable digital services. They expect that this problem could be solved by changing the way EU policies are designed, learning from the Danish approach to digital-ready legislation that was recently evaluated⁷⁰.

The EIF and ISA² evaluation confirm this assumption: interoperability actions are the most beneficial and effective if clearly linked with EU policies. The evaluation however also confirms that the EIF is underutilised across sectors and even by Commission services.

Interoperability by design was emphasised as vital for effective cross-border contact tracing apps in the EU. The argument around the EU Digital COVID certificate included standardisation and interoperability.

Due to the **voluntary participation in the implementation of the EIF** and the voluntary take up at EU level of interoperability resources developed through the Interoperability programmes (ISA² and predecessors), a coherent approach to the topic is missing, beyond what has been set up through specific sectorial obligations (e.g. justice, transport). Even when digital resources are foreseen in **EU legislation**, they **do not apply ‘interoperability by default’ principles** as there is currently no uniform legal and technical framework to establish them.

For instance, the EIF as the main point of reference of the current interoperability policy is mentioned only 18 times in the EU common acquis (see Figure 7). It is not mentioned at all in the Single Digital Gateway Regulation or the eIDAS Regulation. To put this into perspective, the Spanish law on digital public administration⁷¹ refers 136 times to the Spanish National Interoperability Framework (NIF), and interoperability is mentioned 899 times, while the latest Spanish act on the topic (the Royal decree 203/2021⁷²) mentions interoperability 88 times and the NIF 24 times. This increase inclusion of ‘interoperability by default’ has led to considerable momentum gain in Spain’s public sector digitalisation efforts over the same period, visible in the annual DESI figures (2015: 60%, 2020:82%)⁷³.

⁶⁹ [Berlin Declaration on Digital Society and Value-Based Digital Government](#) at the ministerial meeting during the German Presidency of the Council of the European Union on 8 December 2020, p.13.

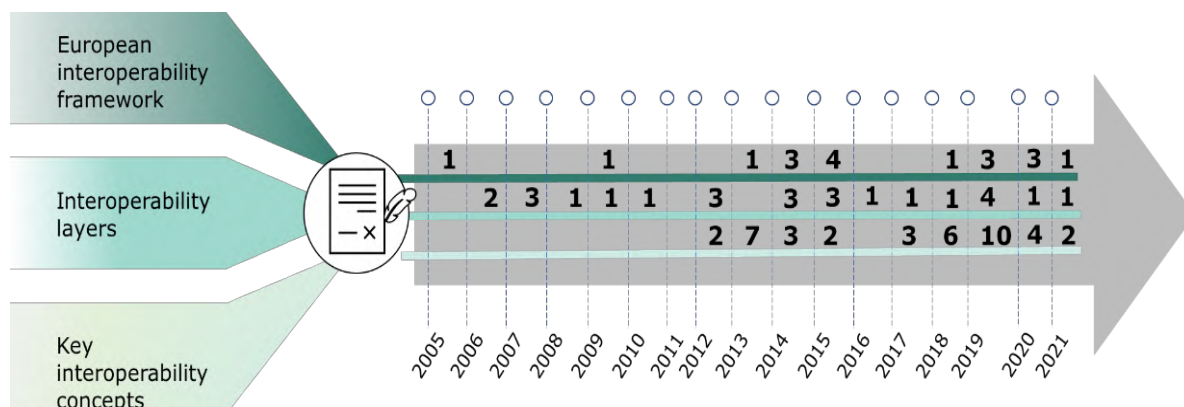
⁷⁰ For further information see, [Evaluation of the effort to make legislation digital-ready](#) (2021), Agency for Digitalisation, Ministry of Finance.

⁷¹ [BOE.es - Código de Administración Electrónica](#).

⁷² [BOE.es - BOE-A-2021-5032 Real Decreto 203/2021](#).

⁷³ [DESI - Spain | Shaping Europe’s digital future \(europa.eu\)](#).

Figure 7. Number of times the EIF and connected keywords were mentioned in regulations, directives and decisions between 2004 and April 2021



Source: [Study supporting the evaluation of the implementation of the EIF](#) based on the [CEPS EurLex dataset](#) and the EurLex website.

This finding is not caused by a lack of EU policies addressing digitalisation issues. As it is quite visible from the legal and political context, there is a large number of EU and Member States policies which have a digital impact. Before the current COVID-19 crisis the keyword digital was appearing in 14.5% of announced EU policy proposals, now their share went up to 47.2%⁷⁴.

This is also reflected in the feedback received from the Member States in the Interoperability expert group (especially in their recommendations) and throughout the public consultations.

‘We need an interoperability policy that is focused on enabling smooth, interoperable implementation and delivery of digital public services at European level without adding new obligations on Member States and that helps increase our overall digital maturity’ – Recommendations from the expert group on Interoperability of European Public Services⁷⁵ (October 2021).

The Member States have repeatedly highlighted that in general much of the challenge in terms of interoperability can be related to issues with legal implementation. Differences in national legislation result in different national processes and standards for data-handling, which make interoperability across borders more difficult.

Another side effect of having many EU policies that have an impact on digitalisation of the public sector is that there is an **increase in reporting obligations** on the public administrations of the Member States. Member States authorities need to provide data, mostly by replying to surveys, for the establishment of DESI, the National Interoperability Framework Observatory, for the upcoming Digital Compass, Single Digital Gateway Regulation, etc. Beyond EU policies they also provide data to the OECD digital government, UN e-government, Berlin Declaration monitoring surveys. There is only anecdotal automated data collection or sharing of collected data between these mechanisms.

There are also legal uncertainties related to the topic on how to facilitate GDPR-compliant data sharing, intellectual property issues when sharing and reusing IT systems, or the challenge of technical specifications that need to constantly evolve in legal texts. Those blocking factors hinder the scaling up of digital public services across EU Member States and must be addressed systematically.

⁷⁴ [Digital ready policymaking boosted by COVID-19.](#)

⁷⁵ [Register of Commission expert groups and other similar entities \(europa.eu\).](#)

2.3. 2.3. How will the problem evolve in the future?

In the literature there is no argument for less action on interoperability and digital transformation of the public sector or for an expectation that the existing problems could be resolved by individual actors alone. Without common action and shared ownership of interoperability policies at EU level, the gap between the needs of citizens, businesses and especially public administrations across Europe will continue to grow.

Data sharing and re-use is paramount to [shape Europe's digital future](#). However, data remains fragmented across numerous domains as well as across borders. One of the most frequently cited barriers holding back better data use is the lack of common standards, or the proliferation of incompatible standards. For example, inconsistent data formats are impediments to the creation of longitudinal data sets, as changes in measurement and collection practices make it hard to compare and aggregate data⁷⁶.

Moreover, the value of data becomes more important in data-centric societies in which more evidenced decisions can be made. However, numerous relevant data are still not fully used by the public sector for their delivered services and developed policies. In order to unlock the wealth of data, public sector interoperability is indispensable.

The problem drivers described above are linked to a constant increase in data traffic⁷⁷ and to the mobility of citizens and businesses in the EU. This automatically leads to a constant increase in the usage and requests for cross-border services and exchanges of data. For instance, there is a significant number of people who cross borders for the purposes of tourism – 64.7% of EU citizens aged 15 or more did so in 2019 and there is an upward trend in the total number of nights that tourists spend in a country other than their own (from 100 in 2005 to 157.8 nights in 2019⁷⁸). In times of COVID-19, most tourists will be requested to show their 'Green passes'⁷⁹. They can use the app from their home country to do so, thanks to the interoperable EU-level standards that those apps are based on. But tourists might also be required to show that the car they are using can enter a certain zone of the city restricted to electric vehicles etc. Interoperability could help here and in a large number of other use cases to provide real time clearance, data and services.

Furthermore, by relying on the internet (as a borderless structure), including for their work, individuals are increasingly requiring cross-border services. The number of people living in a foreign country is also trending upwards – Eurostat has found that, in 2019, 3.3% of EU citizens of working age (20 to 64) lived in another Member State, as compared to 2.4% in 2009⁸⁰. With more and more people finding themselves in a cross-border situation, it is to be expected that the usage of cross-border services and exchange of data will increase, placing an even greater burden on public administrations.

3. 3. WHY SHOULD THE EU ACT?

3.1. 3.1. Legal basis

The problems described in Chapter 2 show a need for EU action to foster interoperability of network and information systems supporting public digital services in the Union across all levels and sectors of government.

⁷⁶ OECD (2019). [Enhancing Access to and Sharing of Data: Reconciling Risks and Benefits for Data Re-use across Societies](#); JRC paper on Business-to-business data sharing, forthcoming.

⁷⁷ [Crossing borders - World Bank](#).

⁷⁸ [Nights spent abroad by EU residents - Eurostat](#).

⁷⁹ [REGULATION \(EU\) 2021/953 - EU Digital Covid Certificate](#).

⁸⁰ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU citizens living in another Member State - statistical overview](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_citizens_living_in_another_Member_State_-_statistical_overview)

The EU's competence to act in relation to **interoperability of trans-European networks** is set out in Articles 170 - 172 of the TFEU, which requires the EU to 'contribute to the establishment and development of trans-European networks' in the area of telecommunications. Article 171(2) states that 'Member States shall, in liaison with the Commission, coordinate among themselves the pursued policies at national level which may have a significant impact' on the objective of the establishment of trans-European networks, and the 'Commission may, in close cooperation with the Member States, take any useful initiative to promote such coordination'. Hence, action to ensure a coherent, human-centric approach to interoperability from policymaking to policy implementation, accompanied by a clear governance to streamline shared interoperability frameworks, solutions, guidelines and specifications for digital public services across EU borders is within the scope of the EU's right to act. The EU shares competence in this area with the Member States.

The Union has used this legal base and its predecessor since 1994 to create funding programmes supporting the development and dissemination of interoperability solutions for public administrations and businesses as well as the set-up of cross-border digital services infrastructures. The Court of Justice of the European Union decided with its judgment in the case C-22/96 of 28 May 1998 that Union measures contributions to the 'telematic interchange of data between administrations in the Community' (IDA) fall within the ambit of the trans-European networks for telecommunication Articles 170 – 172 TFEU and that Art. 114 TFEU cannot be used.

Under this legal base, the EU can go beyond providing funding; the Union can establish guidelines, identify projects of common interest, implement any measures necessary to ensure the interoperability, take initiatives to promote coordination between Member States, and cooperate with third countries for similar purposes (Article 171 TFEU). In the framework of other trans-European networks binding standards necessary to ensure the interoperability for the respective sectors (e.g. energy and transportation) and governance frameworks with clear roles and mandates have been established. For example, the Digital Europe Programme based among others on Art. 172 TFEU defines a wide scope of potential actions for the interoperability of European public service. Highlighting that interoperability⁸¹

- *'concerns all levels of administration: Union, national, regional and local',*
- *'is to be understood in broad sense, spanning to technical and legal layers and encompassing policy elements,'*
- removing *'barriers to a functioning internal market',*
- *'facilitates cross-border cooperation and the promotion of European standards and the successful implementation of policies'*
- *'offers great potential for avoiding cross-border electronic barriers, further securing the emergence of new, and the consolidation of developing, common public services at Union level',*
- needs *'a holistic cross-sector and cross-border approach',*
- action facilitates *'cross-fertilisation between different national initiatives'.*

The objectives of this initiative to contribute to a Digital Single Market and to connect remote areas fit well with the objectives of trans-European networks that shall help to reach the objective of the Internal Market (Article 26 TFEU) and economic, social and territorial cohesion of the EU (Article 174 TFEU). The interoperability-related activities under Digital

⁸¹ Regulation (EU) 2021/694, Recital 53.

Europe Programme will contribute to the implementation of the future interoperability policy through a series of projects on legal, organisation, semantic and technical interoperability.

3.2. 3.2. Subsidiarity: Necessity of EU action

The evaluation of the European Interoperability Framework shows that the digital (and interoperable) transformation of the EU public sector requires **greater EU cooperation, common rules and initiatives**. The concrete needs across all levels and sectors of public administrations that recently became more prominent during the COVID-19 crisis are a telling example.

The COVID-19 crisis has shown that cooperation and governance mechanisms are needed not just to improve basic public services but also **to build resilience and the capability to deal** with unexpected emergencies. During the pandemic, countries with more digitalised and **interconnected** governmental administrations and services reported less service disruptions⁸². The pandemic also highlighted the need for **better governance of response mechanisms across the EU**. The lack of data consistency hampered the EU's capacity to respond cooperatively early in the outbreak⁸³. Interoperability by design was emphasised as vital for effective cross-border contact tracing apps in the EU⁸⁴. The work around the EU Digital COVID certificate mainly consisted of working out a standard, interoperable technical approach among the Member States.

*The Tallinn Declaration of 2017 and the Berlin Declaration of December 2020*⁸⁵, the call of the Living-in.EU movement and the recommendations of the expert group on interoperability of European public services show that public administrations across EU countries see a need for coordinated EU action. In the same line, the EIF evaluation notes that in the absence of a common approach, **the development of a cohesive landscape** of digital and interoperable public services across the EU would be hindered by **divergent measures taken at the national level**.

In addition, enhanced interoperability can significantly **contribute to overarching goals** for the Digital Single Market, the digital agenda of the EU⁸⁶, fostering innovation, ensuring digital sovereignty and acting as a crucial enabler for new initiatives, such as the European Data Spaces announced by the Commission in its Communication on a European Strategy for Data⁸⁷. National and/or sub-national interventions alone would not be able to address the relevant policy problem.

3.3. 3.3. Subsidiarity: Added value of EU action

The evaluations of the EIF and ISA² confirm the added value of an EU-level intervention for interoperability. Building on the experience of implementing the EIF and ISA², an **EU level** initiative for interoperability is likely to **achieve its objectives at lower costs** than comparable national or sub-national initiatives, by creating economies of scale and economies of learning generated by cooperation. The recent political communications are also based on this assessment.

⁸² [2021 Report on Public Administrations Digital Response to COVID19](#).

⁸³ Renda, A., & Castro, R. (2020). Towards stronger EU governance of health threats after the COVID-19 pandemic. *European Journal of Risk Regulation*, 11(2), 273-282.

⁸⁴ [National COVID-19 contact tracing apps, Briefing ITRE in Focus](#), European Parliament.

⁸⁵ [Berlin Declaration on Digital Society and Value-Based Digital Government](#).

⁸⁶ The role of interoperability for enabling digitalisation was highlighted in the Mid-Term Review of the Digital Single Market Strategy: COM/2017/0228 final.

⁸⁷ COM(2020) 66 final – ‘A European strategy for data’.

Beyond that, **the cross-border dimension cannot be addressed only through the efforts of national or sub-national governments**. Even if national, regional, and local public administrations strive to improve their approach to digital and interoperable public services, without coordination, the strategies and solutions selected may impede the cross-border interoperability landscape.

An EU involvement in cross-border interoperability serves both for coordination, ensuring a consistent approach to interoperability throughout the EU and on international level, and as a stimulant offering direction and support. EU action cannot and should not aim to replace local responsibilities but can reinforce subsidiarity by enabling local actors to better meet the needs of citizens and businesses. This resonates in the explicit call for building a common EU interoperability coordination, e.g. in the Tallinn and Berlin declarations, the Living-in.EU manifesto and the Interoperability expert group recommendations.

4. 4. OBJECTIVES: WHAT IS TO BE ACHIEVED?

4.1. 4.1. General objective

The Commission aims for ‘*a reinforced EU governments interoperability strategy to **ensure coordination and common standards for secure and borderless public sector data flows and services***’⁸⁸.

The general objective of the initiative on strengthening interoperability for the EU public sector is to address the issues faced by the Member States and the European institutions when delivering digital public services across borders in Europe. It will contribute to the objectives set in Article 171 and 172 TFUE to establish and develop any measures that may prove necessary to ensure the interoperability of the trans-European network as well as to promote the interconnection and interoperability of national networks. Network is understood holistically as the digital public service infrastructure underlying the delivery of public services. It has all the components of an interrelated system that enable public services to be delivered electronically. These include underlying legal, organisational and semantic requirements as well as the technical setup.

A successful policy in this area would:

- enable public administrations across the EU to exchange data in a secure way, respecting privacy and fundamental rights;
- allow for seamless user-centric services and the sharing of common solutions developed with EU funding; and
- foster data driven decision-making, foresight and participatory processes.

It would further help to reduce administrative burdens and costs for citizens and businesses, facilitate cross-border cooperation, enable the successful implementation of European policies, accelerate the digital transformation of public services and ensure their resilience⁸⁹ in case of disruptions brought on by crises like the current COVID-19. It would also support a more efficient design and implementation of EU policies.

Cross-border interoperability is not solely enabled via centralised Member State digital infrastructures. The digital solutions of today also use a decentralised approach. This entails data exchange between local administrations in different Member States without necessarily

⁸⁸ As set out in the 2020 Communication ‘*Shaping Europe’s digital future*’.

⁸⁹ Digital resilience, as defined in the 2020 Strategic Foresight Report, is ‘about ensuring that the way we live, work, learn, interact, and think in this digital age preserves and enhances human dignity, freedom, equality, security, democracy, and other European fundamental rights and values.’ [Resilience dashboards](#).

going through national nodes. This underlines the importance of common solutions across all administrative levels, particularly for specifications and applications. Needs for cross-border digital interactions are increasing and they require solutions that can fulfil these needs.

Interoperability cannot and should not replace horizontal and sectorial actions that will continue to be decisive to build a European Digital Single Market. Nonetheless a smart interoperability policy can provide the needed foundations to facilitate policy implementation and enforce links between different policies. It helps build digital-ready and interoperable-by-default policy initiatives at all levels (legal, organisational, semantic, technical).

This initiative would help tackle the problem and drivers identified in Chapter 2, and ensure a coordinated approach to EU interoperability **to help EU and Member States institutions deliver better services to citizens and businesses across Europe.**

4.2. 4.2. Specific objectives

The EIF evaluation, the ISA² evaluation, the stakeholder consultations and the recommendations from the Expert group on Interoperability of European public services conclude that, in order to **help EU public administrations deliver better services**, EU action is needed in three concrete areas:

- Ensure a **coherent, human-centric EU approach to interoperability from policymaking to policy implementation**;
- Establish an **interoperability governance** designed to enable public administrations from all levels and sectors as well as private stakeholders to work together – with a clear mandate to agree on shared interoperability resources (e.g. IT solutions, specifications, standards or guidelines); and,
- **Co-create an ecosystem of interoperability resources** (solutions, open standards, data and services) for the EU's public sector, so that public administrations at all levels in the EU and other stakeholders can contribute to and re-use such resources, create public value and innovate together.

Interoperability across different policy areas can only be achieved if there are a political will, clear guidelines⁹⁰, and clearly identified interoperability resources which are taken up systematically. A successful policy would establish effective safeguards and mechanisms to ensure that EU policies set 'interoperable by default' requirements for the implementation of policies, and that the digital implementation of EU policies by public administrations or other stakeholders across the Union is efficiently supported through an established interoperability governance⁹¹ and resources. It would offer administrations the needed guidance and tools, respected and referenced across all policy areas. It would support the **design and implementation of EU policies that are digital-ready by default**⁹².

As interoperability is about different entities working together towards a shared goal, in a complex system like the EU public sector, and in full respect of subsidiarity, it can only be achieved through a **sound multi-level governance**. A successful policy would offer a clear **governance setup co-owned by Member States and the EU, offering all stakeholders space to contribute their ideas and concerns, with transparent processes** leading to joint interoperability resources. Well crafted, governance is empowering because it clarifies rules, responsibilities, input and outcomes, and accountability. It helps all involved actors understand decision-making processes and offers opportunities for engagement. A successful

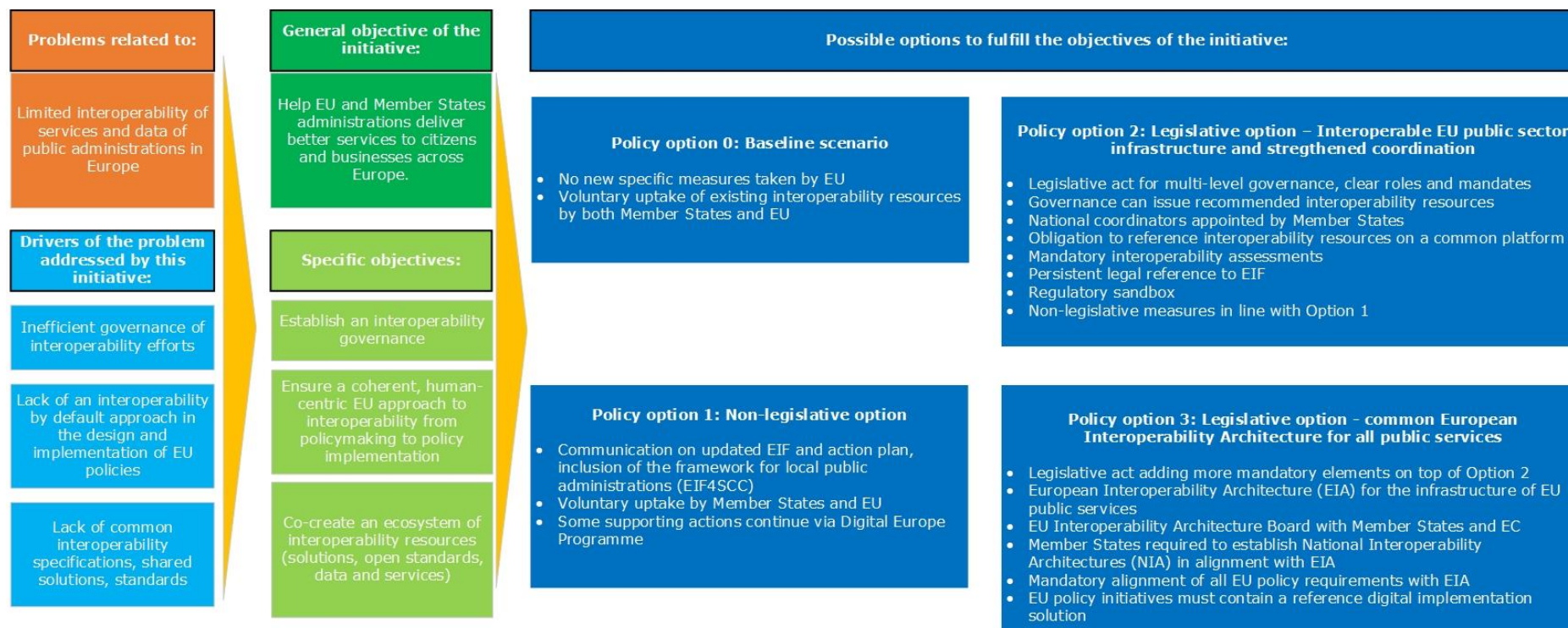
⁹⁰ In Art. 171 TFEU establishing guidelines is the first measure mentioned to reach interoperability.

⁹¹ The EIF gives guidelines for establishing such an interoperability governance: It recommends covering all layers: legal, organisational, semantic and technical.

⁹² Digital-ready policymaking as referenced in the 2021 [Better Regulation guidelines](#).

interoperability policy would need to be an integrator for all relevant initiatives, offering an agile cooperation structure, transparency and inclusiveness, and support take-up of the outcomes.

Figure 8. Intervention Logic



5. 5. WHAT ARE THE AVAILABLE POLICY OPTIONS?

The policy options identified include non-legislative and legislative actions providing for voluntary or mandatory use of interoperability solutions and specifications. The options are described in detail below.

5.1. 5.1. What is the baseline from which options are assessed?

Option 0 (baseline scenario)

No action is taken to increase the interoperability of the services of public interest in Europe. The Commission would not propose any new specific measures to address the problems discovered in the recent evaluation of the EIF and the ISA² programme or the recommendations from the expert group. The baseline is characterised by the following aspects:

- The 2017 **EIF** remains **in place with no change**;
- The **Interoperability Action Plan**,⁹³ would not be updated and therefore be **outdated**.
- **Some supporting actions** continue under the Digital Europe Programme such as the National Interoperability Framework Observatory (NIFO) and the EIF toolbox;
- Work continues with the **expert group on Interoperability of European public services**;
- **No support measures** as regards **Digital readiness** for EC policy proposals are undertaken, beyond what is already available in the updated Better Regulation Guidelines and Toolbox; and,
- **Limited and informal support** from the EC Interoperability Unit⁹⁴ provided **to other digital policies** with high interoperability stakes (e.g. semantic work package of Digital Single Gateway Once Only Principle), if requested by policy DGs.

The formal ISA² Committee where Member States participated in strategic steering of the programme and follow up of interoperability actions, ceased to exist at the end of the programme in 2020. It would not be replaced so there will be **no direct governance with Member States on Interoperability** actions. There would be a limited steering via the Digital Europe Programme committee which coordinates the implementation of the whole programme where interoperability actions represent a very small part of the overall financing⁹⁵ and the level of engagement with Member States on this particular topic is limited. As ISA² has come to an end in December 2020, some of the existing EIF implementing actions covered by ISA² will continue to be supported in the new Digital Europe Programme but there would be **no coherent catalogue of interoperability resources** put in place.

5.2. 5.2. Option 1: Non-legislative

This option is a continuation of the baseline option, with the addition of several non-binding policy statements from the Commission. The uptake in public administrations across the EU remains voluntary.

The Commission adopts a Communication which would:

- **Update the European Interoperability Framework;**

⁹³ [COM\(2017\) 134](#) final, EIF - Implementation Strategy, Annex 1 - Interoperability Action Plan.

⁹⁴ The unit in the Directorate-General for Informatics (DG DIGIT) working on Interoperability (DIGIT.D2).

⁹⁵ The 2021 – 2027 budget of the Interoperability actions represents 2.2% of the total of the Digital Europe Programme (EUR 168 million out of EUR 7 500 million).

- **Update** the outdated **Interoperability Action Plan**⁹⁶;
- **Call for** the uptake of **open-source software**;
- **Call for coordination** with **local public administrations** by publishing the European Interoperability Framework for Smart cities and Communities (EIF4SCC)⁹⁷;
- **Announce the intention to work on synergies** between the Commission's existing and future **monitoring** and reporting systems on digital public sector initiatives, including specific indicators on interoperability; and,
- **Offer ad-hoc support** of the expert group on Interoperability of European public services in the **design of policies** with a **high interoperability stake**⁹⁸.

A new version of the EIF could address **some of the shortcomings** detected in the EIF evaluation and take on board some of the recommendations of the expert group⁹⁹. The EIF could be restructured into a more concrete and practical framework focused on facilitating implementation, include calls for open-source software and specifications and to facilitate the implementation of open and interoperable services that provide incentives for the take-up of common specifications¹⁰⁰. Monitoring would be underpinned by revised key performance indicators and 'SMART goals' (specific, measurable, achievable, realistic, and timely) to facilitate the assessment of its outcomes¹⁰¹. A revised action plan for Interoperability could be put in place to define actions further needed under the Interoperability specific objective of the [Digital Europe Programme](#).

To improve the coordination with local public administrations, the framework for smart cities EIF4SCC, developed under the ISA² programme in conjunction with the [Living-in.EU](#) community, could be published as an annex to the communication. It would allow the current interoperability expert group to cooperate more easily with the Living-in.EU community which, to a certain degree, would help address the specific interoperability challenges faced at local level and promote some collaboration across different levels of government.

For **digital-ready policy making** the expert group on interoperability of European public services could provide ad-hoc support early in the design of some EU policies with high interoperability stake cross-borders or across different sectors. This would necessarily remain voluntary and occasional.

5.3. Option 2: Legislative initiative - New legal framework for an interoperable EU public sector infrastructure and strengthened EU policy coordination

Option 2 would consist of a **package** with a policy communication on strengthened EU interoperability policy coordination and a legislative act that would foster a coherent EU approach to interoperability by proposing the setup of an interoperable EU public sector infrastructure. The legislative act would act on three main pillars – governance, solutions and support measures:

- Establish a **multi-level governance setup for EU public sector interoperability, with clear roles and mandates**. In this governance, Member States and EU institutions and agencies set the strategic goals and agree on concrete measures that

⁹⁶ [COM\(2017\) 134 final](#), EIF - Implementation Strategy, Annex 1 - Interoperability Action Plan.

⁹⁷ [Proposal for a European Interoperability Framework for Smart Cities and Communities](#).

⁹⁸ For instance, policies similar to the Single Digital Gateway Regulation or the Digital Identity are considered to have a high interoperability stake for public services.

⁹⁹ These potential changes were mentioned in the meeting of the [Interoperability Expert Group of 7 July 2020](#).

¹⁰⁰ This example is part of the feedback received on the roadmap summarised in Annex II.

¹⁰¹ These potential changes were mentioned in the [meeting of the Interoperability Expert Group of 7 July 2020](#).

can ensure the cross-border interoperability of their digital public service infrastructures; a governance body or board would be established and it would be composed of representatives from the Member States, and the Commission to define the general direction and cooperation on interoperability to promote the digital interconnection and interoperability of networks and infrastructures supporting digital services in the Union. This board would cooperate closely with existing future bodies established under Union law in the areas of data policy or digital government, such as the Data Governance Act or the AI Act;

- Enact the obligation for Member States to **designate a national coordinator** of digital transformation (e.g. a national ‘Chief Information Officer’) at Member State level and appoint him/her as member of the governance board;
- Set up an **ecosystem of interoperability solutions** that support cross-border digital public services: this will include the European Interoperability Framework and its specialisations, and it will add the possibility for the governance to recommend specifications and applications which can be used to foster interoperability across sectors and administrative levels, while not being mandatory;
- Put in place interoperability support measures that set out a clear process on how EU wide projects in the framework of the Regulation can support interoperable and digital EU policy implementation across the EU public sector. To support 36 innovative interoperability solutions the governance can authorise the set-up of regulatory sandboxes in cross-border contexts. A peer-review system and provisions on training enhance two further important interoperability enablers (skills and knowledge exchange);
- A requirement for public administrations to **assess their alignment with the recommended interoperability resources and those mandated by EU laws** in specified cases (e.g. linked to EU funding or linked to cross-border public sector infrastructures);
- An obligation for Member States to **reference interoperability resources on a common platform** (e.g. [Joinup](#)) if they have been developed with the support of EU funding;
- A basis for making **future EU funding conditional to** public sector digitalisation projects being aligned and/or contributing to the development of shared interoperability resources;
- **Legal clarity for the sharing and re-using** of publicly owned interoperability resources, it would support the use of the latest version of European Union Public Licence (EURL) to enhance legal clarity and mutual recognition of licences in the Member States;
- A legal **mandate for the Commission to develop international** cooperation in interoperability; and,
- A **monitoring mechanism** in close alignment with the Digital Compass.

The policy communication would:

- Set out the **Commission’s policy aims on public sector interoperability**, supporting coherence across sectoral and horizontal EU policies, innovative projects, and accelerating the implementation of public sector digital transformation (such as the Recovery and Resilience Programmes and the Digital Decade), including in the Commission and its own policy-making.

- Establish an **Interoperability agenda** to support funding programmes with public sector digitalisation in scope

As in Option 1 - Call for the uptake of open-source software, address coordination with local public administrations via the Interoperability framework for smart cities and communities (EIF4SCC), call for synergies between monitoring and reporting systems the Commission has on digital public sector initiative.

Option 2 would establish the needed legal certainty for structural cooperation:

Member States CIOs together with the European Commission would form a common interoperability governance like an interoperable Europe Board with a **mandate** to identify and propose recommended interoperability resources (solutions specifications, frameworks...), propose measures to foster the share and reuse of interoperable solutions, propose measures to enhance interoperability capabilities of public sector bodies, support the work of the European Data Innovation Board, on interoperability solutions for the common European Data Spaces, as well as any other Union body working on interoperability solutions relevant for the public sector. The Board would be supported by a community of experts that would enable the involvement of a broader set of stakeholders for the operational tasks. Governance means co-ownership of senior (CIO level) Member State representatives with clear roles and responsibilities, transparent decision-making and involvement of practitioner communities to test, evaluate and develop shared interoperability solutions.

It would introduce obligations on Member States to **designate national coordinators** which would become full members of the main governance body. They would also be obliged to reference the interoperability resources developed with EU funding on a common platform, which would allow all participants to share and reuse solutions and specifications in a more consistent way.

Regions and cities, academic experts, civil society, as well as GovTech and open-source experts should be appropriately associated to this cooperation structure. These stakeholders can help develop solutions to facilitate the interoperable implementation of EU policies or work on other shared needs, following the example of the cyber-security competence community established with Regulation (EU) 2021/887.

While more and more policies have, among their objectives, to contribute to the EU's digital transition, it is crucial that they also have a **clear interoperability legal reference** to link to, as it is the case for IT security or data protection and privacy issues.

The multi-level governance mechanism would help facilitate the coordination between public administrations in Europe and the European Commission in the **digitally supported implementation of EU policies**. It would set incentives to align the national/local infrastructures with agreed interoperability resources to support cross-border and cross-sector digital services and it would foster the co-design of new innovative solutions fit for wide reuse.

Where sectors see the need for harmonised standards, they can inject this need into relevant EU fora with the support of the governance¹⁰². With all resources being issued in **machine-readable format on an official platform** with agreed change procedures, it allows for the flexibility needed to keep up with technological developments. This implies that standards and specifications which are today issued in legal text (e.g. implementing or delegated acts) or just published on various online sites, would be issued in machine-readable code. This implies

¹⁰² In cooperation with existing standardisation legislation and fora, e.g. the Multi-Stakeholder Platform. [Regulation \(EU\) No 1025/2012 on European standardisation](#).

that when developing IT systems supporting the implementation of EU policies, public administrations could implement the code directly.

The legal instrument could lead to the introduction of **policy conditionalities in future EU funding programmes**. In this case, public administrations requesting EU funding and assistance for their efforts to modernise and digitise their systems and processes would need to argue how they plan to comply with - or contribute to - the agreed interoperability resources.

The **interplay of option 2 and other EU or national policies** that set interoperability requirements would be very considerably enhanced in comparison with Option 1. Interoperability policy would provide cross-cutting support to EU policies through mature, referenceable specifications that evolve continuously, in a transparent process, based on the needs of EU policies and EU public administrations.

5.4. 5.4. Option 3: Legislative initiative - New legal framework introducing a common European Interoperability Architecture for all public services

Option 3 would be the **furthest reaching and most centralistic approach** to attain the objectives in Chapter 4. It would also have the form of a legislative act, building on Option 2, while **making interoperability requirements more binding for the Member States**.

More specifically, this option would integrate both the multi-level governance for EU public sector interoperability, and Community Projects (cf. Option 2), but then add a specific mandate for a trans-European interoperable government network to set standards (minimum interoperability requirements) for the development of services of public interest to be then implemented by all public administrations in the Union. The concrete standards would be imposed through implementing acts.

This option would include the following elements:

- A **multi-level governance for EU public sector interoperability** (based on the outline of option 2);
- Establishment of a common **European Interoperability Architecture (EIA)** for the infrastructure of EU public services¹⁰³;
- Set-up of an **EU Interoperability Architecture Board** co-owned by Commission and Member States CIOs;
- **Mandatory alignment of all EU policy requirements with EIA**, exceptions must be granted by the Interoperability Architecture Board;
- **Member States required to establish National Interoperability Architectures (NIA)** in alignment with EIA, as well as **national Architecture Boards** that monitor the alignment of national initiatives with the respective NIA; and,
- Where applicable, EU policy initiatives must contain a **reference digital implementation solution**.

Member States designate national coordinators for interoperability cooperate in a dedicated EU interoperability governance setup similar to the one described above under option 2. As a

¹⁰³ The EIA would represent a comprehensive blueprint of interoperability components and specifications to support the implementation of digital services and seamless data exchanges across-sectors and borders. Individual policy initiatives can build sectoral solutions based on the EIA, reusing its components without deviating from core common design principles. Continuous technical, legal and semantic maintenance and development would ensure sustainability of assets, build resilience and foster digital sovereignty for EU public services.

body, they would be mandated to adopt a European interoperability architecture (building on the existing European Interoperability Reference Architecture EIRA¹⁰⁴) as a blueprint for building and developing interoperable digital public services at all levels. This will be complemented by mandatory common (minimum) interoperability requirements.

All Member States would be required to adopt a national interoperability strategy or framework compliant with EU requirements. This would mean, for instance, introducing an obligation for any EU and national policies and digital services infrastructure to be compliant with the EIA and the standards established via implementing decisions. The EU Interoperability Architecture Board would have the mandate to decide on conflicting standards. The alignment of the national approaches and infrastructures would be reached through the requirement to establish national governance structures, building where possible on existing bodies and processes in the Member States.

This option would also introduce strong interoperability targets for Member States in order to monitor the implementation of the provisions included in the policy. This option would also have direct effects on the implementation of all EU policies with high interoperability stake, such as digital identity and data spaces: standards foreseen in those policies would need, by law (and not only by an internal Commission commitment – see option 2), to be aligned with EU minimum interoperability requirements which would become mandatory.

5.5. 5.5. Options discarded at an early stage

Inspired by the institutional setup created for cyber security¹⁰⁵ or high-performance computing¹⁰⁶ the option of establishing a common body or a joint undertaking was among the initial options assessed. However, actions performed by, e.g., a joint undertaking cannot replace but only complement an overall coherent approach to interoperability and progress might be slowed down by difficult budgetary discussions. Therefore, this option was discarded at the current point in time but should be reassessed in the future, which is explicitly mentioned in Chapter 9.

It was also discussed to what extent the right for data portability, established in Art. 20 Regulation (EU) 2016/679 (GDPR) could be extended to personal data used by public administrations. This would give citizens and businesses a right to have their personal data processed in a machine-readable format. It would however contradict the explicit exception for data processed in performance of a task carried out in the public interest or in the exercise of official authority in the GDPR and would need a recast of the latter. This would go beyond the scope of the initiative.

6. 6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?

The impacts of a public sector interoperability policy are more difficult to identify and quantify than those of many other EU initiatives. A study by the Joint Research Centre (JRC)¹⁰⁷ analysed the economic impact of location interoperability overall based on 20 case studies. It finds that, due to its very nature as an enabling factor across many policy fields, the impact of interoperability is **hard to isolate from other elements of a policy** and interoperability is never an aim in itself but always an **enabling precondition**.

¹⁰⁴ [European Interoperability Reference Architecture](#).

¹⁰⁵ [EU Cybersecurity competence centre](#).

¹⁰⁶ [EU High Performance Computing - joint undertaking](#).

¹⁰⁷ Ulrich, P., Duch Brown, N., Kotsev, A., Minghini, M., Hernandez Quiros, L., Boguslawski, R. and Pignatelli, F., Quantifying the Benefits of Location Interoperability in the European Union, EUR 31004 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-48846-0, doi:10.2760/72064, JRC127330.

Interoperability in its many forms is an important enabler; yet, it is the interoperable policies and public services that are delivering the benefits and consuming resources.

Nevertheless, the evidence available is rather conclusive. For instance, in terms of **economic impact**, the study by the JRC finds that, if all solutions are made interoperable, even with conservative estimates, **citizens** could **save up to 24 million hours** per year due to improved interoperability. This would represent monetary savings in the order of **EUR 543 million** annually. For **businesses**, the establishment of a full interoperable economy would lead to time **savings of 30 billion hours**. In monetary terms, this translates into savings of **EUR 568 billion** annually. Improvements in public sector performance due to interoperability could lead to an increase of **0.4% in GDP**. Overall, the potential positive benefits derived from increased interoperability for the public sector in the EU are considerable. For instance, converting these estimates to monetary terms, a **1% improvement** in the indicators used, because of better interoperability, would imply **an increase of the EU GDP in the range of EUR 21 to 56 billion**.

The final evaluation of the ISA² programme and the evaluation of the EIF show a crucial role of interoperability action during the COVID-19 pandemic¹⁰⁸. **Not acting**, therefore could also have wider repercussions, affecting the **resilience of the public administrations and foregoing the opportunity to strengthen capabilities**.

The impacts of the different policy options are analysed below (for a full overview see Annex III Who is affected and how?).

6.1. 6.1. Impacts of Option 0 - baseline scenario

If no action is taken the **objectives outlined in Section 4 will not be achieved** as the Member States' take-up of **interoperable resources** and specifications when implementing EU policies remains patchy and **voluntary** unless more binding requirements are brought by sectoral policy initiatives. Sectoral initiatives may, as a result, be uncoordinated and deepen the interoperability gap. Member States can continue to implement solutions and specifications in **diverging ways**. Their **ability to exchange data cross-borders** depends on their respective levels of digitalisation, bilateral agreements between Member States' administrations or sectoral policy initiatives of the EU and thus **remains uncertain**.

Continuing with the status quo of the 2017 EIF and an outdated Interoperability Action Plan would not address the main problems identified in the evaluations of the EIF and the ISA² programme¹⁰⁹. Even though future actions on interoperability are planned to be funded also outside the Interoperability Action Plan, for example as part of the Digital Europe Programme, such interoperability action would have no specific governance or ensure coordination across different funding programmes and policies.

Informal and necessarily limited support could on an ad-hoc basis be provided to policy DGs by DG DIGIT's Interoperability unit for the implementation of sectoral digital measures, if requested by the policy DGs. To date, this support is generally requested too late in the process to be able to make a difference and ensure interoperable-by-default and digital-ready policies.

Due to the already high-level of 2017 EIF implementation on the conceptual level, little **costs** can be directly linked to keeping the baseline scenario (see Table 2). On the EU level the costs for monitoring and facilitating the access to guidance can be assumed to fall within the range of costs noted for the implementation of the NIFO action during the ISA² programme.

¹⁰⁸ See and ISA² evaluation [COM/2021/965 final](#), [SWD/2021/965 final](#).

¹⁰⁹ See and ISA² programme final evaluation [COM/2021/965 final](#), [SWD/2021/965 final](#).

The NIFO action relied on a budget of approximately EUR 2.5 million between 2016 and 2020¹¹⁰.

However, the indirect costs and unresolved administrative burden linked to an outdated interoperability policy are likely to be considered significant and would potentially grow over time. The literature shows **strong negative mostly indirect economic impacts of the baseline scenario due to untapped potential for cost reduction**. The overall feedback to both targeted and public consultations also shows that limited negative impacts may be expected with respect to the costs of interacting with public administrations, the costs borne by public administrations in providing services, and research and innovation (with average scores of -0.2 on a scale from -2 to 2, based on 121, 120 and 115 responses for each area, respectively)¹¹¹.

Even though it seems likely that **social and environmental** impacts and the right of individuals to freely move in the EU would not be negatively affected through the baseline option, the potential benefits outlined in the introduction of this chapter would not be unlocked.

In this option there are very **limited incentives** for the Union or its Member States to take a more coordinated approach on the design, approval and take-up of shared interoperability resources when implementing their policies. Ongoing policies will have an impact on interoperability of data and public services cross-borders and across sectors at an EU level (Digital Services Act, Data Governance Act and future Data act, Open Data Directive, Digital Identity, Digitalisation of justice cross-borders, Single Digital Gateway Regulation etc.), limited to their own specific scope without any coordination between measures that impact implementation on the ground. Member States have complained repeatedly about the **lack of coordination** at Commission level (see recommendations from the expert group) and will continue to lack pragmatic guidance on implementation, leading to more delays for sectoral policies. For instance, 18 Member States have had infringement proceedings open on 30/09/2021¹¹² owing to the lack of transposition measures for the Open Data Directive adopted in 2019.

6.2. 6.2. Impacts of Option 1: Non-legislative actions

Option 1 would be mainly a continuation of the current policy approach, updating the current instruments without adding substantially new ones.

This approach, very much in line with what has been put in place in 2017 with the current version of the EIF, has been proven via the evaluations to provide limited contributions, when it comes to developing more effective, simplified and user-friendly digital public services at the national, regional and local levels¹¹³.

In consequence this would mean that the possible positive **economic impacts** of such interoperable services would most probably continue to remain untapped. This assessment has been confirmed by the consulted stakeholders in both the targeted and public consultations: option 1 is expected to bring only limited positive impacts on the free movement of goods, services, capital, and workers across the Member States, and on research, development and innovation (with an average score of 0.5 on a scale from -2 to 2, based on 112 responses).

¹¹⁰ Information on the budget allocated to ISA² actions throughout the duration of the programme is available on the [ISA² Dashboard](#): (retrieved on 3 June 2021).

¹¹¹ All the stakeholder inputs are detailed in Annex II Stakeholder consultation.

¹¹² [Infringement Decisions \(europa.eu\)](#).

¹¹³ See Evaluation of the ISA² programme, COM(2021)965.

Under this option, the **uptake** of interoperability by public administrations across the EU would remain **voluntary** as in the baseline and would most likely produce limited effects, in line with the results of the current policy set-up for Interoperability shown in the evaluation results for the EIF and ISA².

The interplay of Option 1 and other EU or Member State policies when it comes to design, approval and take-up of shared interoperability resources will not substantially differ from the base-line scenario. While an updated EIF would make more coherent links with the policy developments since 2017, option 1 would not ensure that those policies would be implemented in compliance with the EIF or could build on a more formal input from a public sector community on the topic.

The **direct costs** of the current interoperability policy (EIF implementation) for EU countries can be quantified more easily and are very low (see Table 1).

Table 1. Overview of costs and benefits identified in the EIF evaluation

	Citizens		Businesses		Public administrations	
	Quantitative	Comment	Quantitative	Comment	Quantitative	Comment
	Costs					
Direct compliance costs: Implementation of the EIF (one-off costs)	0	No direct compliance costs applicable.	No direct compliance costs applicable.	No direct compliance costs applicable.	EUR 24 000 – EUR 169 000, corresponding respectively to 150 and 550 person-days.	The costs of implementation of the EIF vary depending on whether the Member State updates drafts of existing national documents and strategies based on the EIF or designs national documents and strategies based on the EIF without relying on any other prior such documents.

	Citizens		Businesses		Public administrations	
	Quantitative	Comment	Quantitative	Comment	Quantitative	Comment
	General comment: The costs of implementing the EIF are borne by public administrations only.					
	Benefits					
Direct benefits: additional EU users of the Internet to interact with their public administrations (recurrent benefits, but expected to decrease over the time)	A 10% improvement in the quality of online public services would encourage approximately 4.3 million to 5 million more EU citizens per year	This result is part of an econometric analysis run on 21 EU Member States, Iceland, Norway, Switzerland and the UK.				
	General comment: It is important to note that although no benefits are quantified for businesses and public administrations, the evaluation supports qualitatively that benefits exceed the costs for public administrations and bring substantial benefits to both businesses and citizens.					

Source: [Study supporting the evaluation of the implementation of the EIF](#)

Also, for the **impacts on the costs of interacting with public administrations and the costs of doing business in the EU**, option 1 is not expected to bring results much beyond the limited contributions already achieved under the new EIF from its adoption in 2017 to 2020. The 119 stakeholders contributing to the targeted and public consultations rate those impacts with an average score of 0.3 on a scale from -2 to 2. An effective mechanism to ensure synergies across funding programmes and EU policies could significantly enhance the potential benefits¹¹⁴.

Option 1 **only implies costs for public administrations** (variable from country to country) **and no potential additional burdens on businesses and citizens**. The potential costs incurred by public administrations in implementing this option are expected to be low and are based on the voluntary take-up of new guidance and its implementation in at least some areas of activities of public administrations. With regards to the Commission, there would be upfront costs involved in revising the EIF and costs in monitoring the progress of its implementation in line with current costs.

¹¹⁴ Stakeholders rate this option with an average score of 0.8 on a scale from -2 to 2, based on 113 responses to the public and targeted consultations.

With respect to **social impacts**, Option 1 is expected to contribute to improve to a limited extent the **quality of the services** provided by public administrations via updated guidance and a common and human-centric EU approach to public sector interoperability. Respondents to both the targeted and public consultations confirm that positive impacts may materialise (with an average score of 0.5 on a scale from -2 to 2, based on 119 responses). An updated EIF would allow for updated guidance and recommendations to be provided for the development of digital and interoperable public services based, among others on the learnings drawn from the evaluation of the EIF as well as the final evaluation of the ISA² programme¹¹⁵.

Turning to **environmental impacts**, Option 1 is likely to have either limited positive or no sizeable impacts on the green transition. The assessment focused on the potential (indirect) impacts on the green transition in the EU, e.g., the role played by interoperability in the development of the common European data spaces (with a common European Green Deal data space foreseen in this framework)¹¹⁶. Common EU guidance on interoperability could contribute to achieving some of the goals set through the European Green Deal¹¹⁷.

Finally, when it comes to **impacts on fundamental rights** the most imminent impact can be seen on Article 41 of the EU Charter of Fundamental Rights (CFR), namely the ‘right to good administration’¹¹⁸. Measures to support the digitalisation of public services can be seen as enablers of the right to good administration, having the potential to contribute to the key principles of good administration that include impartiality, fairness, and reasonable time of resolving affairs¹¹⁹. No further action on the EIF and its related principles could also have negative impacts, for instance on Art. 9 CFR, the right to protection of personal data; and Art. 22, CFR the right to linguistic diversity. When it comes to the right to move freely in the EU, studies on SMEs show that non-interoperable administrative procedures hinder European SMEs to do business in other EU countries and thus affect their right of freely acting in the Single Market¹²⁰.

Option 1 is technically feasible as it is mainly a continuation of current policy, and likely to be politically feasible as it only introduces small changes, not expected to face strong opposition. However, looking at the far-reaching recommendations of the expert group on interoperability of public services and European Parliament¹²¹ voices on the topic, it is not unlikely that the Parliament or the Council would ask for more ambitious measures.

In summary, this option would mostly be a continuation of the current system with all its benefits and drawbacks, with some small improvements through updating of the current Interoperability Framework setup. Its scope would however be limited as an update cannot ensure that the framework stays future-proof and coherent, nor can it generate an overall closer cooperation on the topic.

¹¹⁵ See [COM/2021/965 final](#), [SWD/2021/965 final](#) and CEPS (2021), [Study supporting the final evaluation of the ISA² programme](#). [Study supporting the evaluation of the implementation of the EIF](#).

¹¹⁶ COM(2020) 66 - A European strategy for data.

¹¹⁷ [ELISE - European Location Interoperability Solutions for e-Government: Energy & Location Applications](#).

¹¹⁸ Even though the wording of the charter restricts that right to EU bodies, in the Case C-604/12 the CJEU confirmed that it was applicable to national proceedings linked to EU law.

¹¹⁹ Matusiak, J., Princ, M. (2018), [EGovernment As an Element of the Right to Good Administration](#).

¹²⁰ SWD(2020) 54 final, Identifying and addressing barriers to the Single Market.

¹²¹ See positions of Parliament on Interoperability in Annex VI.

6.3. 6.3. Impacts of option 2: New legal framework for an interoperable EU public sector infrastructure

In focusing on **strengthened cooperation without centrally imposing uniform implementation obligations**, this option responds to the subsidiarity needs of public sector digital transformation: Member States are sovereign in designing their government setup; creating distributed but connected – interoperable – public sector ecosystems allows meeting local needs while delivering on the objectives of interoperability.

This option is expected to generate an improved sense of ownership of interoperability by offering a platform for structured cooperation on interoperability across the EU. The benefit lies in more direct involvement in the development of interoperability initiatives, facilitating the take-up of jointly piloted interoperability solutions. The speed of developments may depend on the configuration of the governance and on the prioritisation of issues taken up by it. Option 2 could be combined with introducing conditionalities for respecting interoperability requirements to receive EU funding or a label to certify solutions that fulfil the requirements are set-up by the collaboration platform on interoperability.

Against this background, the feedback from stakeholders indicates that Option 2 would likely bring positive effects across all categories of impacts considered (see Annex II Stakeholder consultations). Overall, responses from the citizens consulted through the public consultation tend to be the most positive, followed by responses received from representatives of EU public authorities (engaged in both the targeted and the public consultations). And this is the option which is most in line with the recommendations of the expert group.

In terms of **economic impacts**, Option 2 is expected by stakeholders to have particularly **positive effects on the free movement of goods, services, capital and workers** across the Member States and on research, development and innovation (with average scores of 1 and 0.9 on a scale from -2 to 2, based on 116 and 117 responses, respectively). The positive impacts are expected from enhanced cooperation across the EU, contributing to improving the development and delivery of digital and interoperable public services. Similarly, Option 2 is likely to lead to a **reduction in the costs of interacting with public administrations as well as the costs of doing business in the EU** (according to feedback from stakeholders showing average scores of 0.9 and 0.8 on a scale from -2 to 2, based on 122 and 115 responses, respectively). Some positive overall **economic impacts** are especially expected from introducing conditionalities. These include positive impacts on innovation and research (as confirmed by respondents to both targeted and public consultations, with an average score of 1 on a scale of -2 to 2, based on 117 responses). To the extent that more interoperable projects and services are developed, this may lead to cost reductions both for public administrations as well as businesses and citizens interacting with public administrations.

By establishing a common governance with the mandate to issue agreed positions on the use of interoperability resources, those resources could also be **mandated for future EU funding programmes**. In this case, public administrations requesting EU funding and assistance for their efforts to modernise and digitise their systems and processes would need to argue how they plan to comply with or contribute to the agreed interoperability resources. Such a measure would ensure that digitalisation efforts in public administrations build on existing solutions, reduce the risk of duplication of work and contribute to a harmonised approach to interoperability. In addition, relying on conditionalities can also ensure that solutions already funded at the EU level are used. The result would be an emerging distributed trans-European network of public administrations and services.

This is further supported by examples from Member States on cost-savings linked with interoperable digital services, summarised in Table 2.

Table 2. Summary of the key findings for time and cost savings estimations

Geographical coverage	Implemented solutions	Cost savings
Belgium ¹²²	Digital government solutions	Estimates for 2016: • EUR 4.6 million for businesses; and • EUR 28 million for citizens.
Estonia ¹²³	Digital signatures	2% of Estonia's GDP saved (according to 2018 estimates)
The UK ¹²⁴	Digital strategies and implementation of key principles: digital-by-default public services	GBP 1.7 billion to GBP 1.8 billion saved every year
The Netherlands and Belgium ¹²⁵	Digital strategies and implementation of key principles: once-only principle	Estimates from 2017: EUR 163 million (Netherlands) and around EUR 100 million (Belgium) saved per year
Spain ¹²⁶	Digital strategies and implementation of key principles: e-administrations, once-only principle, and interoperability platforms	EUR 22 billion saved between 2008 and 2011, with: • 60% e-administration; • 20% implementation of once-only principle; • 20% to interoperability platforms.
EU ¹²⁷	Digital strategies and implementation of key principles: once-only principle and digital-by-default public services	Estimates from 2014: • EUR 5 billion saved per year linked to the once-only-principle; and • EUR 10 billion saved per year linked to the digital-by-default principle.
EU	The use of open source software	Estimated benefits from an increase of 10% in open source software contributions: • An additional 0.4% to 0.6% GDP per year in the EU; • Over 600 additional ICT start-ups per year in the EU.

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

¹²² [Digital Dashboard Belgium](#), Evolution of cumulative annual cost reduction per target group 2016.

¹²³ For further details please see: [e-Estonia guide 2020](#).

¹²⁴ For more details please see: [How digital and technology transformation saved 1.7bn](#).

¹²⁵ For further details please see: Cave J. et al (2017), [EU-wide digital Once-Only Principle for citizens and businesses](#).

¹²⁶ Gallo, C., Giove, M., Millard, J., Thaarup, R. (2014), [Study on eGovernment and the Reduction of Administrative Burden](#), European Commission, p. 35.

¹²⁷ Ibid., p. 25, 48.

The impacts on the costs borne by public administrations in providing public services need to be considered in terms of both shorter-term implications and potential longer-term benefits. In the shorter run, public authorities may incur costs in setting up the mechanism for structured cooperation among administrations in the EU and the Member States. These costs would be offset over the longer term by the benefits generated through the improved cooperation and the development and implementation of common interoperability measures for public services, thus reducing duplications of efforts and unnecessary burdens. In addition, measures such as interoperability checks on EU legislation and EU funding would ensure that EU funds are spent in a much more cost-effective way, thus generating benefits such as facilitating data sharing across sectors and the re-use of digital tools. Overall, the feedback from stakeholders is positive, suggesting at least some reduction in the costs borne by public administrations in providing public services (with an average score of 0.5 on a scale from -2 to 2, based on 118 responses).

This assessment is complemented by estimations of the benefits that are likely to result from Option 2 (the summary of the estimations is presented in section 7.3 and Annex 4). In this case, the scenario for the potential costs incurred assumes a higher commitment to implementing common interoperability solutions based on the enhanced cooperation mechanism on interoperability among EU and Member States' public administrations. This option is not expected to generate additional costs for citizens and businesses compared to the baseline situation. Regarding **social impacts**, Option 2 is likely to lead to a significant increase in the quality of the services provided by public administrations compared to the 'no-change' scenario. The findings from the evaluations of the ISA² programme and the EIF as well as the stakeholders consulted confirm this assessment (with an average score of 1.1 on a scale from -2 to 2, based on 116 responses). Both evaluations emphasise the need for enhanced governance and cooperation to help build a coherent landscape of public sector interoperability across the EU¹²⁸. This can in turn improve the provision and quality of public services. Furthermore, the specialised literature underlines the importance of governance mechanisms and cooperation for the success of digital government strategies and implementation of interoperability requirements¹²⁹. Interoperability can be a key enabler for generating **public value** for stakeholders¹³⁰, including to better equip public administrations to address social challenges (the Dutch Government Data Agenda focuses particularly on the role of data to tackle social issues)¹³¹. Interoperability can also contribute achieving the Sustainable Development Goals¹³², seen as essential to foster positive social impacts according to the UN¹³³.

As far as **environmental impacts** are concerned, the measures proposed in Option 2 are **likely to have positive effects on the green transition in the EU**. Interoperable processes, and in particular, interoperable data play a significant role across policy areas, including the green transition¹³⁴. For instance, the 2021 Ministerial Declaration on A Green and Digital Transformation of the EU reinforces the need to share data '*through standardised and interoperable common European data spaces to unleash the potential from data on realising the European Green Deal*'¹³⁵. The role of interoperable data is also emphasised in the context

¹²⁸ See EIF final evaluation SWD(2022) 720 final, and ISA² final evaluation SWD(2021) 965 final.

¹²⁹ Nielsen, M. M., Jordanoski, Z. (2020), [Digital transformation, governance and coordination models: A comparative study of Australia, Denmark and the Republic of Korea](#), pp. 285–293.

¹³⁰ Chantillon, M., Crompvoets, J., and Peristeras, V. (2020), Prioritizing Public Values in E-government Policies: A Document Analysis, Information Policy.

¹³¹ OECD (2019) [The Path to Becoming a Data-Driven Public Sector](#).

¹³² The Digital Public Goods Alliance, <https://digitalpublicgoods.net/about/>.

¹³³ UN (2020), [The Impact of Digital Technologies](#), UN75 Issue Briefs.

¹³⁴ [Towards a green competitive and resilient EU economy](#).

¹³⁵ [Ministerial Declaration on A Green and Digital Transformation of the EU](#), 19 March 2021.

of the Zero Pollution Action Plan¹³⁶. Combining different types of data (for instance pollution-related data and spatial data) can bring innovations that help alleviate environmental impacts from pollution. Establishing a common, machine-readable, way of defining and exchanging environmental/climate footprint data with all market players could save the burden in setting up and operating public procurement in an age in which everybody will be responsible for knowing and reporting their own climate footprint (e.g. today every time something is procured we need to define again and again how/when/in which way the vendor should communicate such data). In addition, enhanced interoperability of data and processes can also bring direct environmental impacts from reducing paper-based processes in the public administrations as well as limiting physical travel required from the users of public services when completing administrative procedures¹³⁷.

Option 2 is also expected to have generally positive **impacts on fundamental rights**, in particular on the individuals' rights to move freely within the EU. The positive impacts would come from the enhanced provision and higher quality of digital and interoperable public services which may further facilitate this right. The feedback from stakeholders goes in this sense (with an average score of 0.9 on a scale from very negative, -2, to very positive, 2, based on 111 responses). From this perspective, Option 2 may also further support the right to good administration as captured in Article 41 of the EU Charter of Fundamental Rights¹³⁸. Especially introducing conditionalities is expected to have positive impacts on the quality of services (with an average score of 1.3 on a scale of -2 to 2, based on 56 and 54 responses, respectively, received to the targeted consultations).

Looking at **political feasibility**, Option 2 is very closely aligned with the recommendations of the expert group on interoperability of public services (see Annex V) and with the Berlin declaration. It can therefore be expected to receive political support from Member States. The European Parliament often underlines the importance of interoperability in its opinions (e.g. in the recent discussions around the Digital Markets Act) we can assume that it would support this initiative.

6.4. 6.4. Impacts of option 3: Legal interoperability requirements for public sector bodies

Option 3, focusing on a legislative approach based on interoperability requirements, is expected by stakeholders to speed up the benefits in terms of harmonisation of the public sector interoperability landscape in the EU. Such benefits, however, must be weighed against the costs and the overall feasibility of implementation.

The benefits and costs linked with this option would derive from the binding approach taken. This option includes making an updated EIF, or parts thereof, mandatory to be taken up in national frameworks. The costs of implementing the EIF would thus vary across the EU depending on whether only an update is required to the national framework or if the national framework needs to be built from scratch (which would be the case for 5 Member States). In addition, the binding approach would also see more common standards being taken up by public administrations across the EU and associated maintenance costs. Relevant standards would need to be developed and adopted in implementing acts before being implemented in IT systems of EU public administrations. The high number of technical specifications and

¹³⁶ SWD(2021) 140, [Digital Solutions for Zero Pollution](#).

¹³⁷ [The Once Only initiative – a stepping stone to Europe's recovery](#); [eGovernment Using technology to improve public services and democratic participation](#). The environmental impact from improved digital public services is also noted in several government strategies for digital government including the UK ([Greening Government: ICT Strategy 2011](#), p. 12,) and Malta ([A Strategic Plan for the Digital Transformation of the Public Administration 2019 – 2021](#), p. 46,).

¹³⁸ Regarding its applicability beyond proceedings of EU bodies see Case C-604/12.

standards implemented in ICT systems makes it impossible to use implementing acts to cover anything beyond basic minimal requirements.

In terms of **economic impacts**, Option 3 is expected to have positive impacts on the free movement of goods, services, capital and workers across the Member States as well as on research, development and innovation. It would help establish common specifications across the IT systems of Member States public sector and ensure smooth data flows which are a basic requirement for free movement. In the long term it will likely contribute to a reduction in the costs of interacting with public administrations as it would facilitate the '*once-only principle*'. But Option 3 may have more limited positive effects on the costs borne by public administrations in providing public services. This reflects the dual nature of costs: in the short term, the introduction of minimum requirements for interoperability is likely to lead to an important increase in the costs borne by public administrations; over the longer term, the benefits from more coordination and harmonisation are expected to outweigh the initial costs. However, the requirements may be more burdensome on countries already facing resource scarcity issues (limited financial resources as well as qualified staff) or countries that already have made high investments in their domestic interoperability landscape and have a high number of legacy IT systems.

In terms of **social impacts**, significant positive impacts are expected by consulted stakeholders when it comes to the quality of the services provided by public administrations (with average scores of 1.2 and 1.1 on a scale from very negative, -2, to very positive, 2, based on 119 and 112 responses, respectively, received to both the targeted and public consultations). The implementation of minimum interoperability requirements, mandated through a legal act, would likely contribute to a more harmonised landscape of public services across the EU, facilitating the access to and quality of services, and it would further support wider efforts for public sector digitalisation and innovation.

With regard to **environmental impacts**, the introduction of minimum requirements proposed in Option 3 is expected to contribute to the green transition in the EU, even if indirectly in line with Option 2.

Finally, Option 3 would also bring positive **impacts on fundamental rights**, further facilitating the individuals' rights to move freely within the EU. Stakeholders consulted in both the targeted and the public consultations see particularly positive impacts stemming from this option (as confirmed with an average score of 1 on a scale from very negative, -2, to very positive, 2, from 106 answers). In addition, building on the identified social impacts, Option 3 may also further enable the right to good administration (Article 41 of the EU Charter of Fundamental Rights¹³⁹).

The option of introducing new minimum interoperability requirements through a legislative act could potentially generate significant benefits for citizens, businesses, and public administrations. It would, however, also create the highest costs among all options. While Member States are still in the course of implementing several EU policies with high interoperability implications (like the Digital Single Gateway or the Open Data Directive), their preference is on establishing a good cooperation mechanism around the topic and not on further legally binding result obligations (see Expert Group recommendation in Annex V).

A more in-depth feasibility assessment would be needed on this option as it is the one that has the farthest-reaching impacts on existing and future policies both at Commission and Member States level. Getting an agreement on common mandatory interoperability requirements at EU level would be a major challenge, even more so if we factor in concerns of commercial actors that could come up or the ones of all the different levels of administrations across the Member

¹³⁹ Regarding its applicability beyond proceedings of EU bodies see Case C-604/12.

States. This would make it very difficult to align enough up-front to legislate on concrete technical requirements via implementing or delegated acts. Where in Option 2 there is a focus on ensuring the process is in place with some clear but limited obligations, roles and mandates, Option 3 adds on top a ‘standardisation’ oriented approach which does not seem appropriate considering the differences in levels of digitalisation of the Member States.

The advantage of the process-focused approach in Option 2 is that issues can be taken up when they are topical and ‘ripe’¹⁴⁰, like for the COVID-19 ‘Green passes’, and not *in abstracto* when it will be difficult to activate the relevant actors across multiple policy areas to take a proportionate and technical sound decision. It is also easier to react to political priorities in the first place, and to do so in a more flexible way.

Politically, Member States would most likely not be in favour of very strong legally binding obligations (see expert group recommendations in Annex V) which may lead to this option being blocked in Council discussions.

7. 7. HOW DO THE OPTIONS COMPARE?

In this chapter, we compare the policy options on basis of the following five criteria:

- **coherence** with the existing legal framework at EU and national level;
- **effectiveness**, in terms of the potential to achieve the general and specific objectives of the initiative;
- **efficiency**, in terms of the benefits in time and cost-savings for citizens and businesses, impacts on the quality of public services, impacts on green transition, fundamental rights, implementation costs for public administrations, compliance costs for citizens and businesses;
- **subsidiarity**, in terms of what could be achieved by Member States acting alone, and whether the objectives can be met more (cost-) efficiently at EU level; and
- expected **support from stakeholders**.

The results of the analysis are summarised in Table 3 and explained in further detail in this section. The table should be read as follows: ‘0’ if no new impact compared to the status quo is expected; ‘-’ if negative impacts are likely to arise; ‘- -’ if the option would result in very negative impacts; ‘+’ pointing to positive impacts; ‘++’ referring to very positive impacts; and ‘+++’ to the best performance among the options.

Table 3. Comparison of options

Criteria	Core policy options							
	Option 0 – Baseline		Option 1 – revised EIF		Option 2 – Governance		Option 3 – Interop. requirements	
Coherence	ST	LT	ST	LT	ST	LT	ST	LT
Coherence with ongoing initiatives in the field of digital	--	--	+	-	+	++	-	++

¹⁴⁰ The work of Commission, Member States and private actors on the COVID-19 ‘Green passes’ is a good example of the success of standardisation and interoperability efforts now embodied in the EU Digital Covid Certificate Regulation.

Criteria	Core policy options							
	Option 0 – Baseline		Option 1 – revised EIF		Option 2 – Governance		Option 3 – Interop. requirements	
transformation								
Effectiveness - Specific objectives	ST	LT	ST	LT	ST	LT	ST	LT
Establish an interoperability governance	-	--	0	-	+	++	+	++
Coherent approach from policymaking to implementation	0	0	+	0	++	++	++	+
Co-create an ecosystem of interoperability standards, solutions and services for the EU's public sector	0	0	+	0	++	++	+	+
Efficiency	ST	LT	ST	LT	ST	LT	ST	LT
Benefits (time- and/or cost-savings)	0	0	0	+	++	++	++	++
Impacts on the quality of public services	-	-	0	+	++	++	++	++
Impacts on the green transition in the EU	-	-	0	0	0	+	+	0
Impacts on fundamental rights	0	0	0	+	+	+	+	+
Implementation costs incurred by public administrations	0	0	-	0	-	-	--	-
Compliance costs incurred by citizens and businesses	0	0	0	0	0	0	0	0
Subsidiarity								
	0		+		++		-	
Stakeholders support								
Overall respondents to consultations	0		+		+		++	
National and regional public administrations	-		+		++		+	

++	Very positive impact
+	Positive impact
0	Neutral impact
-	Negative impact
--	Very negative impact
ST = short term; LT = long term	

7.1. 7.1 Coherence

In terms of coherence with the ongoing initiatives in the field of digital public sector transformation, the **baseline** (Option 0) has the clear disadvantage of a guiding policy instrument (EIF) that is already outdated in a very dynamic policy field. It would have a very negative impact as it would no longer be consistent and coherent with all initiatives adopted since 2017 (see legal context). Updating the EIF as foreseen in **Option 1** would in the short term resolve this problem of coherence with newer policies but would not provide a sustainable solution in the long term as the amount of policy initiatives with impacts on digital is only expected to increase.

Option 2 scores best in terms of coherence as it offers a governance framework for an EU public sector infrastructure that can develop and adapt over time to relevant new policy and technological developments. Coherence would depend on the take-up of the agreed interoperability specifications in other policy initiatives and instruments. This has the downside that it needs to be ensured through Commission-internal rules in the first place¹⁴¹. On the upside, it would avoid conflicting rules across policy fields – as it would foster clear and dynamic links between the policies.

Option 3 would in the short term be problematic, as coherence with the existing and proposed policies with high interoperability stake, like the Digital Services Act¹⁴², the Data Governance Act¹⁴³ a framework for a European Digital Identity¹⁴⁴, and a Regulation laying down harmonised AI rules would need to be created ex-post. In the medium and long term, it could foster coherence as it would push for a stronger alignment of interoperability requirements set in policies across different administrative levels, like those foreseen in a future Data act for the data spaces. As standards and specifications would need to be set through implementing acts, it would be a challenge to ensure alignment with rapid technical development and maintain a coherent and up-to-date framework, also given the very large group of interested

¹⁴¹ While the co-legislators could conceivably ensure such coherence as well, this task should naturally be achieved upstream, from the very inception of a new policy proposal and through its elaboration by the Commission services until its official adoption. Work on internal measures to support this are advanced and continue.

¹⁴² Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on a Single Market For Digital Services ([Digital Services Act](#)) and amending Directive 2000/31/EC, COM/2020/825 final.

¹⁴³ Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on European data governance ([Data Governance Act](#)) COM/2020/767 final.

¹⁴⁴ Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) No 910/2014 as regards establishing a framework for a [European Digital Identity](#), COM/2021/281 final.

actors both in the public sector and among the private actors who have a commercial interest in supplying digital technologies to the public sector. The focus on specific requirements might not be fit to ensure long-term future coherence.

Option 2 would not impose a harmonised and general interoperability obligation across Europe (different from option 3) but would support gradually building up an interoperability infrastructure with public administrations performing transparent assessments of the possibilities for reusing and further developing common interoperability resources.

7.2. 7.2 Effectiveness

The objective of establishing an **interoperability governance** designed to enable the different administrative levels, sectors and stakeholders to work together is not delivered through **Options 0 or 1** and they would most probably have negative impacts as the body that was governing the Interoperability Action plan – the ISA² committee, does not exist anymore (it has been replaced by the higher level Digital Europe Programme committee). The interoperability expert group would allow for limited and occasional involvement of relevant Member State stakeholders.

The **governance** objective is expected to be most effectively achieved with **Option 2**. The legislative proposal presented under this option would focus on defining a clear mandate, roles and responsibilities for the relevant actors, ensuring continued delivery of the required policy outcomes: common resources and aligned implementation. **Option 3** can be expected to be similarly effective, although the focus on mandatory requirements might overshadow the cooperation potential.

Option 3 could give a strong push for **digital-ready implementation of EU policies** in Member States by making interoperability requirements mandatory. Option 2 seems however the best placed to ensure measures are fit-for-purpose in the short and in the long term by establishing a mechanism that allows Member States to work permanently together on interoperable solutions for the implementation of EU policies, based on their needs. Staying with the baseline (Option 0) would be neutral to negative for this objective. The current EIF is issuing just one high-level recommendation on the topic that would remain valid and could be addressed with different measures also outside the current policy framework without creating incoherencies. Negative impacts can be expected especially in the longer term with staying with the status quo that would be less and less fit for purpose to be the main point of reference for a strong and coherent EU approach. Option 1 could be a vehicle to clarify the Commission's commitment and continued engagement in the field, without a promise of stronger impact.

Options 2 and 3 are considered most effective to reach the objective of **co-creating an ecosystem of interoperability standards, solutions and services for the EU's public sector**. Option 2 would however be most effective in providing a framework for the consistent and continued co-creation of such an eco-system. Option 1 would remain on the level of a Commission statement of intention and the speed of development would most probably remain on the level of the last 20 years, not meeting Member State and policy expectations. While Option 3 would be very effective in pushing for a (limited) set-of reuse of shared interoperability standards and solutions, it risks being overall less effective because it would not be focused on an open and innovative growing ecosystem of diverse interoperable solutions. It is less likely that regional and local public administrations would be actively and constructively involved as the focus is more on the regulatory than on the community building part. Moreover, option 3 is less likely to garner political support, due to its broad scope and high subsidiarity sensitivity (e.g. as regards EU and Member States legacy systems).

Therefore, it is presumed to impact much less in guaranteeing a flexible and responsive reaction to rapidly changing technological and policy requirements.

Whereas option 2 is less intrusive, striking a good balance between efficiency and political engagement from Member States. It creates a much more realistic scenario of cooperation between Member States and the European Commission to establish a more flexible and pragmatic governance that can adjust rapidly to keep up to new needs and technological changes. It can also lead to option 3 gradually over time, once trustworthy relationships are fostered.

7.3. 7.3 Efficiency

Most time- and/or **cost-savings** for businesses and citizens are expected from options 2 and 3.

The analysis conducted for this impact assessment report, reuses the study on Quantifying the Benefits of Location Interoperability in the European Union by JRC and adapts it to a wider area of digital services related to fundamental administrative procedures, as explained in Annex IV. For policy option 2, the JRC study looks at the impact of increased interoperability of public services for citizens, businesses and the public sector. It provides estimates of the number of hours saved and its economic value (in EUR) under two scenarios: a static scenario in which the time saved from interoperability comes only from existing online users, and a dynamic scenario assuming a behavioural change in which the proportion of online users increases.

For the purposes of the computation of the impacts associated to this initiative, i.e. the benefits that can be attributed to cross-border interoperability, further assumptions and calculations were made on:

- **Number of hours spent by businesses in dealing with administration.** A **sensitivity analysis** was performed using as parameter a percentage calculated as number of hours spent by businesses in dealing with administration with respect to total hours worked. Calculations were done for a 30% (the high variant, corresponding to the original numbers used in the JRC report), 25%, 20%, 15% (as intermediate variants) and 10% (for the low variant). In the case of citizens, such wide potential variations on number of hours spent do not occur. As a matter of fact, according to Eurostat's Harmonised European Time Use Surveys¹⁴⁵, the EU-27, on average, citizens spend 27 min per year dealing with the administration. This represents 0.01% of their working time (excluding sleeping time, holidays and weekends). Any sensitivity analysis around this figure would be little informative and not bring any meaningful fine-grained cost saving analysis.
- **Online public services available cross-border.** Using data from the **eGovernment benchmark of 2021 and 2022**, the proportion of public services offered online and available cross-border was calculated. The EU-27 average is 21% for businesses and 12% for citizens. The calculations are made at country level, showing a high variation. For instance, in the case of businesses for Greece the share is only 2% while is close to 40% in Spain. For citizens, it ranges from 3% in Romania to 35% in Malta.
- **Degree of use.** The fact that a service is available cross-border and online does not guarantee that it is used. In order to estimate accurately the expected impact, the figures are adjusted to take into account the intensity of use. To do so, data from Similarweb

¹⁴⁵

<https://ec.europa.eu/eurostat/web/time-use-surveys>

on cross-border traffic to public sector websites offering services (extracted in the previous step) was used. The EU-27 average is 12%, and the proportion of domestic users of online public services is 88%. These figures are also at the country level, with Greece showing the lowest intensity (5%) and Luxembourg the highest (35%).

- **Intensity of cross-border usage.** For policy option 3 an additional assumption is that given the broader scope of the intervention, the **intensity of cross border usage** would increase as it becomes easier to take care of cross-border online public services.

The JRC original results are re-scaled using the steps above to better approximate the impacts of policy option 2. This results in ten different scenarios for businesses and two different scenarios for citizens for each policy option in terms of savings (quantified as time and money; see below).

Table 4. Policy option 2 savings

Policy option 2: Savings			Business				Citizen s
Scenario 1		Low	Intermediate -low	Intermediate e	Intermediate -high	High	
	Mh	273.3	379.2	523.3	674.9	812.6	0.22
	EUR million	5 742.7	8 114.6	11 343.4	14 852.6	17 553.2	5.5
Scenario 2	Mh	297.8	413.9	570.3	738.1	888.1	0.26
	EUR million	6 259.5	8 865.2	12 352.8	15 948.6	19 190.7	6.3

Policy option 3 implies setting standards for the development of services of public interest to be implemented by all public administrations in the Union. This would introduce strong incentives to achieve higher interoperability targets for Member States while digitalising more public services. It is expected that in this context, a larger proportion of users will move to the online provision of the services. In this case, the results coming from scenario 2 seem more realistic. As said earlier on, for policy option 3 an additional assumption is that given the broader scope of the intervention, the intensity of cross border usage would increase as it becomes easier to take care of cross-border online public services.

Table 5. Policy option 3 savings

Policy option 3: Savings			Business				Citizen s
Scenario 1		Low	Intermediate -low	Intermediate e	Intermediate -high	High	
	Mh	314.3	436.0	601.8	776.1	934.5	0.45
	EUR million	6 604.1	9 331.8	13 044.9	16 770	20 186.2	11.7
Scenario 2	Mh	342.5	476.0	655.9	848.8	1 021.4	0.52
	EUR million	7 198.4	10 195	14 205.7	18 341	22 069	13.4

Based on the evaluation of the EIF and assuming that the speed of development would remain the same, option 1 would in this respect also be expected to bring some results but more likely in the (very) long term. The effects of Option 1 would likely be significantly higher if introducing (Commission internal) interoperability synergies between EU funding programmes (similar to option 2).

Regarding impacts on the **quality of public services**, the most positive impacts are, again, expected from Options 2 and 3. Staying with the baseline and Option 1 might have negative impacts while more and more recommendations for public sector service design, that in some countries are even translated into legal provisions, become outdated.

As outlined in chapter 6, the initiative could have limited but positive effects on the **green transition**, for example by enabling more reuse of data for decision-making and also saving energy for the storing of duplicated data. These positive effects are most likely to be achieved best in Option 2. While Option 3 introduces clear standards as of its adoption, under Option 2 these standards would still be co-developed but then in the long-term can be expected to be more future proof because more flexibly adaptable.

By introducing mandatory minimum interoperability requirements Option 3 is likely to create the highest friction in its development phase as well as the highest **implementation costs for public administrations**. If requirements do not fit the existing the national IT architecture in a Member State they might result in significant new investments in IT infrastructure as well as potentially in costly and lengthy adaptation processes for their legacy systems. In the long-term implementation costs could however be lower due to more possibilities to share solutions among Member States public administrations. Also, here Option 2 appears to be the most sustainable solution.

As the EIF is mostly implemented today, no implementation costs would result from staying with the status quo. Based on the evaluation of the EIF and the costs that can be linked to the implementation of that framework, it is likely that also the costs for an EIF update under option 1 would be relatively low. The implementation costs for option 2 would very much depend on the decisions of Member States and the different projects public administrations would engage in. Implementation costs could be adapted according to the funding available from different sources (EU programmes and MS funding).

As none of the options is proposing to introduce obligations to citizens and businesses, no compliance costs are expected for them.

7.4. 7.4 Subsidiarity

This initiative is subsidiarity-sensitive by its very nature: Member States and their regional and local authorities are sovereign in deciding their administrative organisation. It is the local level with whom citizens and businesses interact most closely. It is essential to preserve the freedom of administrations to act in their areas of responsibility. However, confronted with shared challenges of digital transformation, administrations at all levels seek cooperation, shared resources, and legal and investment certainty in their modernisation decisions. This becomes evident from the Living-in.EU movement of local communities and the recommendations from the Member State level expert group on interoperability.

Option 2 is expected to best uphold the subsidiarity principle as it intends to set up a multi-level governance on interoperability, fostering the development of common, diverse yet interoperable solutions. Co-ownership of EU level interoperability initiatives would foster buy-in through self-regulation in a persistent and continuous fashion. Option 1, due to its non-binding nature would also allow for a diverse ecosystem but be less effective in fostering exchange and legal certainty over time.

The baseline and Option 3 are considered as neutral to negative in subsidiarity terms. The baseline because necessary decisions on the update of the framework would not be taken, and Option 3 because it focuses on one harmonised approach not necessarily supporting the emergence of an ecosystem of different yet interoperable solutions and strong IT legacy in numerous Member States and domain areas. The result would be formal compliance with the

subsidiarity principle but without the support (local) administrations need to make subsidiarity a sustainable reality.

In conclusion, an interoperability governance as set out in Option 2, would establish a minimally invasive and self-sustaining subsidiarity support mechanism for public administrations at all levels; freedom to address local needs in service design while relying on common interoperability resources to reduce development efforts and offer seamless public services to citizens and businesses.

7.5. 7.5 Stakeholder support expected

When it comes to the expected support from stakeholders, different stakeholder groups have to be distinguished: among contributors from EU institutions, in the overall consultations, option 3 – with a strong legal framework – obtained the highest scores; among Member States: option 2 is likely to have more support as it is most in line with the recommendations on a future interoperability policy issued by the expert group on interoperability of public services.

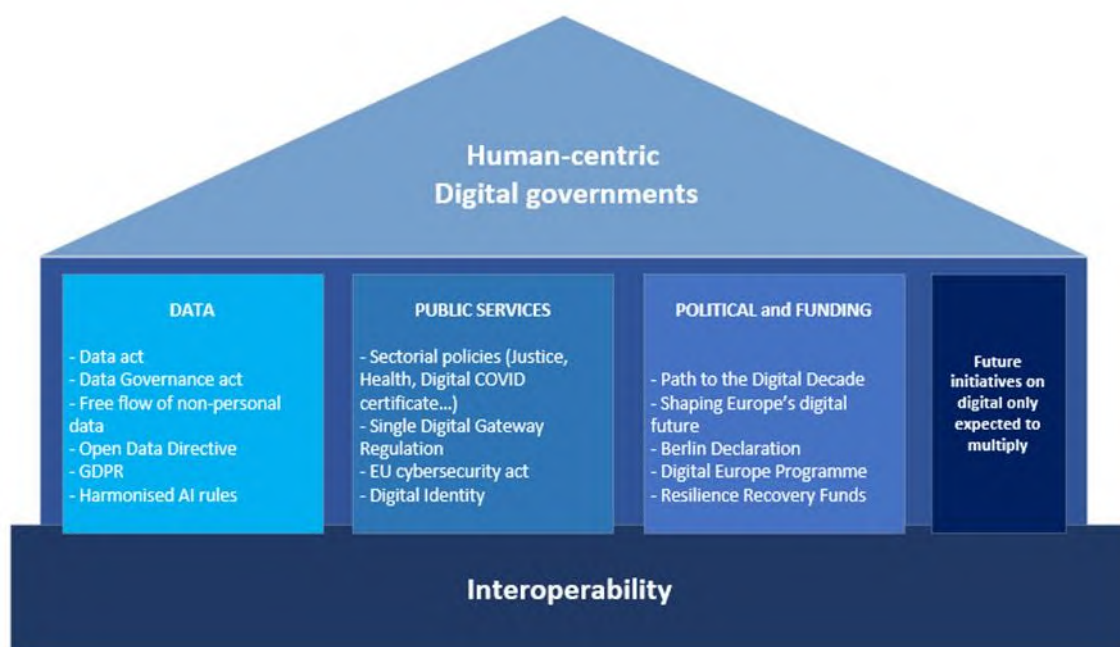
In the public consultations all stakeholders supported a stronger approach, introducing more obligations on interoperability.

8. 8. PREFERRED OPTION

In the light of the above comparison, **option 2 is the preferred option.**

The European Commission should propose a legislative act establishing an interoperable EU public sector infrastructure and strengthened EU policy coordination. It should introduce interoperability as a foundational principle for EU digital policies implementation, under a governance shared between Member States and the Commission.

Figure 9. Role of interoperability in the EU public sector digital infrastructures



This would ensure building gradually a common European infrastructure of interoperable public services and data exchange, successful examples for which can be found at Member State level, for instance in Spain or Denmark. This option would over time build a trans-European network of public services, evolving with EU and Member States policy needs and

implementation priorities; a subsidiarity enabling framework flexible enough to adjust to adapting policy and implementation circumstances.

The recommendations from the expert group on Interoperability of European public services on a future public sector interoperability policy, endorsed in October 2021 by all the Member States, call for ‘a clear strategy focused on enabling delivery on the ground and a proper governance at European level, that makes it possible to align and coordinate efforts of this scale’. They request the European Commission to ‘**establish a shared governance** of interoperability with a stronger, structural involvement of the Member States’¹⁴⁶.

Such a common ‘Interoperable Europe’ governance secures full co-ownership by Member States in a subsidiarity sensitive area and allows for the necessary sustainability of interoperability solutions in a fast-changing technology and policy context. It would act in cooperation with established European structures and policies (such as in standardisation, Digital Decade, innovation or data protection) and facilitate sectoral policy implementation by ensuring ‘interoperability by default’. A dedicated public sector interoperability governance is a focused support instrument for better regulation, helping reduce policy implementation effort and cost, and streamline investments.

An interoperability legislative act could be usefully presented in a package, combined with a policy communication setting out the objectives of the strengthened European Public Sector Interoperability Policy and its interaction with existing and emerging EU policies. It could include as an annex the European Interoperability Framework for Smart Cities and Communities. The policy communication could in addition set out the intention of the European Commission to strengthen its own interoperability-ready policy-making principles, by including regular digital and interoperability checks in its internal procedures, during policy formulation, impact assessments and policy implementation.

Proportionality assessment of the preferred option

Despite imposing some obligations on Member States public administrations, the preferred option would not require the adoption of measures that would burden them beyond what is necessary for the achievement of this initiative’s objectives. Member States would have to implement measures that ensure the functioning of the governance, designate a national coordinator, publish references to EU funded interoperability resources they develop, enhance the uptake and sharing of interoperability solutions.

The objectives to ensure a coherent EU approach, an EU-wide multi-level governance and a dynamic ecosystem cannot be achieved by Member States action alone but need EU action. The analysis of the options and the experience of the last 25 years of non-binding action in the field, have shown that only a legislative approach introducing structural cooperation requirements and a certain level of coherence on interoperability requirements is needed to reach the objectives. The legislative obligations from Option 2 would thus be entirely proportionate to the objectives of the initiative.

REFIT (simplification and improved efficiency)

As detailed throughout the assessment, interoperability is an enabler for increased public sector efficiency and more effective public services. It plays a central role in reducing administrative barriers. Some of the recommendations of the EIF from 2017¹⁴⁷ were around administrative simplification and burden reduction.

The evaluation of the EIF shows that its’ benefits on burden reduction originate mostly from two factors:

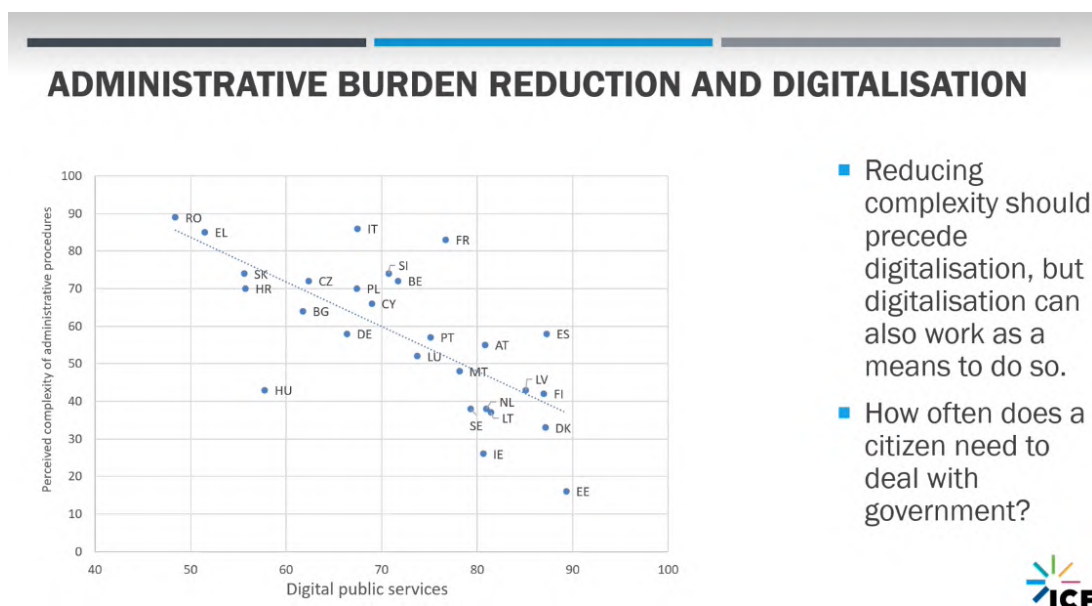
¹⁴⁶ See Annex V.

¹⁴⁷ [European Interoperability Framework \(2017\)](#).

- **Affirming the importance of administrative simplicity.** By streamlining and simplifying the digital delivery of public services, the EIF's implementation costs were negligible in comparison to the cost savings associated with interactions between public administrations, as well as between administrations and their constituents; and,
- **Encouraging data reuse.** The EIF's goal is to assist public administrations in avoiding duplication of effort and effectively leveraging existing resources and information, resulting in better service quality.

From Figure 10 we can see there is quite a strong correlation between the level of Digital public services offered by a Member State and the perceived complexity of administrative procedures: the highest-ranking states in digital public services and interoperability¹⁴⁸ have the lowest perceived complexity.

Figure 10. EUPACK study 2021 Administrative burden reduction and digitalisation



The following table summarises the REFIT potential detected. Following the analysis, the positive impacts of the preferred option on interoperability of the public sector are expected to be far more important than those of the current EIF. With extra new measures which will focus on ensuring more coherence in the implementation of EU policies, the potential for simplification and improved efficiency of this policy is very high.

Table 6. REFIT cost savings

REFIT Cost Savings – Preferred Option		
Description	Amount	Stakeholders who save costs
Replacing proprietary solutions with co-designed, open solutions	2021 study ¹⁴⁹ on the role of open-source software, an increase of 10% in the use of open-source software in the EU may generate an additional 0.4% to 0.6% GDP per year as well as more than 600	Public administrations

¹⁴⁸ [EIF Monitoring | Joinup \(europa.eu\).](https://digital-strategy.ec.europa.eu/en/library/study-about-impact-open-source-software-and-hardware-technological-independence-competitiveness-and)

¹⁴⁹ <https://digital-strategy.ec.europa.eu/en/library/study-about-impact-open-source-software-and-hardware-technological-independence-competitiveness-and>

<i>REFIT Cost Savings – Preferred Option</i>		
<i>Description</i>	<i>Amount</i>	<i>Stakeholders who save costs</i>
	additional ICT start-ups per year in the EU	
Digital-ready policies – implement at lower costs	Danish examples: Reducing administrative burdens with digital-ready legislation	- Public administrations - Citizens and businesses depending on the policy
More interoperable digital services save time and money for their users (see more in Annex IV)	JRC analysis performed for this impact assessment Savings for citizens in the EU per year: ranging from 5.5 to 6.3 million EUR Savings for businesses in the EU per year: ranging from 5 743 to 19 190.7 million EUR	- Citizens - Businesses -
More informed decisions due to better data	Not quantifiable – could potentially sum up to the costs of a pandemic that can be prevented due to available data for timely decisions or not	- Citizens -

9. 9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

The initiative would ideally contribute to an integrated monitoring system involving different Commission services – measuring the quality of (digital) public administration, its digital maturity, especially the monitoring system that is planned to be established under the proposed Decision ‘Path to the Digital Decade’¹⁵⁰. In this context the national reports and country recommendations could include topics emerging from the monitoring of the Interoperability policy. Furthermore, the EIF evaluation recommends focussing **future monitoring on using developed technologies** (e.g. through data mining) **and providing a better cost perspective**.

The main indicators and tools that can be used for monitoring and evaluating the digitalisation of the public sector are: the eGovernment Benchmark reports, the Digital Economy and Society Index (DESI)¹⁵¹, the upcoming Local and Regional Digital Indicators framework (LORDI)¹⁵² index, focusing on the local and regional levels. Turning to indicators specifically designed to track progress in public sector interoperability, the monitoring work done for the [Berlin Declaration](#) and the EIF could be continued and built upon. The current EIF Monitoring Mechanism¹⁵³ is a good basis for developing monitoring activities for the future interoperability policy and can also provide reference points against which future developments can be contrasted and compared. It can be complemented by the [Digital Public Administration Factsheets](#) and the [State of Play of Digital Public Administration](#). Beyond

¹⁵⁰ COM(2021) 574 final.

¹⁵¹ <https://digital-agenda-data.eu/charts/desi-composite>.

¹⁵² <https://living-in.eu/groups/commitments/monitoring-measuring>.

¹⁵³ [EIF Monitoring | Joinup \(europa.eu\)](#).

these, several interesting indicators in the field have been developed, like the ones of the [OECD Digital Government Index](#) or the [UN e-Government Development Index](#) or [Norway](#) and [Australia](#).

A set of **specific indicators for the initiative** complementing the mentioned systems is proposed in Table 7. A full evaluation every five years would be useful for assessing impacts and contextual issues. It could look into the necessity for introducing a more binding approach to interoperability standards across sectors or the need for a joint undertaking to further enhance joint investments.

Table 7. Summary of potential indicators to monitor the intervention over time

Operational objective	Indicator	Definition	Potential metric	Unit of measure	Potential data sources	Frequency of measurement	Target
Set up of a multi-level governance on EU public sector interoperability	Extend to which a multi-level governance is established and functional.	The multi-level governance should ensure active involvement of the relevant stakeholders in EU interoperability action and a good interlinkage between related initiatives	National contact points designated Number of involved actors in strategic and operational governance by stakeholder group Number of new sub-groups, number of existing sub-groups joining the governance framework.	Numbers per year	EC monitoring	Continuous score board	100% national contacts designated within 12 months, all stakeholder groups involved, +10% growth of network per year
Enhanced multi-country collaboration	Extent to which public administrations work together to develop interoperability solutions	Multi-country projects can be initiated through the governance or initiated under other programmes but making links to the interoperability	Number of projects by category and type and number of involved stakeholders and outcome. Use of the regulatory sandbox	Numbers and key topics	EC monitoring	Continuous score board	+10% of multi-country projects per year

Operational objective	Indicator	Definition	Potential metric	Unit of measure	Potential data sources	Frequency of measurement	Target
		governance.					
EU approach to interoperability established across sectors	Extent to which new proposals at the EU level with digital impacts link to the policy	The requirement to assess for digital impacts is part of the new BR guidelines. It should be monitored in how far this, combined with a stronger interoperability policy leads to more references.	Number of EC policy files with digital impacts Number of references to interoperability policy in proposed or adopted policy files by category and sector.	Percentage of total files per year	SWD impact assessments and EU acts published on Eurlex	Continuous score board	50% policy files assess digital impacts, +10% per year link to interoperability policy
Agreed interoperability solutions available	Extend to which the governance agrees on recommended interoperability solutions	The governance would have the mandate to recommend solutions. It should be monitored in how far this mechanism is used.	Number of recommended interoperability solutions published - By type of solution - Share of machine-readable solutions	Number	EC monitoring	Continuous score board	5 new solutions per year

Operational objective	Indicator	Definition	Potential metric	Unit of measure	Potential data sources	Frequency of measurement	Target
Uptake of recommended solutions	Extent to which public administrations (EU, MS, regions and cities) use recommended solutions	The uptake of recommended solutions ensures that costs for developing ICT tools are not duplicated and it contributes to a harmonised interoperability landscape of common solutions.	Number of downloads of the solution, number of mentioning in related procurement documents, number of reported uptake in annual monitoring	Number per year per sector, per administrative level (EU, Member States, regions, cities.	Platform data, procurement data, reporting by Member States	Yearly	+10% per year
Share and reuse GovTech ecosystem	Extent to which public administrations share and reuse existing solutions in developing digital public services in a specific field	The level of re-use of solutions fulfils two roles: it ensures that costs for developing ICT tools are not duplicated and it contributes to a harmonised interoperability	Number of solutions added a common platform - EU funded - Non EU funded Number of solutions downloaded from the common platform Reported instances of reuse by Member State	Number of uploads and downloads of a solution from a central platform and Member States reporting.	Number of cases	Yearly	+5 % of shared and +10 % of reused solution by year

Operational objective	Indicator	Definition	Potential metric	Unit of measure	Potential data sources	Frequency of measurement	Target
		landscape of common solutions.	and sector				
Interoperability requirements in future EU funding programmes	Extent to which interoperability requirements are integrated in the process of implementing EU funding programmes (e.g. at the level of proposals and award of funding)	Consideration of interoperability requirements in the design and use of funding would reinforce synergies between the future interoperability policy and existing funding programmes. It would help limit inconsistencies and ensure that the funds are used in a way that supports interoperability goals.	Number of EU funding programmes which take-up interoperability requirements as eligibility criteria.	Discrete scale (ranging from no interoperability requirements to having it among the eligibility criteria)	<i>Eurlex data, Questionnaire, case studies.</i>	Yearly	High level of consideration

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

ANNEXES

Annex I. Procedural information

Lead DG: Directorate General for Informatics

Decide Planning: PLAN/2020/7507 - ‘Evaluation of the implementation of the European Interoperability Framework (EIF) and proposal for an EU governments interoperability strategy’.

The Initiative is part of CWP 2022 - REFIT initiatives, point 12, and is referenced under the Policy objective ‘A Europe fit for the Digital Age’. The adoption is planned for Q2 (June 2022).

Organisation and timing

31/08/20	Decide Political Validation (Hahn, Vestager)
15/09/20	1st ISSG meeting Participating DGs: CNECT, DEFIS, DIGIT, ECFIN, EMPL, ENER, ENV, ESTAT, FISMA, GROW, the JRC, JUST, MOVE, NEAR, OP, REFORM, REGIO, RTD, SANTE, SG and TAXUD
15/10/20	Publication of combined Evaluation Roadmap and Inception Impact Assessment
01/02/21– 26/04/21	Public consultations
12/10/21	ISSG approval for supporting studies
15/10/21	Recommendations of the Expert Group on interoperability of public services
24/11/21	9 th ISSG meeting Participating DGs: CNECT, ENV, ESTAT, GROW, JUST, the JRC, MOVE, OP, REGIO, RTD, SANTE, SJ, SG, TAXUD, DIGIT
19/01/22	RSB meeting

Consultation of the RSB

An upstream meeting with the RSB took place on 12 March 2021, whose recommendations were duly taken into account.

This draft Impact assessment was submitted to RSB on 17 December 2021 towards the 19 January 2022 RSB hearing. It has received a positive with reservations opinion with the following comments:

Table 8. Modifications to the draft Impact Assessment based on comments received from the Regulatory Scrutiny Board

Main RSB considerations	Changes made to the IA
The report is not clear on the scope of the initiative and its links to the proposed legal base. The report does not sufficiently explain the interaction of the interoperability policy with other related policies.	Chapter 1. ‘<i>Introduction</i>’, Chapter 3. ‘<i>Legal basis</i>’, Chapter 4. ‘<i>Objectives</i>’ have been reworked to better explain these aspects. It has been clarified that the legal mandate for binding measures covers cross-border interoperability between public services. Cross-border processes are however not restricted to central government to central government interactions. Therefore, they concern citizens and businesses using public services at all administrative levels.
The report does not provide sufficient evidence of the identified problems nor of their evolution in the future. It does not explain why some Member States have chosen not to implement an EIF-inspired interoperability framework.	Chapter 2. <i>Problem definition</i> has been reworked to better show the evidence for the respective relevant stakeholders and distinguish between cross-border interoperability and interoperability within countries, giving qualitative examples where the data base is not sufficient. We have further explained in this chapter the factors that led some Member States not to implement an EIF inspired interoperability framework.
The content of the options is not sufficiently clear. The report does not explain how the policy options, in particular the preferred one, would be implemented in practice. In particular, the role and decision-making power of the envisaged governance bodies remains too vague.	Chapter 5. ‘<i>What are the available policy options?</i>’ has been refined based on the comments provided, giving also examples of their practical implementation. The policy proposal is still under discussion and not yet finalised. Expected implementation practice has been further detailed in the updated report in this chapter. The differences between the cooperative, multi-level governance introduced in Option 2 and the EC led governance in Option 3 have been further explained. We have clarified that the current interoperability policy contains no formal governance mechanism – it just has the European Interoperability Framework as a guidance document and funding for interoperability projects through the Digital Europe Programme. We have explained how these elements are insufficient for the sustainable design and full take up of interoperable digital services across Europe. In the reviewed report we have further explained

Main RSB considerations	Changes made to the IA
	the elements of the proposed measures and shown more clearly how the preferred option is expected to substantially contribute to the specific objective of digital-ready policies complementing the newly introduced EC internal Better Regulation rules with a needed cooperation mechanism to put the theory into practice.
The report does not sufficiently explain the differences between the different estimates of potential savings. In particular, the report overestimates the savings from interoperability, as it does not disaggregate them from savings of other simplification and digitalisation policies.	We have highlighted further the expected very positive effects on SMEs (that suffer significantly more from ‘non-interoperable public administrations’) and enhanced the findings on the positive correlation of interoperability and innovation. As seen from the studies and the various quantifications methods we have used to assess impacts, it is extremely difficult to isolate the precise costs and benefits. Interoperability has far-reaching impacts and is a foundational enabler for digitalisation. It’s a key part of many recent EU policies (Data act, Justice digitalisation, digital health, etc.). The policy itself aims to support the deployment of EU policies that are interoperable by design and will start establishing a common set of interoperability specifications and solutions. Nevertheless, we have reviewed further the costs and benefits to try to isolate some of them more specifically. In fact, a streamlined analysis has been conducted with the help of JRC to quantify the cost savings, reusing the study on ‘Quantifying the Benefits of Location Interoperability in the European Union’ by JRC and adapting it to a wider area of digital services related to fundamental administrative procedures stemming from the eGovernment benchmark report. It provides estimates of the number of hours saved and its economic value (in EUR) under two scenarios: a static scenario in which the time saved from interoperability comes only from existing online users, and a dynamic scenario assuming a behavioural change in which the proportion of online users increases. This has been carried out for policy options 2 and 3. The whole methodology and approach is described in detail in Annex IV.

Main RSB considerations	Changes made to the IA
	The report has been reworked to introduce more stakeholder concerns on the various policy options, particularly with regards to expectations from Member States Chief Information Officers which are consistently addressed throughout the report, given their role as core interoperability stakeholders. We have further detailed in the report how we have addressed the recommendations issued by the expert group on Interoperability in the proposed policy options and how differing views from stakeholders have been included, particularly on the elements part of the different options.

Evidence, sources and quality

The Commission has been working for more than 25 years now on interoperability at EU level with different stakeholders involved in the digital transformation of the public sector and creation of EU-wide digital public services.

The evidence used in the Impact Assessment have been collected from the following main sources and has been used at different steps in the preparation of the initiative:

- **National Interoperability Framework Observatory (NIFO) data collection:**
 - The Digital Public Administration Factsheets collected and published yearly; available on the Joinup platform;¹⁵⁴
 - The European Interoperability Framework (EIF) Monitoring Mechanism;¹⁵⁵
- **Other databases** including: Eurostat, the World Bank Worldwide Governance Indicators, United Nations e-Government survey, and the Organisation for Economic Co-operation and Development (OECD) Digital Infrastructure indicators; the datasets related to the e-Government Benchmark reports¹⁵⁶;
- **Expert Group on interoperability of public services** inputs and recommendations
 - The [interoperability expert group](#) was created on 14/02/2020 with representatives of the national administrations CIO offices, members appointed for all 27 Member States and observers from EFTA and Western Balkans countries
 - Position papers from 18 Member States: In December 2020 the Commission kindly asked the members of the expert group to react on a short policy paper with some initial ideas for the next interoperability policy (vision, general approach, policy instruments, etc.);
 - Co-creation workshops – five informal discussions and brainstorming sessions took place between January and December 2021 with more than 200 participants;
 - Bilaterals – the Commission organised 26 bilateral calls with 26 different Member States between July and September 2021;
 - [Policy recommendations](#) – they were formally endorsed by consensus of the whole group on the 5th of October 2021. Those recommendations served as a basis to build the draft legal text and the two dedicated workshops.

¹⁵⁴ The factsheets can be consulted on [Joinup](#).

¹⁵⁵ An overview of the [EIF Monitoring Mechanism](#).

¹⁵⁶ The e-Government Benchmark datasets are available at: <https://digital-agenda-ata.eu/datasets/e-gov>

- Two workshops on legal draft – They took place in November 2021 gathering both around 40 external participants each.
- **CEPS external supporting studies** - The Commission contracted the Centre for European Policy Studies (CEPS) to conduct three independent supporting studies between September 2020 and October 2021.
 - [Supporting study for the evaluation of the ISA² programme](#)
 - [Supporting study for the evaluation of the EIF](#)
 - [Supporting study on the impact assessment for a future interoperability strategy](#)
- **Joint Research centre (JRC) analysis** – JRC has provided extensive support in preparation of the Impact Assessment, in particular with a study on quantifying the benefits of Location Interoperability and general costs of interoperability in the EU (*in publication*)
- **Input received to the Inception Impact Assessment feedback period¹⁵⁷**, 13 responses that are summarised in Annex II.
- **Targeted online survey** 94 responses that informed the analysis and the conclusions of the study, summarised in Annex II.
- **In-depth interviews** with 23 experts and stakeholders
- Input from **Public Consultation** launched for 12 weeks, from 01/02/21– 26/04/21, summarised in Annex II.
- **4 public workshops**: 1 inception workshop and 2 validation workshops in the framework of the DIGITall conference, 1 [public expert panel](#) on options for a legal instrument, more than 200 participants overall

The Impact Assessment was based on certain assumptions, namely:

- It was estimated that the number of cross-border cases of usage of digital public services would be growing with the increase of the number of people living and working in a Member State different from the one of their origin and with the increase of the number of people traveling for tourism purposes.

The data limitations encountered in this Impact Assessment were the following:

- lack of data focusing solely on the benefits and costs of interoperability;
- lack of comparable data on the costs and benefits of transposing the EIF into national frameworks, due to the voluntary nature and heterogeneous uptake of the framework;
- relatively low number of respondents to the different surveys and online consultations;
- limited availability of data on local effects. Therefore the analysis focuses mainly on the EU and national levels and may underestimate the calculated costs as it focuses on general costs at the national level.

To mitigate the impact of the data limitations (to the extent possible), the external contractor followed up directly with some of the stakeholders to clarify certain aspects via targeted interviews. The Joint Research Centre kindly offered their expertise and has developed a more specific study that took both a qualitative approach (20 use cases on location data interoperability) and quantitative (estimation of general costs of interoperability at EU level). In addition, where quantification of costs and benefits was not feasible, a qualitative approach was chosen instead (description of practices, processes and types of costs and benefits deriving from the options). To increase the number of stakeholders involved an important number of consultation activities public and targeted were put in place.

¹⁵⁷ See relevant web page on Europa Have your say, available [here](#).

Annex II. Stakeholder consultation

Summary of the stakeholder strategy

A continuous and active stakeholder consultation strategy was designed and followed in preparation for the Impact Assessment on the EU public sector interoperability policy. It was complemented by active communication activities on our dedicated social media channels ([Twitter](#), [LinkedIn](#), [YouTube](#)).

A broad range of activities were put in place to ensure that all interested parties and stakeholders will have the opportunity to provide feedback on the various policy options that the Commission has identified with regard to its initiative, and their likely impacts, as well as on the relevance, effectiveness, efficiency and the added value of the initiative. In that context, the Commission reached out to a broad range of stakeholders, including Member State national authorities, non-governmental organisations, professional associations, business organisations and individual citizens.

To involve a broader range of stakeholders the following **consultation activities** were conducted:

- Public consultation on the **inception impact assessment (15/10/21)**: The key ideas for the review of the European Interoperability Framework and a future policy were outlined in an Inception Impact Assessment (IIA). The published IIA informed citizens and stakeholders about the Commissions' plans in order to allow them to provide feedback on the intended initiative. This fed into the subsequent consultation activities that ensured an inclusive process with all interested parties being actively invited to contribute.
- **Online kick-off workshop** 'How interoperability can achieve seamless data flows and services for the EU's public sector', conducted on 3 December 2020. It aimed at raising awareness about the EIF evaluation and the impact assessment process and engaging stakeholders in the process.
- **Online survey** (19 January – 7 March 2021), targeting specific stakeholder groups.
- **In-depth interviews** (1 February – 8 March 2021) with 19 selected stakeholders to collect detailed data and information contributing to the EIF evaluation (12 stakeholders) and the impact assessment (7 stakeholders), respectively. The interviews are complemented by expert assessments conducted by independent experts who were tasked with, *inter alia*, completing the questionnaire that served as the basis for the in-depth interviews¹⁵⁸.
- A 12-week long, Internet-based **public consultation** (1 February – 26 April 2021), open to the wider public and available in English, German, and French.
- Validation workshop in the **digitalALL conference**¹⁵⁹ on 22 April 2021 presenting and validating the outcome of the consultation activities with 126 registered participants.
- An innovative co-creation, co-design process has been put in place with the **interoperability expert group with Member States**. Workshops and roundtables following design-thinking methodologies and participatory practices were led with the experts to discuss and develop the needs for a future interoperability policy: 5 brainstorming sessions with more than 200 representatives from Member States, 5 formal expert group meetings with also more than 200 participants overall, 18 position

¹⁵⁸ Five independent experts provided their assessment for the EIF evaluation and four for the impact assessment.

¹⁵⁹ Further information can be found <https://app.swapcard.com/event/digital-public/planning/UGxhbm5pbmdfMzk2Mzcw>

papers issued by the Member States, 26 Member States bilaterals throughout the summer of 2021.

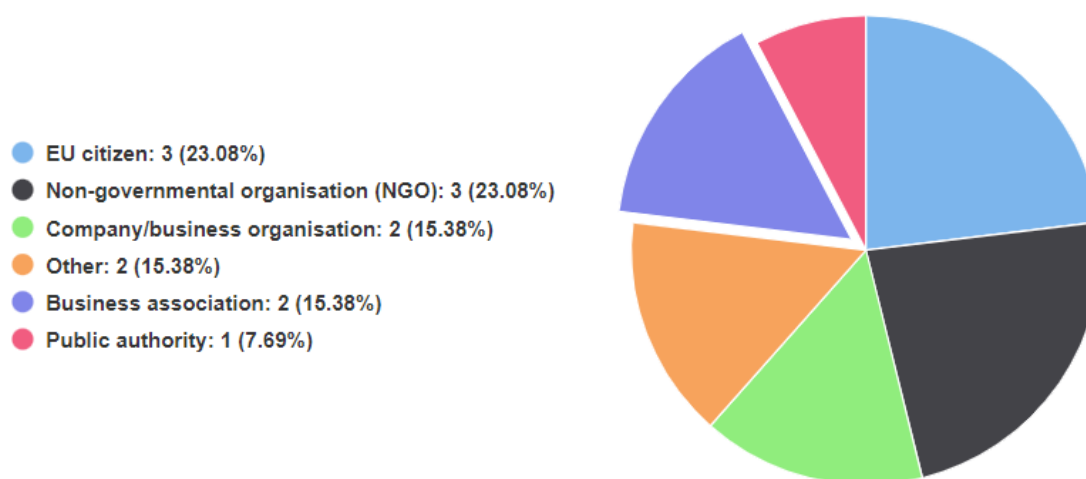
- The topic was also presented and discussed in 2 **meetings of the Chief Information Officers network** organised by the Presidencies of the European Council (Portugal - May 2021, Germany - December 2020) and presented to the digital attachés in the Telecom Working Party of the Council in April and November 2021. Member States have provided us with positive and constructive feedback which has been taken into account in the construction of the proposal.

Summary of the feedback on the Inception impact assessment

Input on the Inception Impact assessment (IIA)

In total there were 13 feedback replies on the IIA from 8 different EU countries (3 from Germany, 2 from Spain and Belgium, 1 from each Sweden, Italy, Greece, France and Finland) and one non-EU country (Norway) and different stakeholder groups (see Figure 11).

Figure 11. Feedback on the IIA by category of respondent



Source: [Have Your Say Portal](#)

The input was relevant for the formulation of problem and objectives as well as for the policy options and the impacts and it is summarized below.

On the **problems** stakeholders highlighted the effects of competing and non-open standards. One stakeholder suggested that the EIF evaluation should include an analysis on the reasons that led to some recommendations to be better implemented than others. This suggestion was taken up in the EIF evaluation.

On the **objectives** several stakeholders draw links to public values beyond digitalisation as such. They suggested to highlight the value of interoperability for the democratisation of public knowledge, civil rights, digital involvement of all citizens and diversity.

One stakeholder suggested to strengthen the ambition of EIF beyond guaranteeing the necessary state tasks, public services should support the optimal processing and easy usage of digital data. In general, most stakeholders advocate to strengthen the principle of openness for the reuse of technical solutions as a core principle. One suggests including **codified design principles** and to encourage an **API centric approach**. Another stakeholder suggests that the EIF should more explicitly be also addressed to regions and sectors.

Eight of the 13 contributions mention explicitly the **need for agreed and open standards**. Two stakeholders request to include specific reference to interoperability between blockchains into the EIF with a clear definition and open standards. One stakeholder

highlights that this should include standards around metadata, another the importance of unique and trusted digital identifiers. Two stakeholders ask for more and **coordinated involvement of the public sector in standardisation organisations**.

Five stakeholders bring forward the idea of **fostering and EU-wide sharing and reuse** of mature, reusable and open source interoperable solutions for public administrations. One stakeholder asks to facilitate the multiple use of the same privacy by design infrastructure at no extra cost. The future policy should incentivise the sharing of design costs around usable, **trusted and secure solutions** also between public and private stakeholders.

Three stakeholders mention the need for **more guidance** on the use of open standards and open source, including clear definitions. One stakeholder asks for a dedicated task force for immediate, middle term and long-term **technical assistance** at all levels to support any interoperability action, including relevant training resources in the [Interoperability Academy](#). One stakeholder asks for a certification programme for interoperability trainers.

Three stakeholders highlight the importance of **making the interoperability policy consistent** with other EU policies like the EU AI strategy. Two stakeholders brought forward the idea of a reference implementation on the city level published under a free software license which would act as formal specification and can be implemented directly. This idea is mentioned linked to EU policies but also to EIF standards, that should come with at least one Open-Source implementation to confirm its implementability.

For the **policy instrument** two stakeholders suggest a more binding instrument, one of them a consolidated EU Regulation while another sees the risk that a strict legal framework might hinder interoperability – but harmonisation of organisational procedures could be beneficiary.

One stakeholder highlights the importance for the different sectors on the example of authors' rights. It asks not only for effective cooperation mechanism but also for effective safeguards to ensure their respect. Another stakeholder has a similar idea in developing a **process** for assessing compliance with the EIF.

Stakeholders highlighted the potential impact of a holistic transformation of (digital) public services on the private ICT sector with the potential to create an ecosystem of related apps and services.

Consultation activities for the EIF evaluation and Impact assessment

The consultation activities led by the contractor targeted several groups of stakeholders. The following grouping is used to analyse the feedback to the consultation activities:

- Civil society;
- Companies and business associations;
- EU and non-EU citizens;
- EU public authorities;
- Experts and academia (including the independent expert assessments);
- National and sub-national public authorities in the Member States.

The questionnaires used throughout the consultation activities mainly used Likert scale responses, referring to a scale from (1) to (5), (-2) to (2) or (--) to (++), depending on the type of question¹⁶⁰:

1. (1) – not at all; (2) – to a limited extent; (3) – to some extent; (4) – to a great extent; or (5) – completely;

¹⁶⁰ For each question, the respondent also had the possibility to select the answer 'don't know/no opinion'.

2. (-2) – definitely would not; (-1) – probably would not; (1) – probably would; (2) – definitely would;
3. (--) – very negative; (-) – negative; (+) – positive; (++) – very positive.

With a total of 112 respondents for the EIF Evaluation and 134 respondents for the Impact Assessment for a Future Interoperability Strategy, the consultation activities reached all types of stakeholders described in Table 9. In what follows, the feedback received during the consultation activities are presented according to the type of consultation, i.e. public versus targeted consultation¹⁶¹. Feedback received during in-depth interviews are grouped together with those from the targeted online survey since both consultation activities were based on the same questionnaire; only more qualitative feedback was sought in the in-depth interviews.

Table 9. Overview of responses to the EIF Evaluation (EIF) and the Impact Assessment (IA) by stakeholder group

Consultation	In-depth interview		Online survey		Public consultation		TOTAL	
Stakeholder	EIF	IA	EIF	IA	EIF	IA	EIF	IA
Civil society (all other stakeholders)	-	1	2	1	7	8	9	10
Companies and business associations	-	-	3	5	14	13	17	18
EU and non-EU citizens	-	-	2	4	18	31	20	35
EU public authorities	5	3	8	10	-	-	13	13
Experts and academia	6*	6*	4	3	4	5	14	14
National and sub-national public authorities	2	-	25**	28**	12	16	39	44
TOTAL	13	10	44	50	55	73	112	134

*The six in-depth interviews include the five expert assessments.

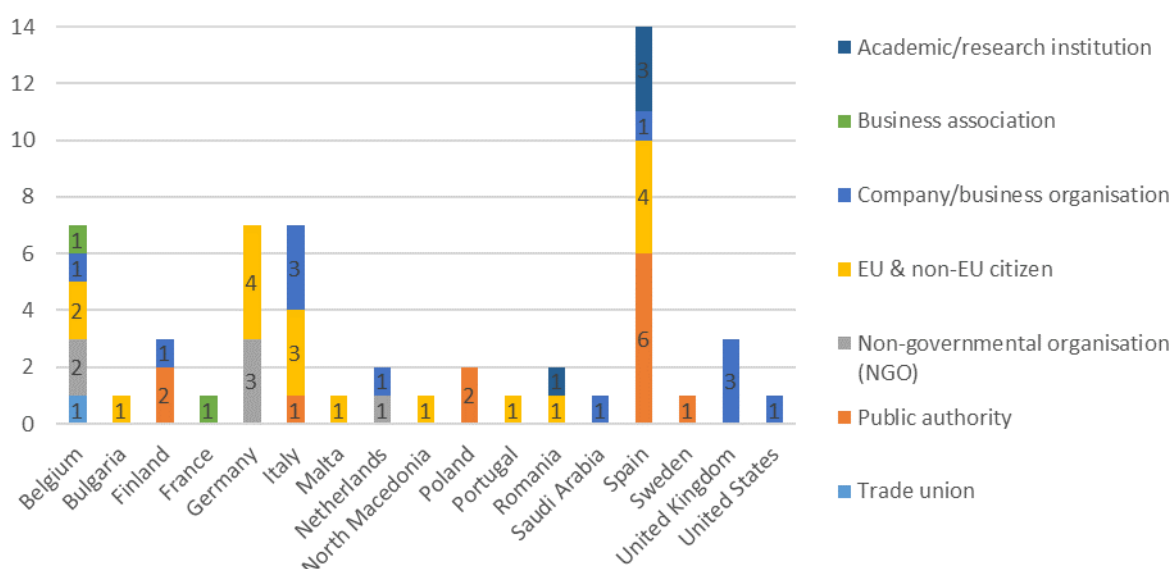
**One follow-up interview to the targeted online survey was conducted in the scope of the EIF Evaluation and one was conducted in the scope of the Impact Assessment.

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

In the public consultations, feedback was received from 13 Member States, with the highest number of received answers from Spain (see Figure 12). In addition, six respondents are non-EU citizens. For the work with the Expert Group all 27 Member States provided input.

¹⁶¹ Averages do not account for respondents answering ‘don’t know/no opinion’.

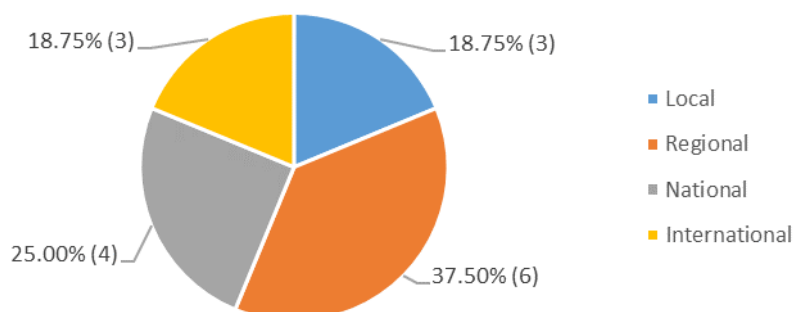
Figure 12. Geographical distribution per stakeholders' category



Source: [Study supporting the impact assessment for a future interoperability strategy](#)

The group of respondents to the public consultations from public authorities includes a mix of administrations exercising at the international (3 respondents), national (4 respondents), regional (6 respondents) and local (3 respondents) levels (see Figure 13).

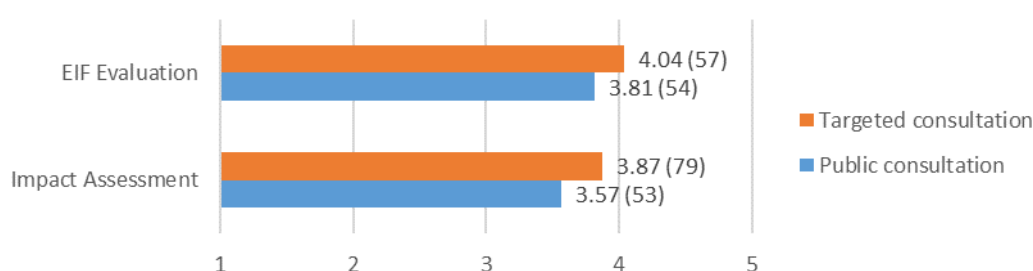
Figure 13. Scope of public authorities (share of respondents and number of respondents in brackets)



Source: [Study supporting the impact assessment for a future interoperability strategy](#)

On average, respondents have a good level of knowledge in the field, noting they are familiar to a great extent with digital public services and interoperability (see Figure 14). When it comes to specific knowledge about the EIF, the difference between the respondents to the targeted consultation and those contributing to the public consultation is more pronounced, with respondents to the public consultation reflecting a relatively lower level of knowledge (see Figure 15). Nevertheless, the consulted stakeholders are on average familiar at least to some extent with the EIF.

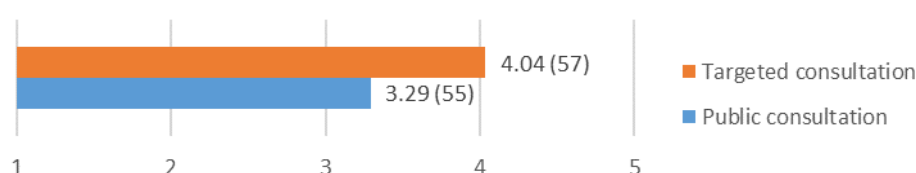
Figure 14. Knowledge of digital public services and interoperability (breakdown by type of consultation; average score and number of respondents)



Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Figure 15. Knowledge of the EIF (breakdown by type of consultation; average score and number of respondents)



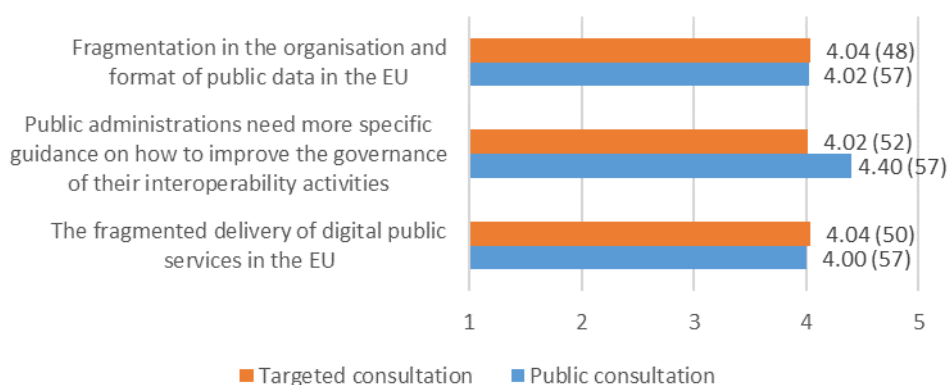
Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Results: EIF Evaluation

The framework is deemed to be **relevant** to some extent. The needs and problems originally identified by the EIF continue to be experienced across the relevant stakeholders and the framework has only partially addressed them (see Figure 16). Respondents to the targeted consultations call for more guidance for public administrations to improve the governance of their interoperability activities and address the problems linked to the fragmentation in the delivery of digital public services and the organisation and format of public data. Public administrations particularly point to the need for more cooperation, especially in specific sectors (e.g., health). Several other needs were highlighted, such as the need to increase awareness, for staff with IT skills in public administrations and to build investment capacity to keep pace with rapid technological change and bridge technological barriers.

Figure 16. Extent to which the following needs and problems are currently experienced by European public administrations, businesses and/or citizens (breakdown by type of consultation; average score and number of respondents)

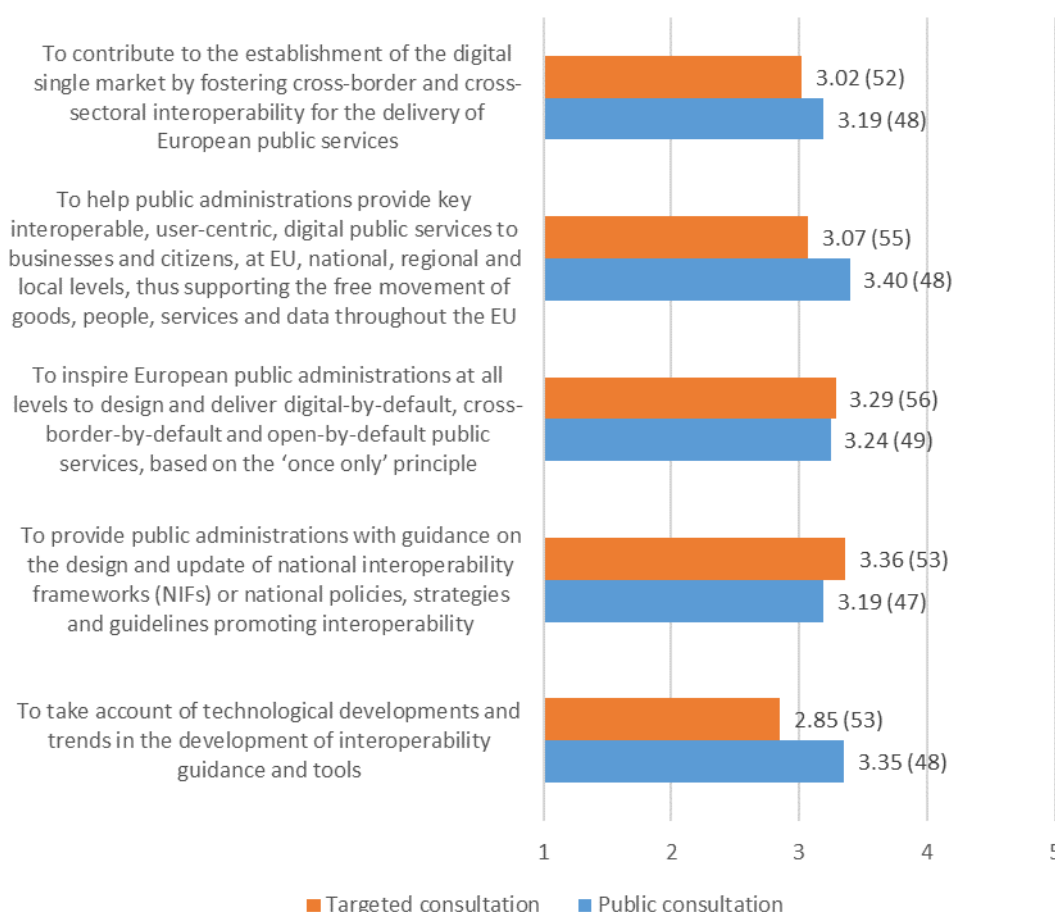


Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Source: [Study supporting the evaluation of the implementation of the EIF](#)

Stakeholders participating in both consultations consider that the recommendations of the EIF have been **effective** to some extent in achieving the objectives (see Figure 17). However, the EIF has been seeking to achieve broad objectives and the recommendations require more granularity. The targeted consultation generally emphasises the contribution of the framework to raising awareness of the importance of cross-border interoperability, although more needs to be done at the sub-national level. The principles set out by the EIF have enhanced interoperable digital public services but are difficult to assess due to their abstract nature or still limited achievements. Stakeholders call for more clarification when it comes to transparency, technological neutrality and user-centricity. The layered interoperability and the conceptual model could be improved with more practical guidance for implementing the models. Overall, positive impacts have been experienced across stakeholders, in particular in enhancing the quality of services provided by public administrations and in fostering the free movement of goods, services, capital and workers across the EU. Nevertheless, more could be achieved to increase the direct and indirect benefits gained by stakeholders.

Figure 17. Extent to which the recommendations listed in the EIF have contributed so far to the achievement of the following objectives (breakdown by type of consultation; average score and number of respondents)



Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

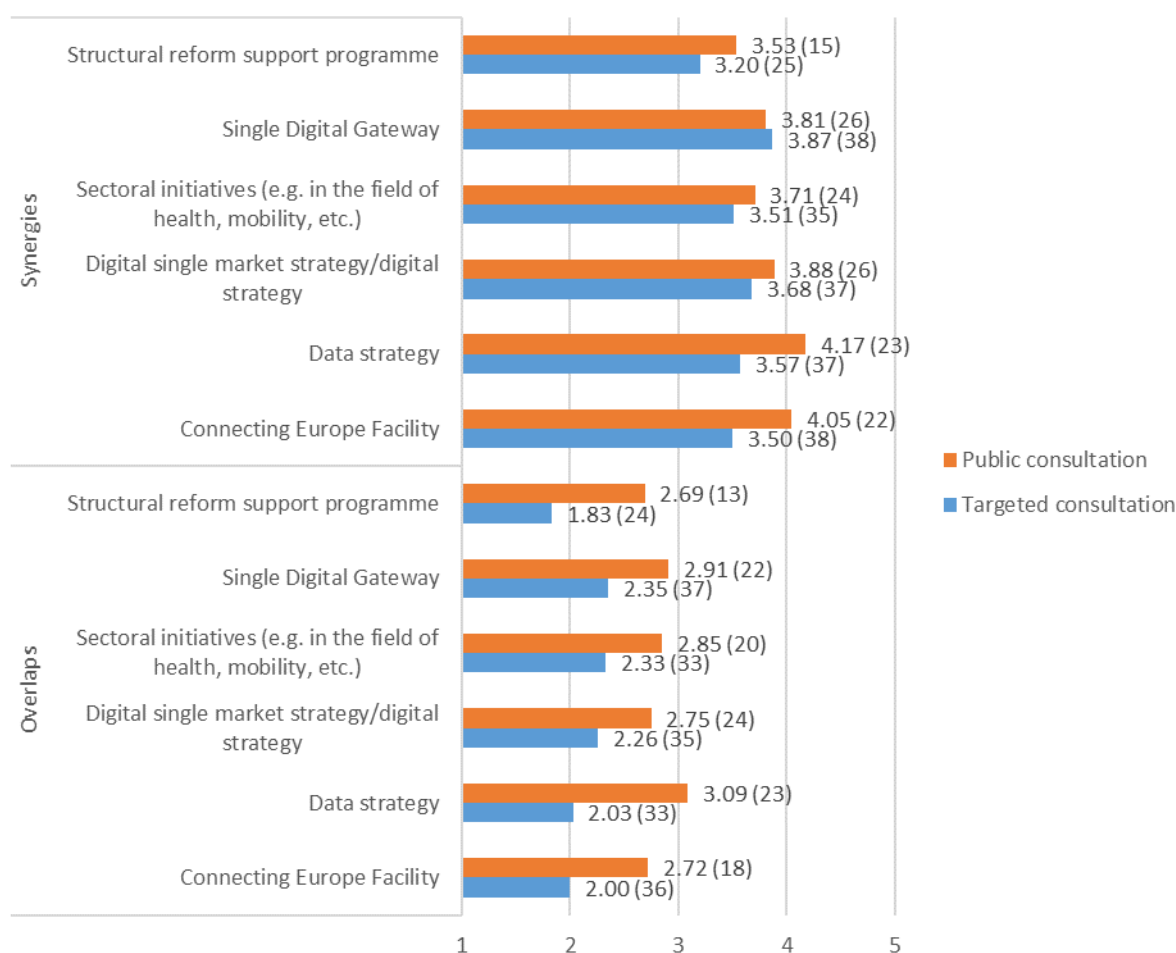
Source: [Study supporting the evaluation of the implementation of the EIF](#)

Although costs and benefits are difficult to assess due to a plethora of factors, stakeholders participating in the targeted consultation acknowledge that, in the long run, the EIF brings benefits that exceed the cost of implementation. The EIF results in **efficiency** gains by

supporting data re-use, enabling synergies in implementing and designing new services and streamlining administrative procedures. A representative from a national public administration noted that the costs of several ICT projects have been eliminated due to timely considerations of interoperability. The costs of implementing the framework are relatively moderate, both at the national and EU levels; initial investments can be challenging, but over time the benefits outweigh the costs and expand beyond a single administration.

In terms of **internal coherence**, the respondents consider that the components of the EIF are generally synergetic (see Figure 18); the framework could be improved by better linking the conceptual model with the principles and the layered interoperability model. In addition, clarification of some thematically overlapping sets of recommendations would make the framework more actionable. At the level of **external coherence**, synergies are identified with the Single Digital Gateway, the Digital Single Market Strategy and the Data Strategy; overlaps and inconsistencies remain limited, but challenges may arise within own frameworks that are developed as part of sectoral initiatives (see Figure 18).

Figure 18. Extent to which there are synergies, overlaps between the EIF and other EU initiatives with similar objective (breakdown by type of consultation; average score and number of respondents)



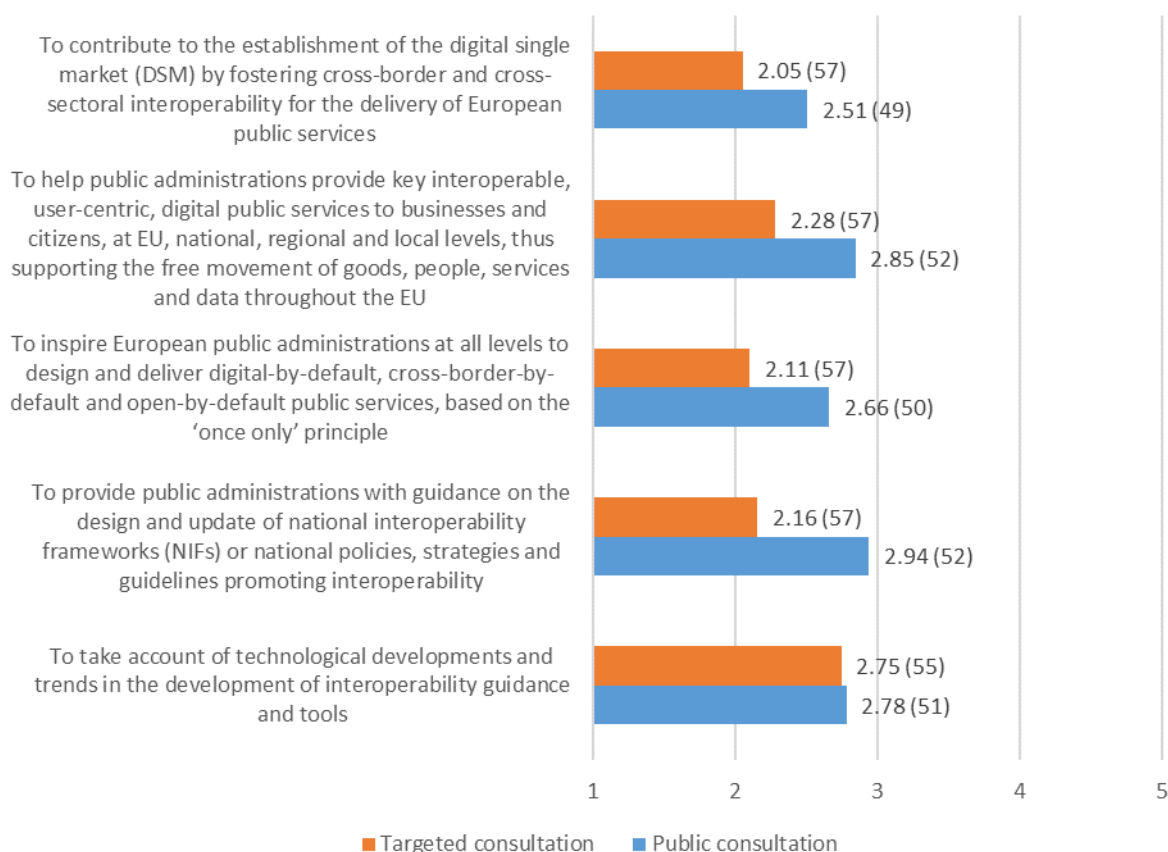
Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Source: [Study supporting the evaluation of the implementation of the EIF](#)

Finally, respondents to both types of consultations generally agree that national or sub-national initiatives would bring only limited contributions to the objectives pursued by the EIF, confirming its **EU added value** (see Figure 19). In particular, the cross-border dimension cannot be achieved solely by national or sub-national administrations. The EIF is not

sufficiently used across areas and by Commission services. Furthermore, cross-border interoperability remains limited and is driven by specific sectoral needs.

Figure 19. Extent to which national or sub-national interventions (in the absence of the EIF) would be able to achieve the following objectives (breakdown by type of consultation; average score and number of respondents)



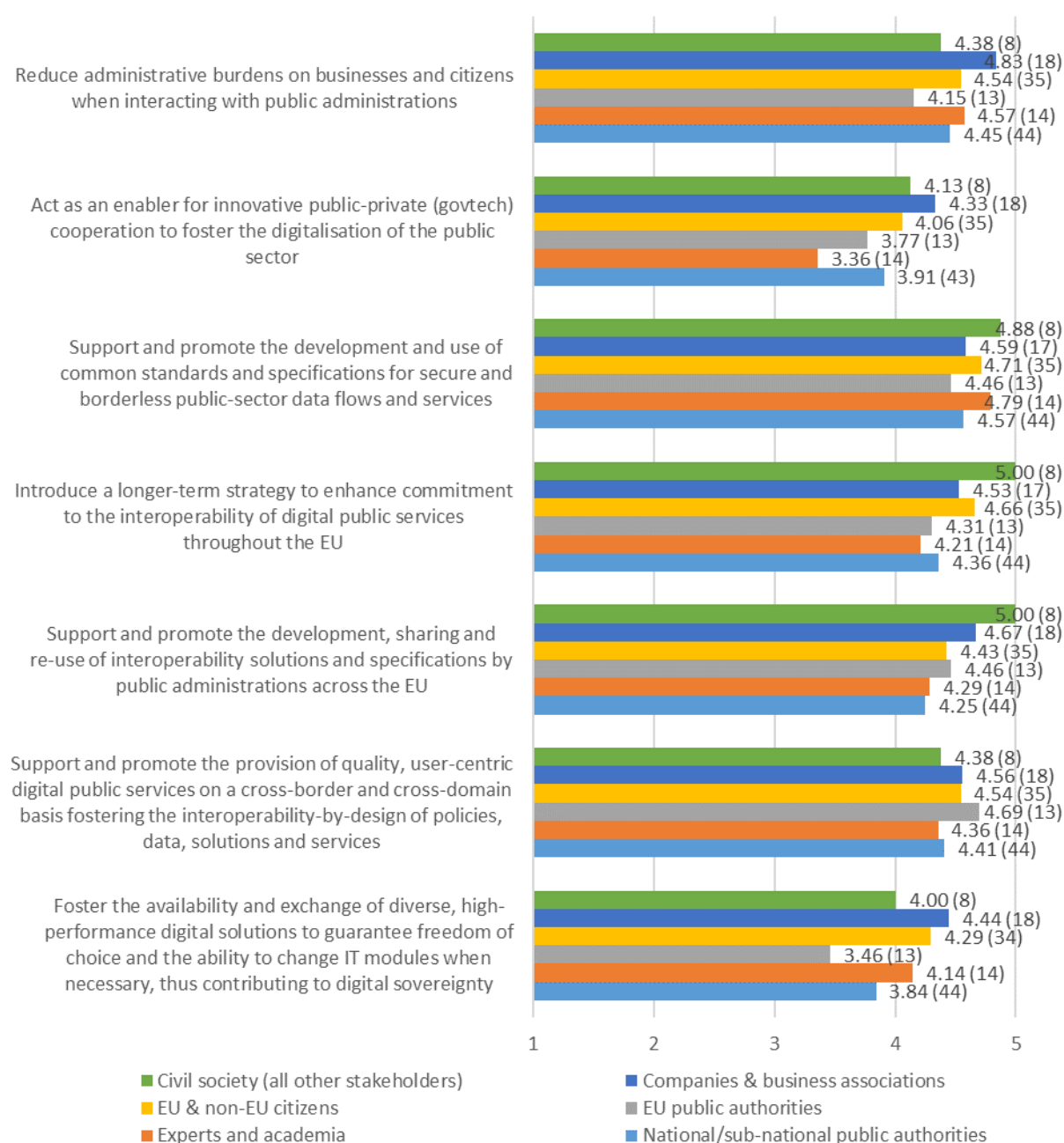
Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Source: [Study supporting the evaluation of the implementation of the EIF](#)

Results: Impact Assessment

On average, there is broad agreement among respondents that the **specific objectives** defined by the impact assessment are largely relevant, with the caveat that many of these objectives are interrelated and cannot be achieved separately. Several **additional objectives** are mentioned by stakeholders participating in both consultations: the development and promotion of specific standards and guidelines that could guide public administrations towards interoperability-by-design, a shift towards pro-active and self-sovereign services, enhancing transparency through the implementation of the once-only principle and a system that centralises users' information.

Figure 20. Extent to which a future interoperability policy of the EU's public sector should aim to achieve the following objectives (breakdown by group of stakeholders, average score and number of respondents)



Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Note: Averages do not account for respondents answering 'don't know/no opinion' (DK/NO).

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

The policy options on which stakeholders have been consulted come from the CEPS '[Study supporting the impact assessment for a future interoperability strategy](#)'. Options 0 and 1 are well aligned with the ones detailed in the impact assessment. Option 2 and 3 in the impact assessment already include the add-on options from the study and reflect the evolution of the proposals over time.

Stakeholders provided feedback on the **impacts** expected to stem from the core and add-on policies option (see Figure 21). Only limited impacts are expected to stem from the baseline option (**option 0**). The soft law approach (**option 1**) is expected to have some minor positive

impacts. A soft law approach may provide enhanced guidance and contribute to some extent to interoperability in the EU, but a voluntary approach would likely make a limited contribution. A governance mechanism for interoperability initiatives at the EU level, rooted in a legal act, (**option 2**) is expected to have positive impacts. The coordination approach through hard law will contribute to interoperability across the different areas of impact identified; nevertheless, coordination without stricter measures for enhancing implementation can only bring limited contributions. Finally, mandating the implementation of minimum interoperability requirements at the Member State level (**option 3**) is likely to bring the highest level of positive impacts among the core options based on the feedback from stakeholders.

Respondents across most stakeholder groups and consultation activities generally confirm that **add-on option 1** (providing incentives for the development and take-up of interoperability solutions) would have positive impacts to a certain degree, in particular with respect to research, development and innovation in the EU. While **add-on option 2** (conditionalities) is generally expected to improve the quality of the services provided by public administrations, conditionalities are expected to have a more limited positive impact on the costs borne by public administrations in providing public services. Using the European Semester as a tool to monitor the progress made in the field of interoperability (**add-on option 3**) can bring positive impacts primarily with respect to the quality of public services.

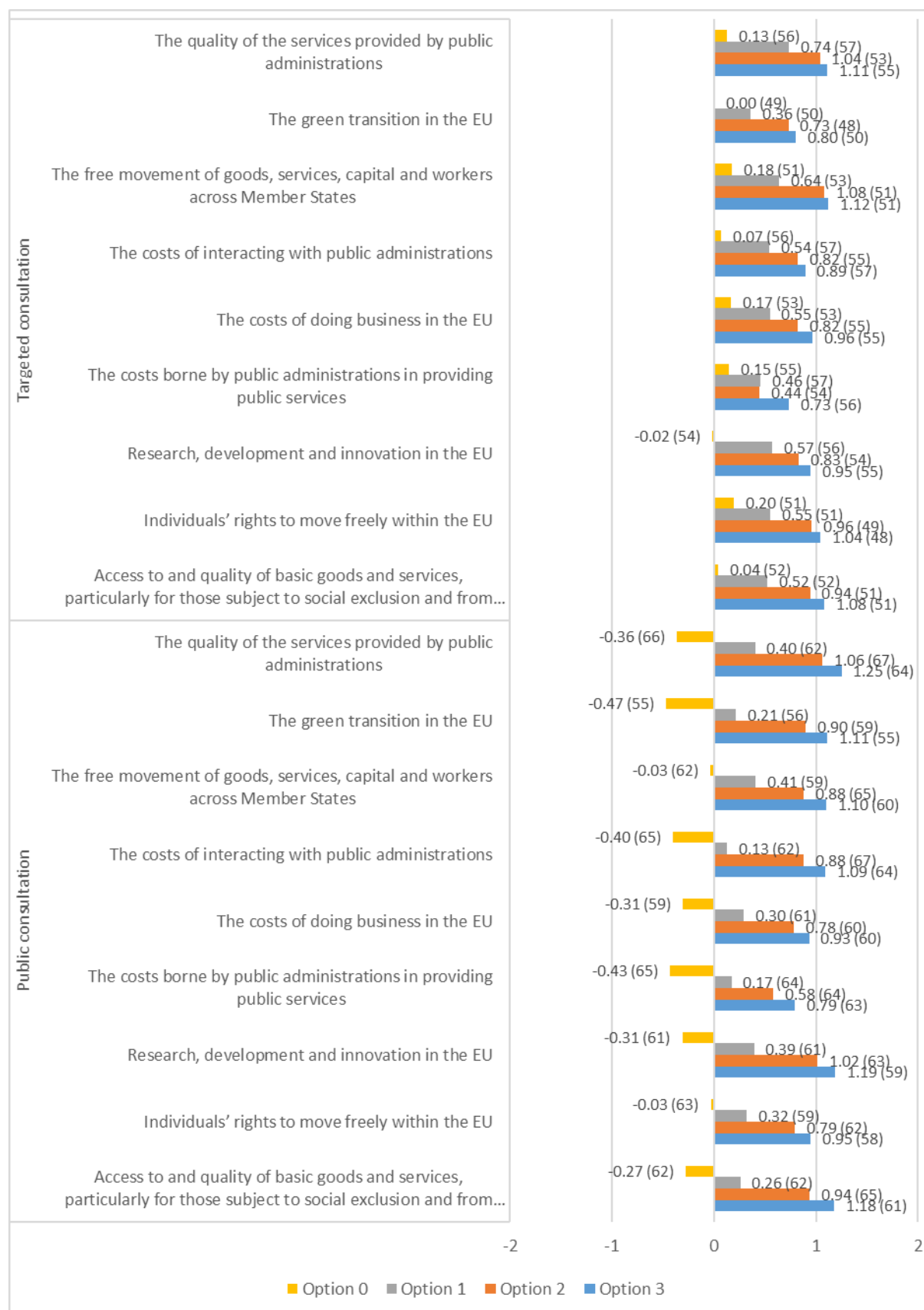
When it comes to the **effectiveness of the options**, **hard law approaches accompanied by add-options are preferred** in order to bolster interoperability, with a particular preference for **option 3**. Stakeholders responding to both types of consultation emphasised that a directive would provide targets at different levels of maturity and thus allow countries to progress in the same direction. The legal framework should be flexible enough to account for local conditions and sector specificities.

In terms of the **efficiency of options**, feedback is mixed depending on the type of the option. Participants to the targeted consultation generally noted that implementing a hard law might be more costly for Member States. At the same time, the add-on options are more widely supported.

The core options 1, 2 and 3 as well as the add-on options are **coherent with other EU initiatives** at least to some extent. In particular, the Data Governance Act could pave the way for the design of a governance mechanism for interoperability and enhanced EU-level cooperation (option 2). In addition, the approach outlined in option 3 has complementarities with the INSPIRE Directive in terms of the general approach of relying on a directive with requirements for interoperability.

Finally, the **feasibility of options** varies, but respondents to the targeted and public consultations consider, on average, that the implementation of the options will be supported to some extent. Option 2 and 3 require a need for discussion and cooperation. Option 3 raises, in particular, potential burdens through the stricter focus on implementation which may in turn limit its feasibility. By contrast, a soft law through updated guidance (Option 1) approach may encounter more limited resistance.

Figure 21. Impacts of the different Policy Options (breakdown by type of consultation; average score and number of respondents)

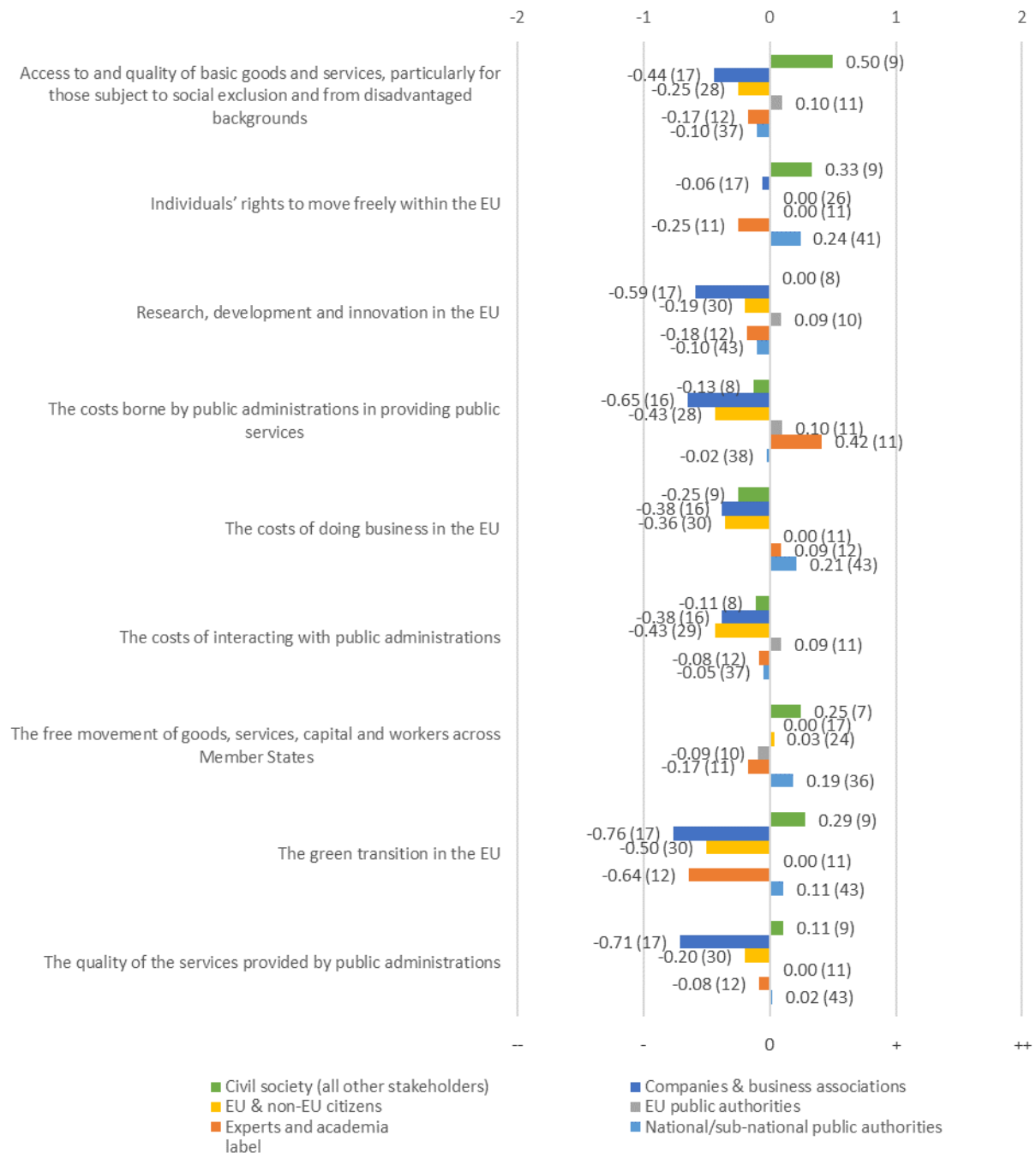


Score: (-2) very negative; (-1) negative; (1) positive; or (2) very positive.

Source: [Study supporting the impact assessment for a future interoperability strategy.](#)

Stakeholders from different stakeholder groups in the public and targeted consultations estimated the impacts quite differently. Stakeholders from companies and businesses saw the highest negative impacts of staying with the status quo. Stakeholders from EU public administrations associated the highest positive impacts with policy option 3 of introducing new interoperability minimum requirements. In the consultations also national public administrations gave the highest rating for option 3. The co-design process with the Expert Group however showed more support for the option 2.

Figure 22. Impact of option 0 (baseline) on... (breakdown by group of stakeholders; average score and number of respondents)

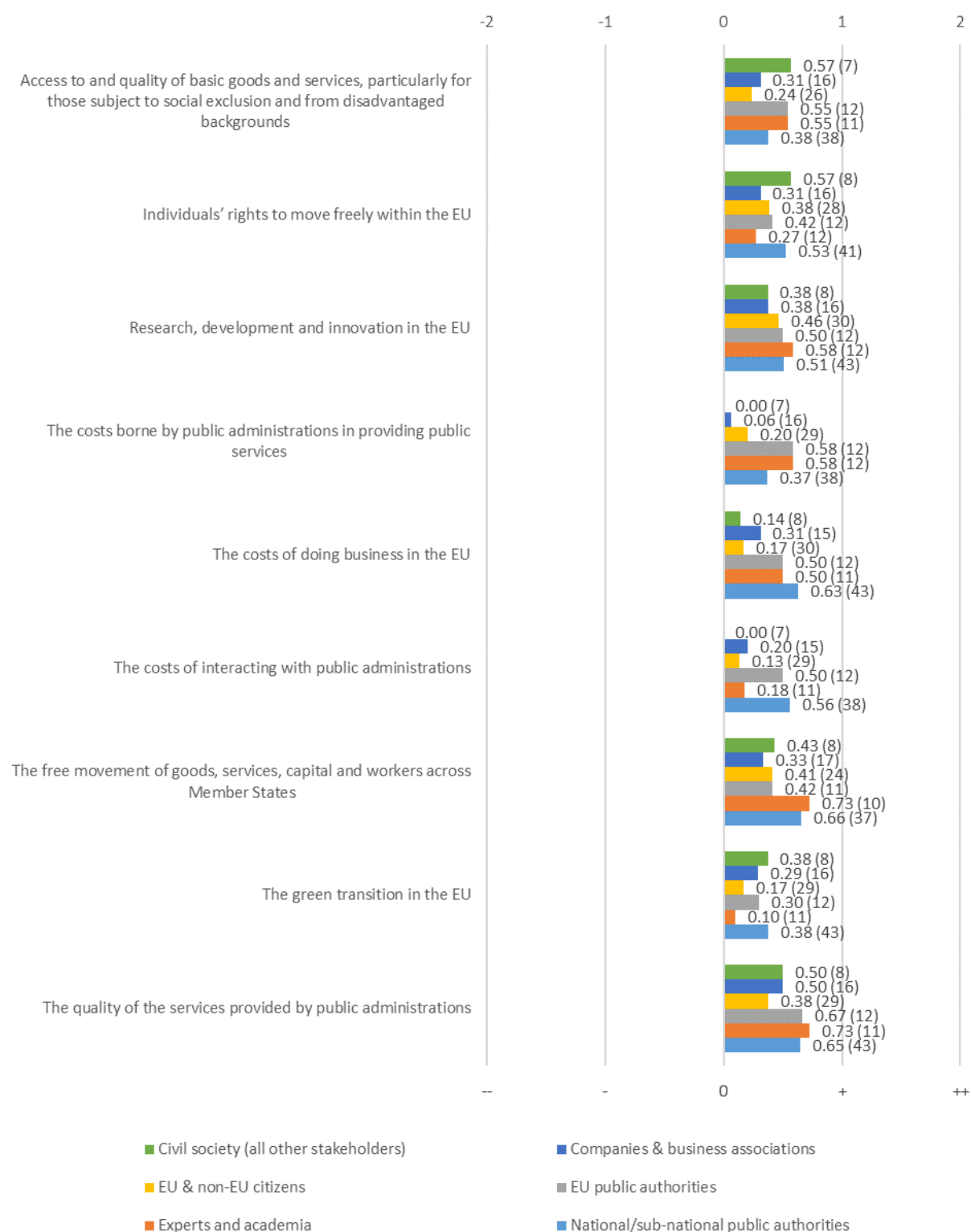


Scale: (--) very negative; (-) negative; (0) neutral; (+) positive; or (++) very positive.

Note: Averages do not account for respondents answering 'don't know/no opinion' (DK/NO).

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Figure 23. Impact of Option 1 on... (breakdown by group of stakeholders; average score and number of respondents)

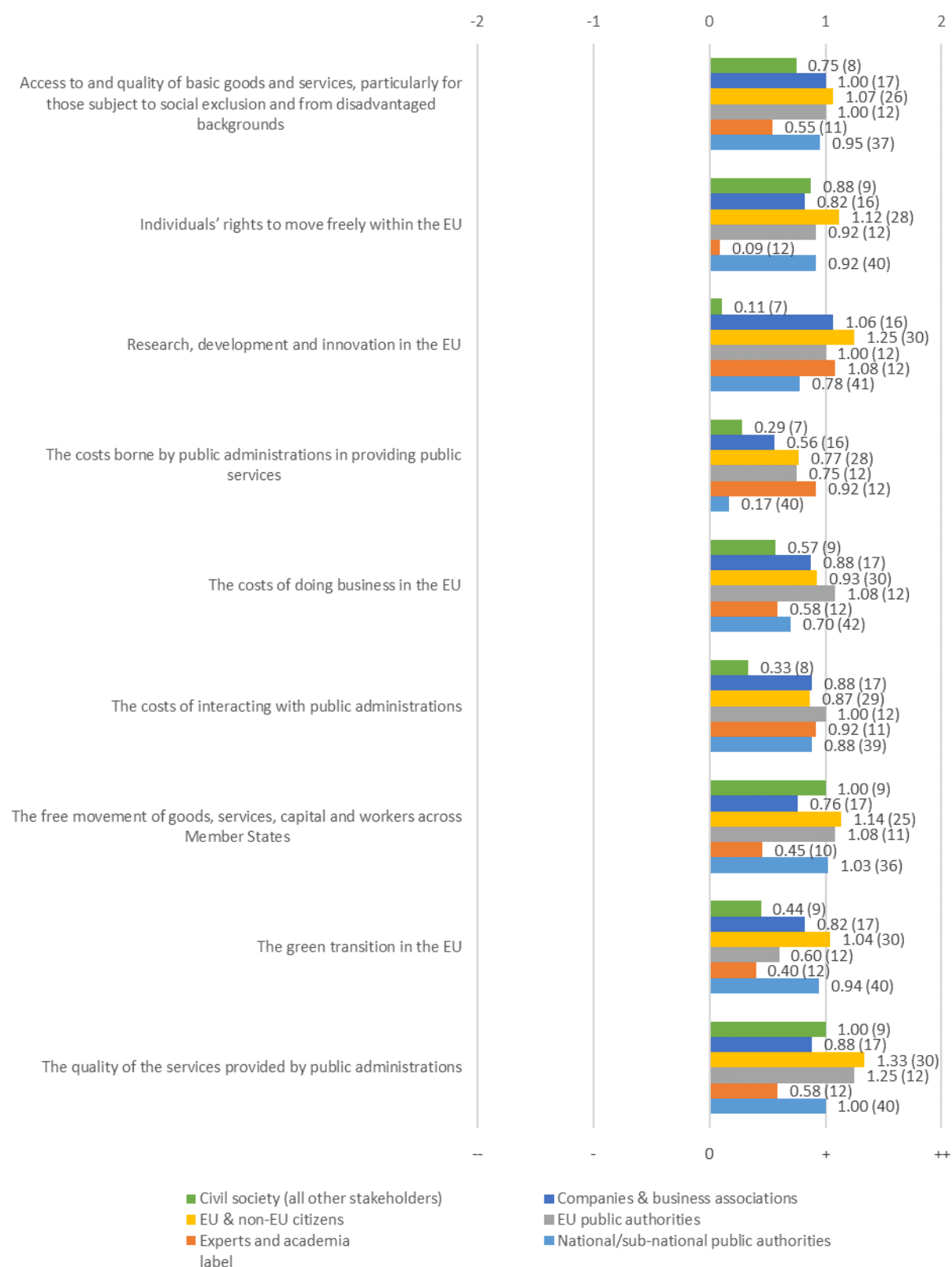


Scale: (--) very negative; (-) negative; (0) neutral; (+) positive; or (++) very positive.

Note: Averages do not account for respondents answering 'don't know/no opinion' (DK/NO).

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Figure 24. Impact of option 2 on... (breakdown by group of stakeholders; average score and number of respondents)

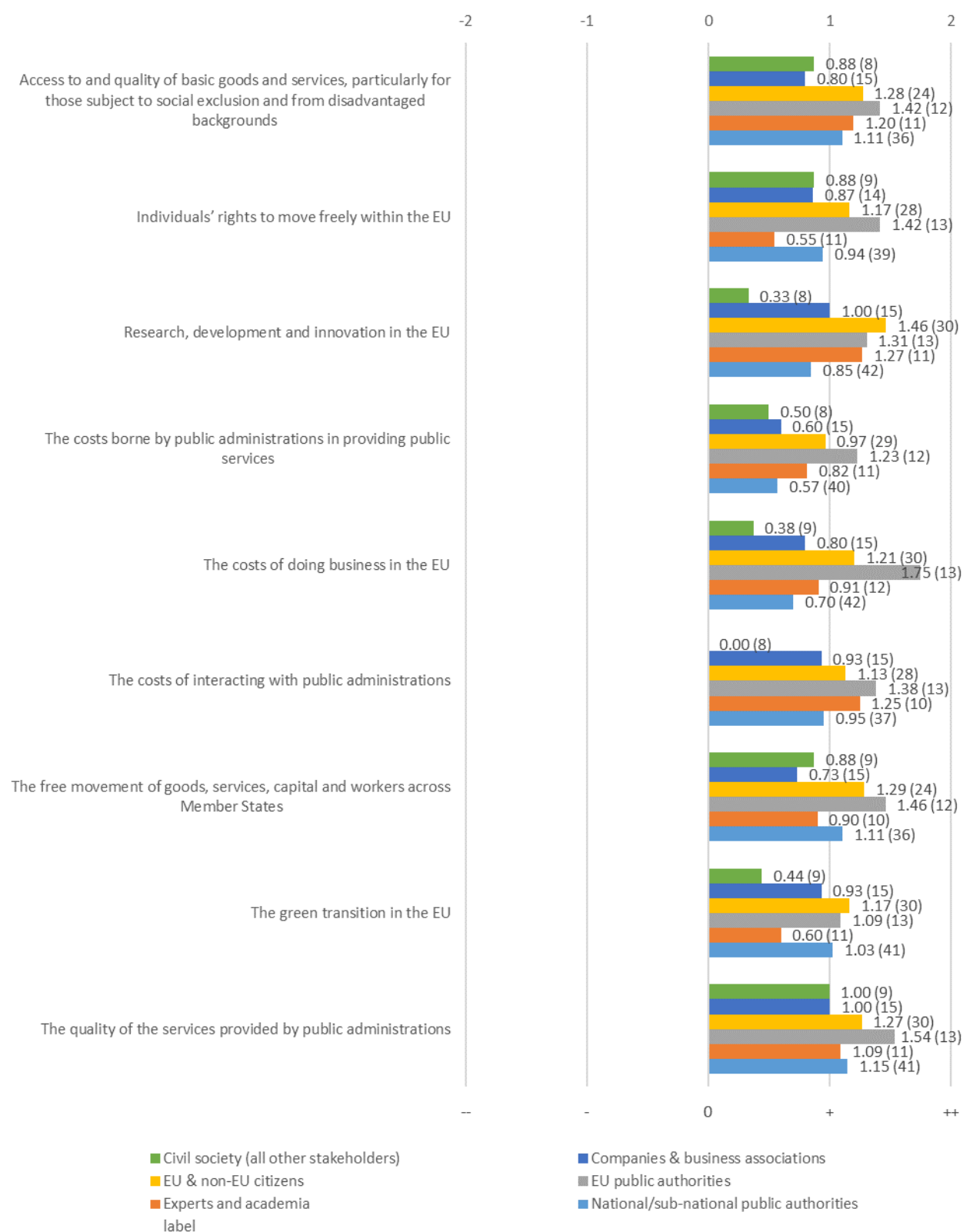


Scale: (--) very negative; (-) negative; (0) neutral; (+) positive; or (++) very positive.

Note: Averages do not account for respondents answering 'don't know/no opinion' (DK/NO).

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Figure 25. Impact of option 3 on... (breakdown by group of stakeholders; average score and number of respondents)



Scale: (--) very negative; (-) negative; (0) neutral; (+) positive; or (++) very positive.

Note: Averages do not account for respondents answering 'don't know/no opinion' (DK/NO).

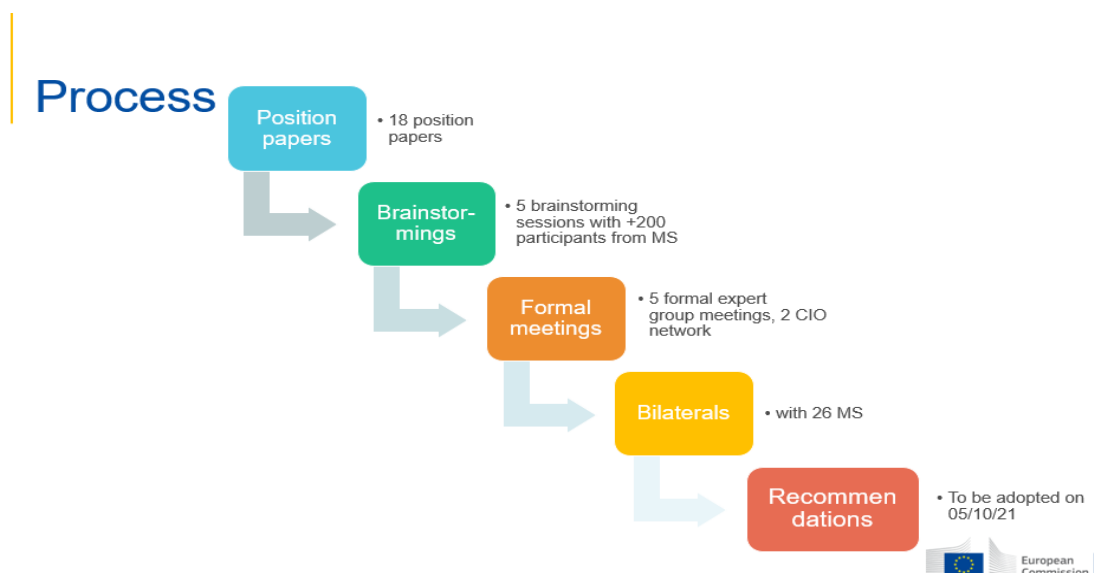
Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Input of the Expert Group co-design process

We have put in place an innovative co-creation, co-design process with the interoperability expert group¹⁶² with Member States that encourages open cooperation and transparency. This has led to a constant increase in the engagement and interaction in meetings. Moving all discussions online since more than 18 months now has also led to an increase in the number of participants. In physical meetings we would have had 1 or maximum 2 representatives per Member State for a maximum of 35 approximately, whereas online we regularly have more than 54 participants. Workshops and roundtables follow design-thinking methodologies and participatory practices. We organised since mid-2020: five brainstorming sessions with more than 200 representatives from Member States, five formal expert group meetings with also more than 200 participants overall. Member States issued 18 position papers and we met them throughout the summer of 2021 in 26 bilaterals to discuss around the recommendations on the future policy.

The main result of this process with the expert group are the recommendations on a future interoperability policy (Annex VI). Other intermediate results can be interesting to understand the view of the stakeholders that are likely to be the most affected by the policy initiative.

Figure 26. Co-design process with the Expert Group



The co-design process with the expert group was structured around five work phases:

- **Position papers** from 18 Member States – CIOs office – In December 2020 the Commission kindly asked the members of the expert group to react on a short policy paper with some initial ideas for the next interoperability policy (vision, general approach, policy instruments, etc.). This was only on a voluntary basis, however two-third of the members replied positively and shared position papers explaining their views on the upcoming policy and the proposed instruments;
- **Co-creation workshops** – five informal discussion sessions took place between January and December 2021 (see the list below), involving around 40-45 members of EU national administrations each time. The working methodology was based on design-thinking principles, including ‘diverge’ and ‘converge’ working phases, and participants were sometimes asked to fill polls (e.g. see below a poll from the workshop on the 30th of April). These meetings were moderated using Chatham House rules (no recording,

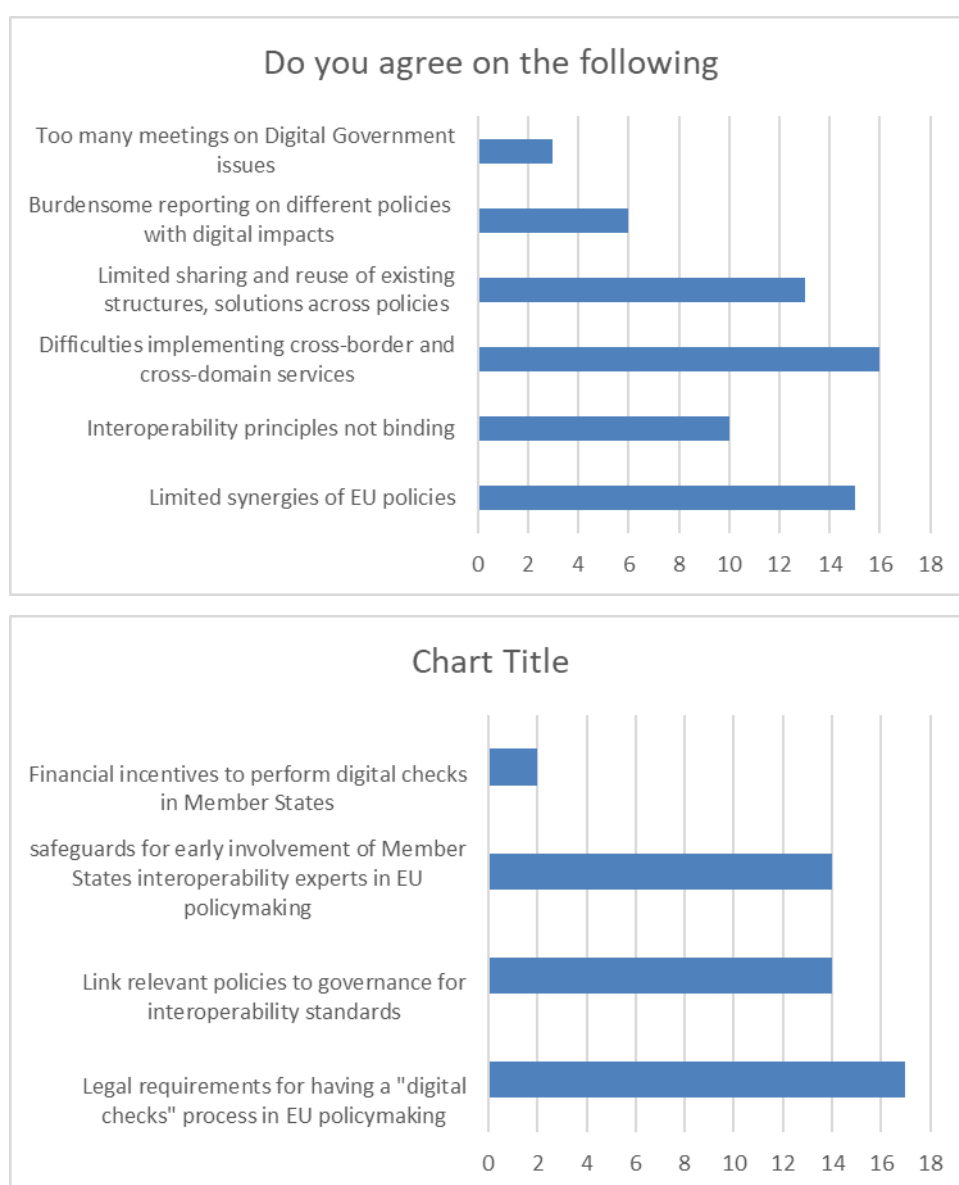
¹⁶²

<https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=3714>

participants do not formally engage their country), in order to foster interactions between people and ideation. Several working papers were circulated to stabilize ideas along the process and the subjects of these workshops helped build the structure of the draft policy recommendations of the group (see point d.). All papers were available to all the participants and we encouraged transparent feedbacks directly on a Teams space.

- 04/02/2021 - General debate on the policy approach for the next interoperability policy following the position papers (e.g. vision, priorities, etc.)
- 14/04/2021 - Communities of Practitioners (e.g. topics, organisation and composition, etc.)
- 30/04/2021 - Synergies and Funding (e.g. links with other EU digital policies, financial support to Member States for interoperability implementation)
- 20/05/2021 - Digital Checks and digital-ready policy (e.g. experience from Member States, replicability at the EU institutional level)
- 10/06/2021 - Governance (e.g. composition, structure and mandate of a strengthened EU interoperability governance)

Figure 27. Example of poll during the co-creation workshop on the 30th of April 2021



- **Bilaterals** – the Commission organised 26 bilateral calls with 26 Member States between July and September 2021 (only one country did not reply because of a lack of internal resources at that time). Each of these informal discussions lasted between 45 and 120 minutes. They were very rich in terms of content and feedback received, while helping the Commission to identify points of tension, test ideas with the Member States and build mutual trust;
- **Policy recommendations** – this is the main outcome of the expert group since its creation in February 2020. They were formally endorsed by consensus of the whole group on the 5th of October 2021. The document includes 27 recommendations structured around three chapters, each of them reflecting the common ideas expressed by the Member States in the position papers, the co-creation workshops and the bilaterals:
 - Chapter 1 - A strengthened governance
 - Chapter 2 - Interoperability for better EU policies
 - Chapter 3 - Upgrade EU interoperable solutions

Those recommendations served as a basis to build the draft legal text and the two dedicated workshops;
- **Two workshops on the legal draft** – They took place in October and November 2021. The first one gathered around 40 external participants who expressed their views on the legal concepts introduced by the Commission and discussed the composition and mandate of the future strengthened EU interoperability governance. Following the first workshop, the Commission circulated a first draft of the legal text with the members of the expert group and organised a workshop to collect preliminary ideas and suggestions to be integrated in the impact assessment and the upcoming legal proposal. Member States provided written feedback by the 3rd of December 2021.

Main outcomes of the public workshop on legal draft – 28th of October, 2021

Title: ‘Regulating public sector interoperability – How to?’

Registered participants: 50 from 20 different Member States

Expert panel:

1. **Joep Cromevoets**, professor for Information management in the Public Sector and senior researcher in: e-Government, Digital Government, Public Sector innovation, GIS, and Spatial Data Infrastructures at KU Leuven,
2. **Laurence Diver**, Postdoctoral legal researcher at the ‘Counting as a Human Being in the Era of Computational Law’ project at the Vrije Universiteit Brussel and co-founder, with Mireille Hildebrandt, of the new open-access *Journal of Cross-disciplinary Research in Computational Law* ([CRCL](#)).
3. **Sachiko Muto**, Chief Executive Officer of [OpenForum Europe](#) (OFE), a Brussels-based think tank that promotes openness in ICT and a level playing field for open source software, researching at TU Delft on the social and political implications of technological change.
4. **Arne Pilniok**, Assistant Professor for Public Law, Public Administration and Legal Education at Uni Hamburg, researching on legal questions of digital public administration in the European context.

Main outcomes of the discussion

Between guiding implementation and influencing policy design - What is the EU right to take action in the field?

Legal basis single market Art. 114 TFEU or better Art. 172 TFEU?

- case law confirmed Art. 172 TFEU as a legal basis
- for topic digital-ready policymaking:
 - measures cannot restrict right of initiative of the Commission
 - success depends on institutional commitment
 - **suggestion for an updated inter-institutional agreement on better regulation**
- for implementation support:
 - right for action depends on the degree to which the initiative is binding and on the decision-making procedures suggested
 - flexibility in decision making should be built in law

What kind of governance for public sector interoperability is needed and who should be involved?

- A. Governance around interoperability of public services is the instrument to create to public value and not only for costs cutting
- Governance should bring together **MS and EU ‘permanently’ in sort of interoperability board,**
 - To develop solutions a multi-level setup is needed to involve: End-users, private sector, regions and cities
- B. Tech is not neutral! Interoperability should mean also ensuring legal protection by design of GovTech solutions
- requirements need to be assessed before taking policy decisions;
 - running services need continuous governance;
 - GovTech cannot be steered by market instruments alone.

What kind of issues need binding interoperability agreements and for whom?

- With Tallinn, Berlin declaration far reaching commitments but no instruments to bind parties around the implementation.
- If IT is regulated with binding - need flexible way to change ‘binding’ parts to keep them future proof.
- Anything binding needs to be open by default.

What are issues that could profit from incentives in law?

- Open-source communities show that cooperation around tech can be very fruitful – public sector to learn from it and link to it
- Stability of cooperation depends also on availability of funding – incentives in EU funding to produce interoperability solutions and profit from the cooperation framework
- Incentives to cooperate on digital implementation of EU policies

- To consider the use benchmarking for monitoring

A legal text can contribute to clarity of roles, co-ownership but actions beyond legal text needed – a cultural change, people willing to cooperate, skills, catalogues.

Annex III. Who is affected and how?

The benefits of the various policy options for citizens and businesses were estimated based on a study¹⁶³ of the European Commission’s Joint Research Centre (JRC) that provides an economic impact assessment of public sector interoperability in general. A sensitivity analysis was applied to the original findings, and additional calculations (using the eGovernment Benchmark reports of 2021¹⁶⁴ and 2022¹⁶⁵) were used to estimate the share of cross-border interoperability.

On this basis the preferred policy option would affect the following stakeholders in the following ways:

Citizens

Citizens receive benefits from enhanced interoperability at the national level (when they need to use national public services) and at the cross-border level (e.g. when they settle, travel, study in another Member State) as interoperability helps reduce barriers for citizens to act. The use of digital tools will not require significant costs of investments on the part of the citizens.

We have considered that an increase in interoperability would reduce exclusively the time devoted by those individuals already using the internet to deal with the administration. We did exclude the effect that enhanced interoperability, due to improved accessibility and service quality, might also motivate some individuals to engage with the administration online.

Businesses and SMEs

The businesses will be affected by the new initiative in a similar manner as the citizens. There are no specific costs that are foreseen for businesses – in order to make use of the digital tools, they need to possess a computer and to have access to the internet.

Businesses interacting online with public administrations, will benefit from a reduction in the time spent on filling in administrative forms or from better availability of the information they seek (e.g. to start a business, VAT rules and rates, open a branch, finding partners, standards in Europe, providing services abroad, resolving disputes, access to finance, and exchanges for new entrepreneurs). Similarly, businesses and SMEs involved in cross-border transactions are expected to benefit directly from the improved interoperability of digital public services (e.g. multilingual digital public services). This could also give impetus to the SMEs to engage more in cross-border transactions within EU. The private companies who provide digital solutions for public services as well as other relevant stakeholders will have no new obligations. They will benefit from new or increased opportunities, for example for publishing open-source solutions on a share and reuse platform that could be picked up to be certified by the governance as a recommended solution or by contributing to the work of a community in the new framework.

Again, we have considered that an increase in interoperability would reduce exclusively the time devoted by those individuals already using the internet to deal with the administration.

¹⁶³ Baseline for the estimates of the JRC: ‘[Quantifying the Benefits of Location Interoperability in the European Union](#)’ (2022).

¹⁶⁴ Data from the ‘[eGovernment benchmark of 2021](#)’.

¹⁶⁵ Data from the ‘[eGovernment benchmark of 2022](#)’.

Public sector authorities

Public administrations are the main beneficiaries of improved interoperability measures, as they can reduce the time spent resolving customised requests, processing the same information several times or searching for data through more centralised systems between national and cross-border public administrations.

The implementation of the preferred policy option would have practical implications foremost for public sector bodies. There would be a general obligation to contribute to the Interoperable Europe governance body and to assign a responsible authority in the Member State. They would have new obligations around transparency: for example, an obligation to reference all public sector IT solutions and specifications developed throughout the Union with EU funding on a central platform, or to assess the possibility for reuse of common solutions. Most practical implications however translate into more opportunities to work together with public sector bodies from other Member States on interoperable solutions, in enhanced legal certainty around topics like share and reuse and the possibility of co-developing innovative cross-border digital solutions.

However, as previously explained (section 7.3 and developed in Annex IV) citizens and business benefit substantially from saved hours spent to deal with administrative obligations.

<i>Overview of cost savings – Preferred option</i>							
		Citizens/Consumers		Businesses		Administrations (total EU-27)	
		One-off	Recurrent	One-off	Recurrent	One-off	Recurrent
Action (a)	Direct cost savings (EUR million)		5.5		5 742.7		
	Indirect cost savings (EUR million)						

Annex IV. Methodology

This annex presents the methodology employed for the back-to-back evaluation and impact assessment. It details the types of data collected and their validation, the methods used, and the main limitations of the analysis.

Overview of information and data sources

In the Data Collection Phase, a mix of data collection methods and desk research was employed to gather both primary and secondary information and data, as follows:

- **Primary information and data** were collected via the following consultation activities:

- Work on **recommendations with the Expert Group on Public Sector interoperability**;
- Targeted in-depth interviews;
- Targeted online survey;
- Public consultation;
- feedback received on the **Combined EIF Evaluation Roadmap and Inception Impact Assessment**¹⁶⁶.
- **Secondary information and data** were collected by reviewing:
 - The Digital Public Administration Factsheets, developed as part of the NIFO action and available on the Joinup platform¹⁶⁷;
 - The EIF Monitoring Mechanism¹⁶⁸;
 - Relevant literature;
 - Official EU-level documents such as communications, regulations, and directives;
 - Official national-level documents such as national interoperability frameworks;
 - Databases including Eurostat, the World Bank Worldwide Governance Indicators and Doing Business report, and the Organisation for Economic Co-operation and Development (OECD) Digital Infrastructure indicators; and
 - The datasets related to the e-Government Benchmark reports¹⁶⁹.

The above-mentioned sources were complemented by expert assessments conducted by five independent experts who were part of the Team on the supporting studies conducted by CEPS, in accordance with the Technical Proposal. The independent experts were tasked with completing the questionnaire that served as the basis for the in-depth interviews and with providing additional expert input to support the evaluation and impact assessment.

Several of the secondary data sources¹⁷⁰ mentioned above were used by the JRC to quantify the general benefits of interoperability in the European Union, and to respectively estimate the proportion of these benefits that can be attributed to cross-border interoperability. Furthermore, to follow a conservative approach, a sensitivity analysis has been applied to the benefits for businesses.

Primary data

The consultation activities were launched in December 2020 (with a kick-off workshop to raise awareness on the evaluation process) and lasted until the end of April 2021 (marked by the end of the public consultation). The duration of each consultation activity was planned to ensure that stakeholders had enough time to provide their inputs. This was complemented with a co-creation process with the Expert Group on interoperability of public services (see Annex II).

The general consultation activities resulted in a total of 134 responses for the impact assessment and 112 responses for the EIF evaluation, which can be divided into six stakeholder groups as presented in Table 10. The stakeholder categories were defined on the

¹⁶⁶ The feedback of stakeholders can be consulted at: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12579-European-Interoperability-Framework-EIF-evaluation-and-EU-governments-interoperability-strategy/feedback?p_id=9804060&page=1

¹⁶⁷ The factsheets can be consulted on Joinup: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-public-administration-factsheets>

¹⁶⁸ An overview of the EIF Monitoring Mechanism is available at: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/eif-monitoring-mechanism>

¹⁶⁹ The e-Government Benchmark datasets are available at: <https://digital-agenda-ata.eu/datasets/e-gov>

¹⁷⁰ Details are explained in the JRC report ‘[Quantifying the Benefits of Location Interoperability in the European Union](#)’ (2022), and as part of the methodology section (below).

basis of the assessment of relevant stakeholders conducted in the inception phase and by taking into account the need to ensure the comparability of results between the three strands of the consultation activities: in-depth interviews, online survey, and public consultation (considering in particular the mandatory template for background information used for public consultations).

Table 10. Overview of responses to the consultation activities by stakeholder group for the impact assessment/evaluation

Consultation Stakeholders	In-depth interview	Online survey	Public consultation	TOTAL
Civil society (all other stakeholders)	1/-	1/2	8/7	10/9
Companies and business associations	-/-	5/3	13/14	18/17
EU and non-EU citizens	-/-	4/2	31/18	35/20
EU public authorities	3/5	10/8	-	13/13
Experts and academia (including the independent expert assessments)	6*/6*	3/4	5/4	14/14
National public authorities	-/2	27/25**	16/12	44/39
TOTAL	10	50	73	134/112

Note: x/y:x: Number of participants in impact assessment, y: number of participants for EIF evaluation.

* In-depth interviews conducted with experts and academia include four independent expert assessments.

**One follow-up interview to the targeted online survey was conducted.

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

In order to facilitate the comparison of stakeholders' responses, the questionnaire of each consultation activity relied on Likert scales. Respondents were thus asked to provide their feedback by referring to a scale from (1) to (5) or (--) to (++), depending on the type of question.¹⁷¹

1. (1) – not at all; (2) – to a limited extent; (3) – to some extent; (4) – to a great extent; or (5) – completely;
2. (--) very negative; (-) negative; (0) neutral; (+) positive; or (++) very positive.

The SWD presents the aggregate results of the consultation activities using bar charts showing the average scores of responses from each stakeholder group. The average scores do not account for 'don't know/no opinion' answers. The data labels of the bar charts display the average score first, then the corresponding number of respondents in brackets.

In order to assess the reliability of primary data, Figure 28 and Figure 29 provide an overview of the level of knowledge in the field of digital public services as well as the knowledge of the EIF among the participants who contributed to the consultation activities. Overall, stakeholders reflect a high level of knowledge, strengthening the reliability of the primary data collected.

¹⁷¹ For each question, the respondent also had the possibility to select the answer 'don't know/no opinion'.

Table 11. Overview of the level of knowledge of respondents

On average, respondents have a good level of knowledge in the field, noting they are familiar to a great extent with digital public services and interoperability. EU and non-EU citizens report a relatively lower level of knowledge, but even in this case, the respondents are familiar at least to some extent (3.50) with the field of digital public services and interoperability.

Figure 28. Knowledge of digital public services and interoperability (breakdown by group of stakeholders; average score and number of respondents)

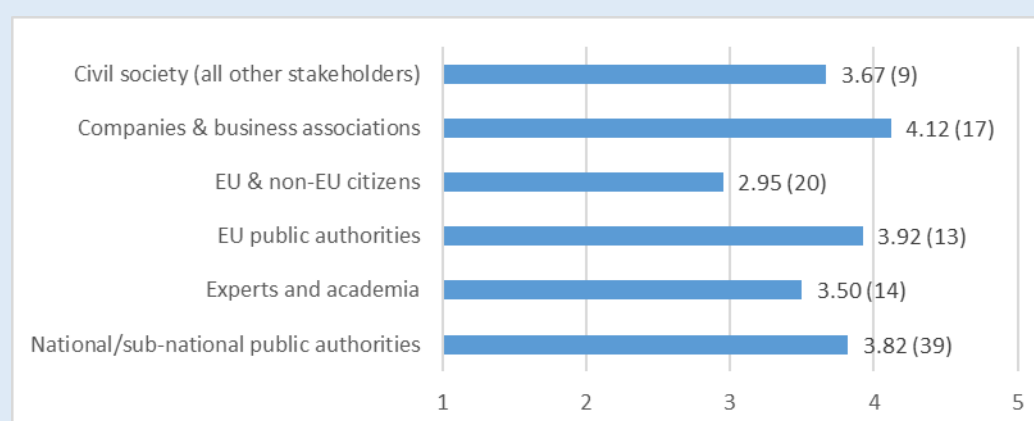


Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely. Note: Averages do not account for respondents answering 'don't know/no opinion' (DK/NO).

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Furthermore, respondents across almost all groups are, on average, familiar to a great extent with the EIF (see Figure 29). The only exception concerns respondents among EU and non-EU citizens who have a relatively lower level of familiarity with the EIF, but they are still, on average, familiar to some extent with the EIF.

Figure 29. Knowledge of the EIF (breakdown by group of stakeholders; average score and number of respondents)



Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

Note: Averages do not account for respondents answering 'don't know/no opinion' (DK/NO).

Source: [Study supporting the impact assessment for a future interoperability strategy](#)

Secondary data

The **impact assessment** builds on the evaluations of the ISA² programme and the EIF¹⁷², which were conducted simultaneously with the impact assessment as key sources to assess achievements accrued so far in the field of public sector interoperability in the EU as well as lessons learnt. The estimations of the benefits primarily draws on previous work of the JRC and sets it into the context of the Interoperable Europe Act by applying the necessary additional calculations.

The EIF Evaluation relies on an extensive review of available secondary data. One of the main sources of data is the **National Interoperability Framework Observatory (NIFO)** action supported by the ISA² programme and its **outputs that are available in the Joinup collection** with the same name¹⁷³. The particular sources developed as part of NIFO and used as evidence feeding into the evaluation of the EIF include:

- The **Digital Public Administration Factsheets**, contributing to the assessment of the effectiveness of the EIF by providing an overview of the development of national interoperability frameworks or similar strategies¹⁷⁴;
- The **2020 Report on the State-of-Play of Digital Public Administrations and Interoperability**, detailing the progress made by the EU Member States in enhancing the provision of digital and interoperable public services (the report also covers nine additional countries: Iceland, Liechtenstein, Norway, Switzerland, the United Kingdom, Ukraine, Montenegro, Turkey and the Republic of North Macedonia)¹⁷⁵; this Report contributes to the assessment of the effectiveness and coherence of the EIF by providing an overview of key developments across the EU and the level of implementation of the EIF;
- The **2019 EIF Monitoring Mechanism**, tracking the implementation of the EIF and its principles, model and recommendations across the EU, thus contributing to the assessment of the effectiveness of the EIF¹⁷⁶;
- Other reports and documents developed as part of NIFO and available on Joinup, including the Report on Public Administrations' Digital Response to Covid-19 in the EU¹⁷⁷, contributing in particular to assessing the relevance of the EIF.
- The webpages of ISA² actions and the ISA² Rolling Work Programmes.

¹⁷² CEPS (2021), Study supporting the final evaluation of the ISA² programme. Available at: <https://op.europa.eu/en/publication-detail/-/publication/afa4297a-0acc-11ec-adb1-01aa75ed71a1/language-en/format-PDF/source-229005953>

CEPS (2021), Study supporting the evaluation of the implementation of the EIF. Available at <https://op.europa.eu/en/publication-detail/-/publication/29d694d4-4696-11ec-89db-01aa75ed71a1/language-en/format-PDF/source-search>

¹⁷³ For further details please see: National Interoperability Framework Observatory, Knowledge Centre, available on Joinup: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/knowledge-centre>

¹⁷⁴ The factsheets can be consulted on Joinup: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-public-administration-factsheets>

¹⁷⁵ Bouhend, A., et al. (2020), 'Report on the State-of-Play of Digital Public Administrations and Interoperability', European Commission. Available at: https://joinup.ec.europa.eu/sites/default/files/news/2020-10/SC263_D04.02_State-of-play%20report%20on%20digital%20public%20administration%20and%20interoperability%202020_v_FINAL.pdf

¹⁷⁶ The underlying data was shared with the Study Team by DIGIT.D2 to facilitate the analysis. An overview of the EIF Monitoring Mechanism is available at: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/eif-monitoring-mechanism>

¹⁷⁷ Charay et. al. (2021), Report on Public Administrations' Digital Response to COVID-19 in the EU, Publications Office of the European Union. Available at: <https://joinup.ec.europa.eu/collection/nifo/report-state-play-digital-public-administration-and-interoperability>

Official documents such as **communications, regulations, directives and decisions** were reviewed contributing in particular to the assessment of the coherence and EU added value of the EIF. In addition, official national-level documents such as national interoperability frameworks were also reviewed, primarily as part of the analysis of the effectiveness of the EIF, while also contributing to understanding the EU added value of the framework. For the impact assessment these data sources contributed across the study, from depicting the policy context to comparing the policy options considered for this impact assessment.

In building the evidence base, **the relevant literature in the field of interoperability** was reviewed and considered throughout the evaluation process. The key insights from literature contribute particularly to the assessment of the relevance of the EIF and for the impact assessment particular the existing problems in the field of public sector interoperability.

Relevant indicators measuring digitalisation in the public sector were considered from a variety of databases, namely: Eurostat, the World Bank Worldwide Governance Indicators and Doing Business report, and the Organisation for Economic Co-operation and Development (OECD) Digital Infrastructure indicators. In addition, the datasets related to the e-Government Benchmark reports¹⁷⁸ were used, contributing in particular to (i) the assessment of the effectiveness and efficiency of the EIF; (ii) for the impact assessment - contributing in particular to quantifying the existing problems and the assessment of the potential impacts stemming from the policy options considered for this impact assessment; and (iii) for the estimation of the benefits of cross-border interoperability for citizens and businesses.

Data validation

To ensure the robustness of evidence, the collected data were **validated via triangulation**. Tool #4 of the Better Regulation Toolbox on evidence-based better regulation defines triangulation as ‘the application and combination of several research methodologies in the study of the same phenomenon’¹⁷⁹. Validation requires checking ‘whether the findings of a study are true and certain: ‘true’ in the sense that research findings accurately reflect the situation; and ‘certain’ in the sense that research findings are supported by evidence’¹⁸⁰. To ensure that the findings are supported by well-founded evidence, data were collected from **multiple sources and using different tools** to analyse the evaluation criteria and questions. This approach allows for increasing confidence in collected data, comparing and contrasting findings, and providing a clearer understanding of the issues at stake. The analysis relies on three different types of triangulation to provide a solid basis for drawing robust conclusions:

- ☐ **Triangulation of data**, relying throughout the impact assessment on data collected from multiple sources and stakeholders.
- ☐ **Triangulation of methods**, based on data collected via at least two different data collection methods (e.g., interview, targeted questionnaire, public consultation, desk research).
- ☐ **Triangulation of evaluators**. Several members of the Core Study Team and Support Team were involved in data collection activities; in addition, each element of the impact assessment was addressed by at least two members of the Core Team. Hence, conclusions were agreed upon by at least two researchers.

¹⁷⁸ The e-Government Benchmark datasets are available at: <https://digital-agenda-ata.eu/datasets/e-gov>
¹⁷⁹ Better Regulation Toolbox (2017), Tool #4 Evidence-based better regulation, https://ec.europa.eu/info/sites/default/files/file_import/better-regulation-toolbox-4_en_0.pdf
¹⁸⁰ Triangulation: Establishing the Validity of Qualitative Studies, Lisa A. Guion, David C. Diehl, and Debra McDonald, 2011.

Methods

The evaluation and impact assessment combines both quantitative and qualitative data, thus relying on a variety of methods and tools to analyse the collected data. In particular, the qualitative information was aggregated, compared and summarised to substantiate the evidence feeding into evaluation and impact assessment. To analyse the findings from the consultation activities, the Study Team employed descriptive statistics. To complement these methods, other specific quantitative methods were used to evaluate the effectiveness, efficiency and coherence of the framework:

Cost-benefit analysis (CBA)¹⁸¹

CBA is a method of comparing the costs and benefits associated with a certain initiative, typically a government policy, programme or project, in order to assess whether the initiative is expected to bring about a net improvement. A key feature of CBA is that all costs and all benefits are quantified and expressed in monetary terms, and are adjusted for the ‘time value of money’ (through some discounting mechanism), so that all benefits and costs that occur at different points in time are expressed on a common basis in terms of their ‘present value’. The main limitations of CBA concern the difficulties in attributing a monetary value to items for which no market exists and the fact that certain non-monetisable effects simply cannot be taken into consideration. CBA was used to assess of the potential impacts stemming from the proposed policy options.

The standard cost model (SCM)¹⁸²

SCM aims at assessing administrative costs imposed by rules or policies *inter alia* on businesses and public administrations. It is based on the identification of the basic components of a rule, the Information Obligations, whose costs for the addressees can be measured and quantified. An Information Obligation is a specific duty to gather, process or submit information to the public authority or a third party. The SCM is employed to measure the costs borne in terms of days spent by national public administrations to transpose the EIF into national frameworks as well as the costs that would be borne by public administrations when implementing the proposed policy options.

The Multi-criteria analysis (MCA)¹⁸³

MCA is a technique for comparing and ranking different courses of action that yield multiple outcomes expressed in different units of accounts (i.e. some are expressed in monetary terms, others in physical units of different nature, e.g. number of lives saved and quality of gaseous emissions). In some respects, it can be said that MCA goes one step further than CBA, as it gives explicit recognition to the fact that a variety of both monetary and non-monetary objectives (i.e. social, environmental, technical, economic, and financial) may influence policy decisions. At the same time, this kind of analysis inevitably includes a higher degree of subjectivity compared to CBA, especially regarding the weighting and ranking of different criteria. Therefore, unlike CBA, a basic feature of MCA is its implementation through participatory processes, involving policymakers, experts (e.g. through Delphi panel method),

¹⁸¹ Better Regulation Toolbox (2017), Tool #59 Methods to assess costs and benefits, https://ec.europa.eu/info/sites/default/files/file_import/better-regulation-toolbox-59_en_0.pdf

¹⁸² European Commission (2017), ‘Tool #60. The standard cost model for estimating administrative costs’, in the Better Regulation ‘Toolbox’, available at https://ec.europa.eu/info/sites/info/files/better-regulation-toolbox_2.pdf; SCM Network (2005), ‘The International SCM Manual; Measuring and Reducing Administrative Burdens for Businesses’, available at: http://www.administrativeburdens.com/filesystem/2005/11/international_scm_manual_final_178.doc

¹⁸³ For an excellent review, please see Department for Communities and Local Government, Multi-criteria analysis: a manual, London, January 2009.

stakeholders, etc. This method was employed to compare the proposed policy options based on their effectiveness, efficiency, coherence and feasibility.

Text mining

Text mining is a technique referring to a set of data-processing operations that extract knowledge according to a criterion of novelty or similarity in texts. In practice, this technique is based on an algorithm that counts the number of times a specific reference is made in a given text corpus. In this evaluation, text mining is used to evaluate the degree of external coherence of the EIF, together with its principles, interoperability layers and conceptual model. In particular, this approach allows checking, throughout the corpus of EU legislation and Commission communications, the extent to which the EIF and its components are taken into consideration by other EU initiatives in the field of interoperability that were adopted since the first version of the EIF (2004).

This analysis can be done in two steps:

- Searching through the corpus of EU legislation and Commission communications since the adoption of the first version of the EIF (2004) to obtain an overview of the number of times the EIF and keywords related to the EIF are mentioned in official EU documents;
- Taking a more in-depth look at a selection of relevant official documents and conducting a more granular analysis to understand which elements of the EIF are referenced.

While the first approach provides a quantifiable overview of the references to the EIF in different pieces of legislation and communications over time, the second approach provides more insights into the take-up of the EIF and its specific elements.

To quantify the number of mentions of the EIF and keywords related to the EIF in pieces of EU legislation, the Study Team relied on an extensive dataset, the ‘CEPS EurLex dataset’, customised to facilitate text mining¹⁸⁴. The dataset contains 142,036 pieces of EU legislation adopted between January 1952 and August 2019, representing almost the entire corpus of the digitally available EU legal acts from this timeframe. The dataset covers three types of legally binding acts adopted by the EU institutions: regulations, directives, decisions, and implementing and delegated acts. When it comes to quantifying the number of references to the EIF and keywords related to the EIF in Commission communications, the analysis was run for documents including green and white papers, communications, reports (categorised as ‘DC’ on [EurLex](#))¹⁸⁵. Importantly, the analysis excluded self-references to the EIF Communications.

The datasets were used to search for specific keywords in the timeframe 2004 (the year of the adoption of the first EIF) to August 2019. In addition, to cover the period from August 2019 and April 2021, the EurLex website was used. The keywords, selected based on their connection to the EIF and the extent to which they would be expected to yield results in a text mining exercise, were grouped into three clusters as follows¹⁸⁶:

- Cluster 1: European Interoperability Framework. This cluster refers exclusively to the EIF and contains three keywords: ‘European Interoperability Framework’, ‘EIF’ and ‘interoperability framework’;

¹⁸⁴ Borrett, Camille; Laurer, Moritz, 2020, ‘The CEPS EurLex dataset: 142,036 EU laws from 1952-2019 with full text and 22 variables’, <https://doi.org/10.7910/DVN/0EGYWY>, Harvard Dataverse.

¹⁸⁵ Hradec, Jiri, 2021, the database is part of the ‘[Trends in Global Governance and Europe’s Role](#)’ (TRIGGER) project.

¹⁸⁶ An additional keyword, ‘conceptual model’ (related to the EIF conceptual model for integrated public services provision), was dropped from the analysis as it did not yield results related to the EIF.

- Cluster 2: Interoperability layers. This cluster gathers together the following keywords: ‘semantic interoperability’, ‘technical interoperability’, ‘organisational interoperability’ and ‘legal interoperability’;
- Cluster 3: Key interoperability concepts. This cluster contains the following keywords: ‘once-only’ (keyword related to the ‘once-only’ principle), ‘digital by default’, ‘privacy by design’, ‘user-centricity’, ‘re-use of data’, ‘interoperability principle’, ‘interoperable e-Government service’.

The datasets of EU legislation and communications were searched for the keywords, resulting in a list of pieces of legislation and communications where the keywords were found. The results were thus summarised by year and number of mentions per cluster of keywords.

Calculating the economic impact of cross-border interoperability

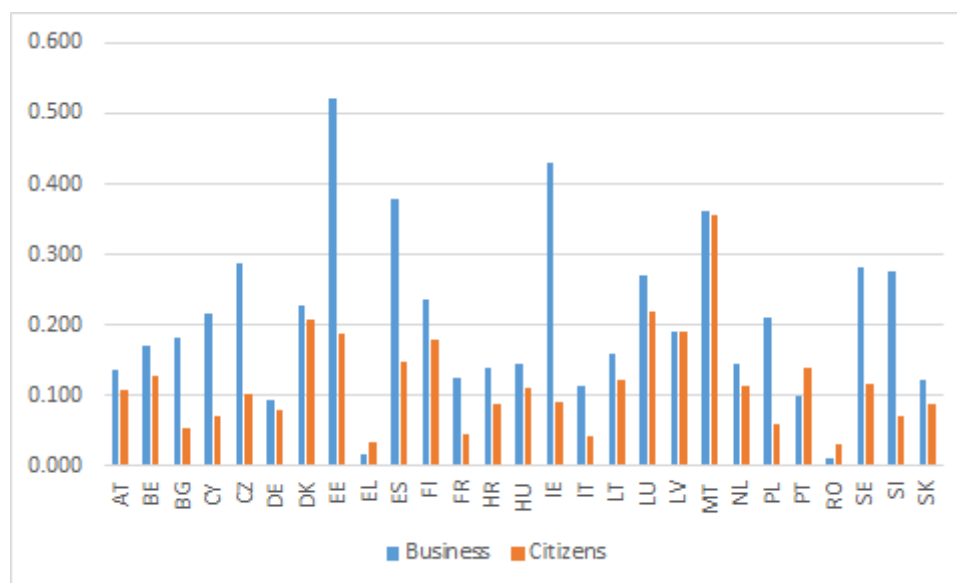
The original 2022 JRC report provides an economic impact assessment of public sector interoperability in general. This work distinguishes the impact of improved interoperability on citizens, on businesses, and on the public sector. Results are provided as time savings in hours, and also in monetary terms (i.e. translated into annual savings in EUR). These calculations do take country differences into account and are based on statistics from sources such as Eurostat, OECD, the Worldbank and others. It is one of the most comprehensive analyses of interoperability benefits in Europe available. The report itself¹⁸⁷ provides the necessary details.

To estimate the benefits that can be attributed to cross-border interoperability (the scope of the Interoperable Europe Act), the eGovernment benchmark of [2021](#) and [2022](#) provides valuable information that compares how governments across Europe deliver digital public services. This information includes a list of public sector services provided by the governments. These services (i) can be provided by local, regional or national authorities, (ii) can be provided offline and online, (iii) can cover services for both citizens and companies, and (iv) are comparable across all Member States since the methodology for data collection is the same.

Using this source, it becomes possible to collect information about all services covered by the different Member States. On this basis, it is possible to extract all those services that are provided online, and that are available cross-border. The graph below illustrates the proportion of public services included in the eGovernment benchmark that are provided online and cross-border – for both businesses and citizens. As it can be seen, for the EU-27 countries, the averages are 21% for businesses and 12% for citizens, although with large variations across the different Member States.

¹⁸⁷ JRC ‘[Quantifying the Benefits of Location Interoperability in the European Union](#)’ (2022).

Figure 30. Proportion of public services included in the eGovernment benchmark that are provided online and cross-border – for both businesses and citizens and per country (in %)



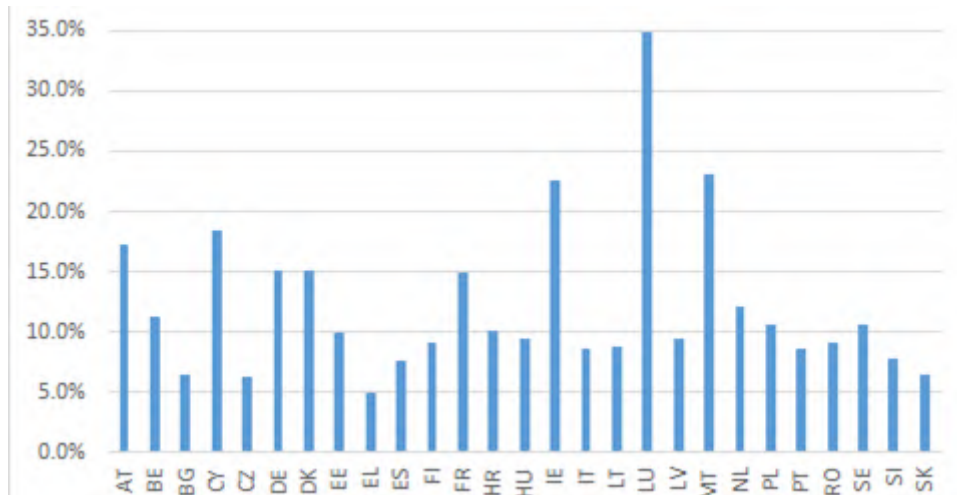
Assuming that these two lists of services are representative of the widest portfolio of public services offered by the different Member States, it is possible to calculate the proportion of public services that may be subject to the impacts of enhanced interoperability as envisaged in the Interoperable Europe Act. In this way, the actual scope of the proposed regulation is addressed as close as possible.

The fact that a service is available cross-border and online does not assure that it is used. Hence, there is a need to correct the intensity of use in order to accurately estimate the expected impacts. For this purpose, the eGovernment benchmark offers an extensive list of websites that users can visit to perform the desired administrative procedures. After removing duplicates and errors, a list of 1608 public sector websites in the 27 EU Member States remain. For these websites, it is possible to obtain information about the geographic origin of the internet traffic to these websites¹⁸⁸. This data (illustrated in the figure below) provides the proportion of visits to the public services websites that have an origin in a different country from the one that provides the service. And this is a measure of cross-border usage of the offered services. The EU-27 country average is 12%, meaning that the proportion of domestic users of a public service is 88% while the usage from foreign users (from another EU Member States) is 12% on average. Again, with imbalances among Member States. It is worth noticing that the number of visits is a good approach for user's usage because concrete visits reflect the 'attention' generated by the visited services. Visits are a good proxy for actual online service usage, in the absence of more precise indicators, such as conversion rates. Moreover, the applied methodology used 'real visits', i.e., visits that imply that users spend some time on the respective website. All bounced visits, i.e. visits for cases where the user left the webpage shortly after entering it, were removed.

¹⁸⁸

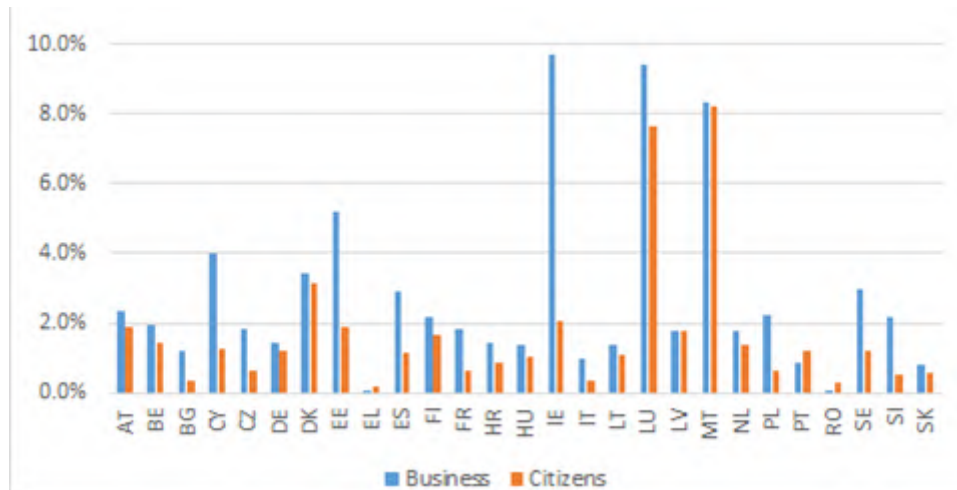
The Similarweb tool provided the required calculations: <https://www.similarweb.com/>

Figure 31. The proportion of visits to the public services websites that have an origin in a different country from the one that provides the service



Combining the information from the JRC study with the new data collected to perform this exercise it is possible to estimate the economic impacts of increased cross-border interoperability in the EU-27 countries, i.e. to simulate the potential effects of the IEA. Taking into account the proportion of cross-border services, as well as the cross-border usage of these services, the impact that would correspond to the IEA would represent, on average for the EU-27 countries, the 3% of the total impact of no interoperability for businesses and 2% for citizens with differences by Member States, as shown in the next figure. These proportions, when converted to economic impact, provide the figures shown above.

Figure 32. The total impact of no interoperability for businesses and for citizens, per Member State



To reach those figures, the following formulas have been applied:

$$I_h^c = H_i^c * \alpha_c * \beta_c$$

Where I_h^c represents the impact in terms of hours saved (h) in country c as calculated in the JRC report, H_i^c is the number of hours estimated in the JRC report for scenario i¹⁸⁹, α_c is the proportion of public services included in the eGovernment benchmark that are provided online and cross-border and β_c is the measure of cross-border usage of the offered services. The calculation of the impact in terms of hours saved can be done for citizens and businesses. The transformation of the impact in hours in an economic impact, is done by multiplying the number of hours by its price, the hourly wage rate by country (ω_c), as indicated in the following equation:

$$I_{\epsilon}^c = I_h^c * \omega_c$$

Finally, to get the total impact at the EU-27 level, we sum the impacts over all the Member States:

$$I_{\epsilon}^{EU} = \sum_{c=1}^{27} I_{\epsilon}^c$$

A similar expression can be used to compute the EU-27 impact in number of hours saved.

Given the available evidence, the expected impact on citizens and businesses calculated for the Impact Assessment of the Interoperable Europe Act and for policy option 2, can be expressed in a static scenario (scenario 1) and a dynamic scenario (scenario 2) as depicted in the table below. In the dynamic scenario, we assume that increased interoperability affects user behaviour, whereas we do not do so in the static one. Moreover, given the limitations explained below, we have performed a sensitivity analysis. This resulted in five variants: 30% (as the **high** variant, corresponding to the original numbers used in the JRC report), 25%, 20%, 15% (for the **intermediate** variants) and 10% (for the **low** variant).

Table 12. Policy option 2 savings

Policy option 2: Savings			Business				Citi zens
Scenario 1		Low	Intermediate -low	Intermediate	Intermediate -high	High	
	Mh	273.3	379.2	523.3	674.9	812.6	0.22
	EUR million	5 742.7	8 114.6	11 343.4	14 852.6	17 553.2	5.5
Scenario 2	Mh	297.8	413.9	570.3	738.1	888.1	0.26
	EUR million	6 259.5	8 865.2	12 352.8	15 948.6	19 190.7	6.3

In summary, this impact assessment estimates annual cost savings of policy option 2 between 5.5 million Euros and 6.3 million Euros for citizen, and between 5.7 billion Euros (in a static

¹⁸⁹ There are several scenarios, one static in which interoperability only reduces the number of hours required to deal with the administration, while the dynamic scenario also implies that the number of citizens and/or businesses using online tools to access public services. In addition, in the case of businesses, a sensitivity analysis takes into account the intensity of usage of these tools.

scenario with the lowest proportion of time saved) and 19.2 billion Euros (in a dynamic scenario with a large volume of time saved) for businesses.

Main limitations

The mix of primary data and information, obtained through consultation activities, and secondary data and information, mainly obtained through desk research, was crucial in allowing to draw conclusions and, more importantly, to provide estimates of costs and benefits. Nevertheless, the following limitations may affect the main findings:

1. The **scarcity and difficult comparison of data for assessing the costs and benefits** of transposing the EIF into national frameworks. The voluntary nature of the framework reflects a heterogeneous uptake of the framework across the EU, limiting the availability of data and making the comparison between countries difficult, as the framework is adopted on an ad hoc basis. Furthermore, the implementation of the EIF has not followed the same timeline in the different countries. To overcome this limitation, the Study Team contacted the national public authorities that responded to the consultation activities and indicated their availability to participate in a follow-up interview in order to gain insight on the time spent (in terms of person-days) on the transposition of the EIF, or part of it, into their national framework.
2. Starting with the JRC report, **the calculations of the benefits of the Interoperable Europe Act are based on a series of assumptions** (for the JRC report they are extensively listed in the original report). Assumptions are necessary when actual data is not available but they can lead to imperfect results¹⁹⁰. To give one example, the figures reported in the JRC report for the time spent by businesses in dealing with the administration is subject to assumptions and uncertainties, all explained in the original report. Due to a lack of reliable data, a sensitivity analysis was performed to account for the level of uncertainty here.
3. The **overarching scope of the EIF hinders the assessment of the direct costs and benefits stemming from its implementation**. Costs and benefits deriving from the EIF do not just pertain to the implementation of the framework, as costs and benefits depend on the levels of digitalisation of the Member States or on the different degrees of centralisation and varying organisational structures involved in delivering public services. The costs related to interoperability initiatives are borne at different levels of administration in several countries.
4. The conclusions drawn in the Impact Assessment are built upon the EIF Evaluation, which evaluates the latest implementation of the EIF (i.e. from 2017 to 2020). However, the framework seeks to achieve overarching goals and impacts that **require time to show results**.

Another limitation may be the potential ‘**consultation fatigue**’ of respondents. In particular, this Impact Assessment was carried out in a context in which the feedback of stakeholders may have been sought for several relevant developments: the end of the ISA² programme, the roll-out of the new Digital Europe Programme, the 2030 Digital Compass and the new policy initiatives related to digitalisation in the EU.

Annex V. Recommendations of the Expert group on interoperability of public services

Introduction

Europe has set the goal of 100% key digital public services by 2030. All enabled by a strengthened digital sovereignty and interoperability that foster innovation in line with EU

¹⁹⁰ Activities available online and used, cannot be fully referred to the administrative activities– for example some enforcement activities are also included.

core values and standards. This is one of the four pillars helping to deliver Europe's Digital Decade for 2030.

It means that the pace of implementation and delivery of digital public services needs to increase. The level of digital maturity of Europe's public services needs to increase.

Europe's public sector spends 12.4% of GDP (around EUR 1 trillion per year) on the purchase of services, works and supplies. Digitalising Europe's public sector digitalises Europe.

Cooperation at EU level is a must to deliver on this goal. We have seen that very clearly with the COVID-19 pandemic: European solidarity and cooperation have helped us navigate a crisis of unprecedented scale and magnitude. But to deliver on our goals and help build better digital public services for Europe more of this cooperation is needed.

Member States are under a lot of pressure to implement European policies that have an impact on their digital transformation on top of their own national priorities. At central levels there are the Single Digital Gateway Regulation, the Open Data Directive, the NIS directive, GDPR, the upcoming revised eIDAS regulation or the Data Act, just to name a few. There are also the numerous sectoral initiatives: e.g. digitalisation of justice, e-Customs, revised TEN-E regulation, digital health and many more.

Interoperability of solutions, data, and services is not only key for a sound implementation of the above-mentioned policies, but it will also help to reduce efforts and costs. It helps build resilient digital public administrations that can deliver public services that span borders and sectors across the EU, allow us to share data and stay connected. This calls for a paradigm change in how citizens, public administrations and democratic institutions interact. To make this become a reality we need a clear strategy focused on enabling delivery on the ground and a proper governance at European level that makes it possible to align and coordinate efforts of this scale.

Purpose and scope of these policy recommendations

The European Commission has announced in the 2020 communication Shaping's Europe's Digital Future a 'strengthened interoperability strategy'. This is the opportunity to rethink the voluntary efforts of the past 20 plus years on interoperability and establish a more structured and pragmatic cooperation both between Member States at a horizontal level and between different European services and policies at a vertical level. We need an interoperability policy that is focused on enabling smooth, interoperable implementation and delivery of digital public services at European level without adding new obligations on Member States and that helps increase our overall digital maturity.

The expert group on Interoperability of European public services was set up in February 2020 with members representing the national public administrations of the European Member States and observers from EFTA and candidate countries. One of its roles is to provide advice and expertise to the Commission in relation to the preparation of the legislative proposals and policy initiatives.

The following policy recommendations are expressed by the Member States to the European Commission. They will be one of the cornerstones for the upcoming European Commission policy proposal on the next interoperability policy and will accompany the impact assessment of policy options and evaluation of the European Interoperability Framework.

The recommendations have been co-designed and co-created by the members of the expert group on Interoperability throughout a series of brainstorming sessions, workshops, bilateral discussions with the European Commission and written contributions spanning almost a year.

We share a common vision for the next interoperability policy

We need a visionary and at the same time pragmatic approach to interoperability policy, that builds on all the work done in the past 20 years and takes a bolder stance on European Interoperability. We want to enable a structured cooperation focused on delivery of cross-borders and cross-sectors European digital public services.

The members of the Interoperability expert group recommend a new interoperability policy to:

- Establish a shared governance of interoperability with a stronger, structured involvement of the Member States
- Deepen the synergies with other ongoing EU policies and funding programmes (particularly those with an impact on the digitalisation of the public sector)
- Identify common specifications and encourage their uptake
- Include more operational and pragmatic actions
- Focus on more exchange of best practices between Member States
- Better promote, via external communication and awareness raising, the achievements and benefits of interoperability work by the Member States and the EU.
- Engage with sectoral areas and policies.

To translate this vision into concrete actions, we call on the European Commission to implement the following policy recommendations.

Chapter I: Reinforce the European cooperation on interoperability

In this chapter, we focus on the core aspect of a reinforced European interoperability policy: create a structured cooperation with a comprehensive governance to support the implementation of interoperability in the Member States.

Governance is one of the aspects that can trigger the best virtuous effects and where quick progress is the most needed. *It will help increase the level of digital maturity of the public sector in the EU and ensure a cohesive digital delivery across organisational boundaries, cross-borders and cross-sectors.*

To do so, we articulate our proposal around three topics: (A) Establish a shared strategic governance with a clear mandate, (B) supported by communities of Member States' practitioners and (C) reinforce innovation and international cooperation.

A. Establish a shared strategic EU Interoperability Governance

*Recommendation n°1: **Establish a common EU Interoperability Governance** that will have a legal mandate to set the priorities at EU level and steer the implementation of interoperability actions. This governance structure will act in full respect of subsidiarity and proportionality, while supporting Member States in their implementation efforts and encouraging coordination and exchange. Depending on the specific objective, decisions from the governance structure should be adopted in the appropriate voting system (e.g. consensus, qualified majority). They may be non-binding (e.g. guidelines, opinions) or binding (e.g. European Interoperability Framework updates).*

*Recommendation n°2: This EU Interoperability Governance should have a clear, simple and effective governance. We recommend to structure it into **two layers: a 'strategic layer'**, co-led by the Member States governments' leaders of digital transformation with the support the European Commission, and an **'operational layer'** of thematic subgroups, communities of practice (see recommendations 4, 5, 6) supporting the work of the strategic layer.*

*Recommendation n°3: The **mandate** of the EU Interoperability Governance should at least cover the following tasks:*

- **Foster synergies with any existing or new EU policy initiatives** that have an impact on interoperability of European digital public services (e.g. Data Governance Act, Digital Decade) by giving recommendations on interoperability impact of EU policy initiatives (see Recommendations 10, 11, 12);
- Oversee the evolution of the European Interoperability Framework as a clear reference for related cross-cutting and sectorial policies in the EU, decide on the evolution of its principles and recommendations, and provide for a regular monitoring of progress across Member States (see Recommendations 13, 14, 15);
- Improve the **coherence between the different EU data policies** that impact the public sector (see Recommendation 18, 19, 20), for instance by liaising with EU governance bodies with a broader scope (e.g. Data Innovation Board, Digital Decade governance) to avoid duplication of work;
- Help build a **catalogue of interoperability solutions** and update it based on Member States' needs (see Recommendations 21, 22, 23);
- Promote **Open Culture, Open-Source Software and Open Standards** in European public administrations (see Recommendations 24, 25);
- Ensure that adequate funding is provided at EU level to deliver better interoperability solutions (see Recommendation 26, 27, 28);
- Reinforce innovation, **GovTech and experimentation cooperation** amongst Member States and associated countries, both at national and local levels but also internationally (see Recommendations 7, 8, 9);
- Provide guidance to the European Commission on **joint reporting of Member States' interoperability implementation progress**, aligned with all relevant reporting tools (e.g. OECD, UN, Digital Decade, etc.), monitoring (see Recommendations 16, 17).

B. Supported by communities of Member States' practitioners

A strategic governance alone cannot do much: **interoperability implementation requires the involvement of practitioners** from all levels and sectors of EU public administrations that have hands-on expertise and can help build consensus on solutions and technical specifications. This should form the 'operational layer' of the EU Interoperability Governance in a way that is consistent, efficient and based on the actual needs and practices of the EU, Member States, regions and local communities.

*Recommendation n°4: **Communities of Practice shall be the operational layer of the EU Interoperability Governance. They can take the form of a temporary Working Group and they must have a clear mandate, a defined list of problems to solve, a deadline and expected outcomes.** They are assisted by the secretariat (European Commission) which ensures alignment with the work of the strategic layer of the governance and with the policy initiatives at EU level. They can include voluntary experts from academia, private sector, civil society, all administrative levels (e.g. local, regional, national) or other domains as needed depending on the subject.*

Recommendation n°5: the strategic EU Interoperability Governance can set-up a Community on practical issues related to, at least, one of the four EIF layers (legal, organisational, semantic and technical) and relevant for the implementation of EU level services (e.g. Data Spaces), while:

- Ensuring that there is no overlap with existing or new created communities/bodies dealing with similar topics (e.g. between the Single Digital Gateway Regulation, Data Governance Act, eGovernment Action Plan, ICT standards, Living-in.eu, etc.);
- Bringing together the relevant experts in their domains (e.g. from the GovTech sector, academia, NGOs, civil society) to define technical solutions that are interoperable. This involves working closely also with private partners; local entities (e.g. involve

regions, municipalities), EU standardisation and other international organisations (OECD, UN, international standardisation bodies, etc.) as well as citizens' representatives depending on the subjects to be handled.

*Recommendation n°6: These communities can develop cross-border interoperability initiatives, proofs of concept, pilots (e.g. technical guidance, specifications, prototypes, applications, etc.). Initiatives that reach a certain level of maturity and have a large support can be included in the Interoperability catalogue by the strategic level of the EU Interoperability Governance. In any case, we reaffirm that **it is very important to critically evaluate whether a specific standard or specification is relevant and applicable for a specific use case before making it mandatory.***

C. Reinforce innovation and international cooperation

Public sector innovation has now a strong focus on digital technologies as enablers (e.g. AI, blockchain). The pandemic has only accelerated and reinforced the need to rapidly innovate and emphasized further the inequalities in preparedness of the public administrations. For this reason there is an urgency to ensure in the EU context that digital innovation can be replicated between the front-runners and laggards, allowing leapfrogging for some of them. This goes with a number of activities such as exchange of best practices, experimentation and close cooperation, including the private (GovTech) sector.

Digitalisation issues (including interoperability) are global by nature, especially since the pandemic - and they are nurtured by innovation and international cooperation with other countries, international organisations like the United Nations, CAF (Development Bank of Latin America), the World Bank or the OECD, but also with private actors and civil society. The EU and its MS should take a coordinated approach towards contributing to these diverse fora to ensure consistency and promote the EU public values of digital public services.

*Recommendation n°7: A future interoperability policy should facilitate early **alignment with the European standardisation efforts and cooperation with international standardisation organisations** to ensure that EU public sector's needs for standards are taken into account in an effective way.*

*Recommendation n°8: Provide opportunities for **international cooperation on interoperability**, outreach, partnerships, exchanges, with relevant international organisations and partners to increase usefulness of international interoperability and complement our digital sovereignty.*

*Recommendation n°9: Provide means to **allow exchange of best practices**, such as the Innovative public Services Observatory to promote sharing and reuse and ensure interoperability by default. Provide for **Open Source, GovTech and experimentation cooperation** amongst Member States and associated countries, both at **national and local** levels but also **internationally**. Ensure multiplication through other channels and financing programmes (EIC, Horizon Europe, International Cooperation).*

Chapter II: Make the most of interoperability for better EU policies

A stronger governance on interoperability is not enough on its own: we must ensure that the policies and European legislation we implement for our citizens and businesses are interoperable and digital-ready 'by default'.

Interoperability and (digital) implementation of policies are too rarely considered as a high priority in the European policy-design process, even though it can bring better coherence across sectors, help save time and public money, while increasing the legal robustness of legislative acts and making it easier for policymakers to reuse data.

We reaffirm the call from the Berlin Declaration:

- To ensure through the Better Regulation framework that policies and legislative acts proposed by the European Commission are digital-ready and interoperable by default
- To strengthen Europe's digital sovereignty and interoperability by fostering interoperability 'by design' of policies to enhance cross-border and cross-sector interconnections

Therefore, the next interoperability policy should improve the policy-design at EU level (A) and leverage on a more pragmatic European Interoperability Framework (B) to ensure coherence and better support implementation by the Member States, especially when it comes to data-related policies (C).

A. Introduce new mandatory checks to ensure that EU policies are 'digital-ready' and interoperable 'by-default'

Public administrations are bound by a specific legal context. The design of such legal provisions influences how technical solutions can be deployed across different public administrations that should be interoperable and allow secure and controlled data flows. The vision of an interoperable public sector can only become a reality if legal provisions are digital-ready.

An increasing number of Member States are developing – or plan to develop – guidelines and mandatory checks to ensure that new legislation is fit for the Digital Age. Because their decisions impact hundreds of millions of citizens and businesses, the EU Institutions should also lead by example and incorporate such checks as early as possible in the decision-making process.

Therefore, recommendations 10, 11 and 12 are mostly oriented towards the European Commission and the modernization of its legal processes, while ensuring proper support and advice-sharing from the Member States.

*Recommendation n°10: **Introduce mandatory but lightweight 'digital checks' along all steps of EU policymaking** (European Commission, Council and European Parliament) and across policies. This should align with the Better Regulation agenda. Among others, such checks should direct policymakers' attention towards user-centric implementation, best (re)use of public data, coherence with digital policies and upcoming data initiatives (e.g. Digital Decade/Compass, Data Act or other sectorial policies), and the reuse of existing technical and semantic specifications and interoperable solutions.*

*Recommendation n°11: The EU Interoperability Governance and the European Commission should **create guidelines for such digital checks** (e.g. expected outcome, life cycle, monitoring, etc.). They should establish a clearly defined process, which ensures that:*

- *The digital checks are conducted as early as possible in the policy design;*
- *Member States' interoperability experts are timely consulted on EU policy proposals with significant digital impacts;*
- *The outcome of the digital checks is transparent and being fed into the inter-institutional decision-making.*

*Recommendation n°12: **Establish a community of practice on 'digital-ready' policymaking that provides user-friendly guidelines, tools and best practice examples and that gives advice to national, local and EU policymakers.** This community of practice should support the implementation of Recommendation 10.*

B. Reinforce the European Interoperability Framework

The EIF is the cornerstone of EU interoperability action and it must remain an effective guide for implementation in the EU, Member States and at local levels. Due to its non-technical approach, the EIF has proven to be a useful instrument to raise awareness on interoperability beyond technical audiences. However, the EIF in its current state is not frequently referenced in EU policies. Public administrations across the EU could all benefit from a reinforced EIF that is more closely linked to EU sectorial policies and provides more pragmatic and operational guidance.

*Recommendation n°13: Make the **EIF a clear reference** for related cross-cutting and sectorial policies in the EU to ensure a holistic approach to interoperability.*

*Recommendation n°14: Work on **operationalising the EIF** to make it simpler to implement especially in highly decentralized countries.*

Recommendation n°15: Empower the EU Interoperability Governance to:

- ***Assess the implementation** of both, principles and recommendations of the EIF in the Member States, including solutions, standards and technical specifications implemented in the context of the EIF;*
- ***Update the framework** – both principles and recommendations – based on progress made and take into account the evolution of practices (e.g. move from an approach focusing on digital service delivery to a focus on public sector data flows);*
- ***Promote the reuse** and take-up of relevant interoperability solutions, standards and specifications for the implementation of relevant EU policies and share best practices and examples of implementation at different levels (e.g. national, local, international).*

*Recommendation n°16: Establish a **more automated monitoring mechanism for the implementation of the EIF and ensure data collected is reused by all Commission services following the ‘once only principle’** (e.g. reuse between the Digital Decade, eGovernment benchmark, NIFO, Berlin Declaration monitoring, etc.). Reuse relevant information and reporting on digital government progress collected by other international organisations (OECD, UN).*

Recommendation n°17: Encourage a culture of ‘interoperable by design’ by including more information on the digital maturity of the public sector in Europe in the annual digital public administration factsheets.

C. Improve the coherence between EU interoperability, digital and data policies, ensure availability of operational capacities at the EU level

The upcoming reinforced EU interoperability policy is the opportunity to bring more support for the evolving EU data policy landscape, to facilitate building, operation and inter-connection of data spaces.

*Recommendation n°18: Provide **guidance on interoperability of data** through:*

- *The creation, maintenance and promotion of technical specifications on semantic interoperability to facilitate the sharing and re-use of data, taking into account EU values and diversity;*
- *Supporting data use and experimentation, in particular cross sector and cross border, by liaising with relevant data governance bodies.*

A fully interoperable Europe can only be achieved with the political willingness and the operational capacity to execute it. This needs a well-designed organisational set-up that fosters cooperation and coordination across sectors and across borders. Therefore, a reinforced governance structure must be supported by the European Commission with

dedicated multidisciplinary teams and the adequate resources to support Member States in the implementation of interoperability.

Recommendation n°19: The European Commission services should reduce internal friction and improve the way they cooperate on the design and implementation of policies that have an impact on digital transformation of the public sector.

Recommendation n°20: The European Commission services responsible for public sector interoperability should guarantee an effective support of the EU Interoperability Governance.

Chapter III: Upgrade the current EU interoperable solutions offering

The European Commission has been providing interoperability solutions and technical specifications for over twenty years, under the CEF-Digital and ISA² programmes (and their predecessors). While these products have brought added value to the Member States, we call on the European Commission to improve the governance and offer of EU interoperability solutions and technical specifications. Member States should be more closely involved in planning and priority setting for solutions developed at the EU level (e.g. co-decide on which former ‘building block’ or ISA² solution should be adapted, improved or removed, etc.).

Three actions are proposed to foster the development and uptake of interoperability solutions: set up a catalogue of key interoperability solutions and open standards (A), support the development of an open source ecosystem for the public sector (B) and provide adequate funding to deliver better interoperability solutions (C).

A. Enrich the EU catalogue of interoperability solutions and open standards

EU public administrations need a federalised, one-stop-shop of interoperable solutions, technical specifications and open standards, where they could easily find free-to-use products provided by European public administrations or other stakeholders. Such a catalogue could help EU public administrations save time and resources.

The European Commission has been developing such a catalogue, however it is not systematically used by public administrations and its content should be enriched.

Recommendation n°21: Encourage EU and non-EU public administrations to consult, use and actively participate in the JoinUp platform. Participating in these communities will not only benefit the administrations, but also other re-users like companies and citizens.

*Recommendation n°22: The European Commission should foster the transformation of this catalogue into a **federalised one-stop-shop managed by the EU Interoperability Governance**. Its content should be based on:*

- (a) A systematic collection of Member States’, agencies’ and local administrations’ assessments, to keep the catalogue up to date with actual needs*
- (b) A thorough process (e.g. proportion of reusability in a minimum of Member States, Open Source, sustainability, ‘future-proofness’, security, privacy etc.).*

B. Make the best use of Open Source products for the common good

A recent study showed that Open Source Software and infrastructure are key for the digital transformation of the public sector and can be a major boost to the EU’s GDP. A future interoperability policy should be the occasion to support open source functions in public administrations, the use of open source products to provide public value and foster the participation of EU public administration in the open source communities.

*Recommendation n°23: Better **support Open Source Software** as a means to foster EU digital sovereignty and prevent vendor lock-in situations, for example by encouraging*

administrations to actively participate in existing international communities working on open source projects and open specifications;

*Recommendation n°24: Provide a **catalogue of Open Source solutions** for the public sector. Such catalogue should be integrated in the catalogue of interoperability solutions and open standards.*

C. Provide adequate funding to deliver better interoperability solutions

IT solutions are often developed based on the ad-hoc needs of the requesting sector but would benefit from a shared commitment across countries or sector. The EU should look into ways to ensure funding for interoperability solutions by creating more incentives to ensure interoperability when spending public money for the purpose of digital transformation of the public sector.

Existing EU funding opportunities for interoperability projects are not always aligned and are complex for Member States to navigate.

*Recommendation n°25: Mandate the EU Interoperability Governance to **issue opinions on funding priorities** (e.g. for Digital Europe Programme, building on former ISA² committee practice).*

*Recommendation n°26: Publish **regular guidance on the relevant European funding** available to promote interoperability in the scope of the digital transformation of European public administrations.*

*Recommendation n°27: Ensure that EU **funding** for the digital transformation of public sector is guaranteed to produce **solutions that are interoperable by default**.*

Annex VI Political and policy context

Table 13. Overview relevant political statements of the last years

EC Council Conclusions	
European Council conclusions of October 2021 (EUCO 17/21)	In October 2021 the European Council stressed the importance of ‘unlocking the value of data in Europe, notably through a comprehensive regulatory framework that is conducive to innovation and facilitates better data portability, fair access to data and ensures interoperability ’
Policy Objectives and Priorities for 2020-2024 (2021/C 18 I/02)	‘The COVID-19 crisis has accelerated hyper-connectivity and the integration of new technologies that shape the way we live and transform how we learn, work, socialise and consume. The crisis also exposed the vulnerabilities Europe is facing - ranging from cyber security to capacity issues and insufficient broadband infrastructure in many regions. To bolster our place in the global economy and defend our values, we will shape our own digital solutions and establish Europe’s digital sovereignty . Our efforts need to focus simultaneously on access to and protection of data , the development of innovative technology and upgrading our infrastructure.’
‘Shaping Europe’s digital future’ 9 June 2020 (8711/20)	‘A swift and comprehensive digital transformation of public administrations at all levels is an essential element of the digitalised Single Market and the crisis recovery strategy and a driving force for new and innovative technological solutions for public services

	and societal challenges.’ The Council calls on the Commission ‘to ensure coordination and support for the digital transformation of public administrations in all EU Member States, including interoperability and common standards for secure and borderless public sector data flows and services.’
Exploring the potential of the Joint Cyber Unit initiative - complementing the EU Coordinated Response to Large-Scale Cybersecurity Incidents and Crises of 10 October 2021 (12534/21)	The COVID-19 pandemic has further exposed the vulnerabilities of our societies and the potential for damage from large-scale cyber incidents to the economy, democracy, essential services and critical infrastructure, most notably in the health sector. It has also increased the importance of connectivity and society’s dependence on reliable, trustworthy and secure network and information systems
European Parliament	
European Parliament resolution of 18 December 2019 on enabling the digital transformation of health and care in the Digital Single Market; empowering citizens and building a healthier society (2019/2804(RSP))	‘whereas, owing to the lack of interoperability and market fragmentation across health systems, citizens cannot yet fully benefit from the digital single market;’ 20. Calls on Member States’ health authorities to make use of EU financing instruments, such as the European Structural and Investment Funds and the European Fund for Strategic Investments, for the deployment of interoperable electronic health records at national and regional level, which will enable citizens to access their personal health data, and for investment in building solid and more reliable infrastructure which supports the digital transformation, and helps to reduce the digital divide between all Member States; 31. Is of the opinion that ensuring a fit-for-purpose regulatory environment is a key element in protecting public health and providing access to high quality medicines; is also of the opinion that the effective use of IT systems will improve regulatory efficiency across Europe; urges the Commission, therefore, to optimise the European regulatory framework by harmonising regulatory telematics projects with a focus on data quality, interoperability and the interdependency of the European regulatory framework;
European Parliament resolution of 25 March 2021 on a European strategy for data (2020/2217(INI)).	‘C. whereas the EU requires the availability of interoperable, flexible, scalable and reliable IT architecture that is capable of supporting the most innovative applications; whereas artificial intelligence (AI) is one of the strategic technologies for the 21st century, both globally and in Europe; whereas adequate infrastructure is also required in the EU, notably high-performance hardware to run applications and store data; J. whereas cloud markets (i.e. Infrastructure, Platform and Software as a Service – IaaS, PaaS and SaaS) are characterised by a high degree of market concentration, which may put start-ups, SMEs and other

	European actors at a competitive disadvantage in the data economy; whereas the Commission should ensure competitive markets through interoperability, portability and open infrastructures, and remain vigilant about any potential abuses of market power by dominant actors; 2. Notes that the COVID-19 crisis has highlighted the role of and need for high-quality, real-time databases, information and data sharing, as well as shortcomings in the infrastructure and interoperability of solutions across Member States; stresses the impact of the digital transformation and the availability of a wide range of technologies on the Union's economy and society; 3. Underlines that future data legislation must be designed to facilitate technological development, innovation, data access, interoperability and cross-border data portability; urges the Commission, in this respect, to carry out an evaluation and mapping of the existing legislation in order to assess what adjustments and additional requirements are needed to support the data society and economy and safeguard fair competition and legal clarity for all the relevant actors; calls for the Union to be a leader in establishing an international framework for data, while respecting international rules; 13. Stresses that the increasing volume, development, sharing, storage and processing of industrial and public data in the Union is a source of sustainable growth and innovation that should be tapped into, in compliance with Union and Member States' laws such as data protection, competition law and IPR; notes that data is becoming increasingly valued by the market; believes that economic growth can be secured by ensuring a level playing field and a competitive, multi-player and fair market economy, while ensuring interoperability and access to data for actors of all sizes, in order to counter the market imbalances;'
European Parliament resolution of 20 May 2021 on shaping the digital future of Europe: removing barriers to the functioning of the digital single market and improving the use of AI for European consumers (2020/2216(INI))	'1. Believes the EU's digital policy should create and support the key foundations needed for the European public and private sectors to be world leaders in trustworthy, human-centric digital innovation; considers that the digital single market is one such foundation and is about ensuring the full potential of new technologies by removing unjustified national barriers, by establishing legal clarity for consumers and businesses, benefiting for European citizens and strengthening competition; believes that having a better organised and common European approach for market integration and harmonisation can contribute to that result; believes that further actions are needed at both Member State and EU level to achieve this; 9. Highlights that the Commission should adopt a balanced, future proofed and evidence based approach to legislation based on the subsidiarity principle that creates a digital single market that ensures the provision of public services, is competitive, fair, accessible, technologically neutral, innovation-friendly, consumer-friendly, human-centric and trustworthy, and that builds a secure data society and economy;

	14. Calls on the Commission to aim at both an innovation and consumer friendly regulatory environment, strengthening the financial and institutional support for the European digital economy in close coordination with Member States and stakeholders through measures such as: investing in education, research and development, supporting innovations in Europe, providing increased and broader access to easily readable and interoperable high quality industrial and public data
European Parliament resolution of 10 June 2021 on the EU's Cybersecurity Strategy for the Digital Decade (2021/2568(RSP))	'6. Considers that digitalisation of our society means that all sectors are interconnected and the weaknesses in one sector can hamper others; insists, therefore, that cyber-security policies be incorporated into the EU digital strategy and EU funding, and that they be coherent and interoperable across sectors'
College decisions:	
A European strategy for data. COM(2020) 66 final,	'Data interoperability and quality: Data interoperability and quality, as well as their structure, authenticity and integrity are key for the exploitation of the data value, especially in the context of AI deployment. Data producers and users have identified significant interoperability issues which impede the combination of data from different sources within sectors, and even more so between sectors. The application of standard and shared compatible formats and protocols for gathering and processing data from different sources in a coherent and interoperable manner across sectors and vertical markets should be encouraged through the rolling plan for ICT standardisation and (as regards public services) a strengthened European Interoperability Framework. European businesses often experience problems with multi-cloud interoperability, in particular data portability. The horizontal framework will – where appropriate – be complemented by sectoral legislation for data access and use, and mechanisms for ensuring interoperability. '
'2030 Digital Compass: the European way for the Digital Decade', COM/2021/118 final	The European Commission has set the goal of 100% key digital public services by 2030 as one of the four pillars helping to deliver Europe's Digital Decade. The Communication points out that digital transformation enables modern public services but also acknowledges that: 'the gap to reach this vision is still significant. Despite the increasing use of public services online, services provided digitally are often basic e.g. filling in forms. Europe must harness digitalisation to drive a paradigm change in how citizens, public administrations and democratic institutions interact, ensuring interoperability across all levels of government and across public services.'
Ministerial Declarations	
2020 Berlin	'Digital sovereignty and interoperability' is one of the 7 principles

Declaration on ‘Digital Society and Value-Based Digital Government’,	guiding digital transformation endorsed by all Member States, the Commission has been called to: ‘continue coordinating cross-border interoperability and strengthen the European interoperability framework ’.
EU Ministerial Declaration of Digital Day 2021 : Green and Digital Transformation of the EU Ministerial Declaration	‘Specifically, we will engage and work together to: • Make high quality data available and accessible through standardised and interoperable common European data spaces to unleash the potential from data on realising the European Green Deal; • Promote the use of a digital twin in the form of a Building Logbook for new public buildings; as well as work with local authorities and other relevant stakeholders to set up a European network of digital twins of the physical environment; Support EU cities and regions to use green digital solutions in their transition to climate neutrality;’
Others	
COTER-VII/005 142nd plenary session, 3-4 February 2021 OPINION Cross-Border Public Services in Europe	• underlines the need for an EU legal framework to allow for an efficient establishment and management of cross-border public services which would address the needs of our citizens living in border regions • calls on the European Commission, as the institution in charge of monitoring the implementation of EU legislation, and more importantly the Member States and regions with legislative powers, to coordinate the transposition of directives with the neighbouring states and regions, so that new legal barriers do not arise as a consequence of a lack of coordination; • points out that impact assessments can provide an excellent insight into the effects of EU legislation and calls on the EC to establish methodologies that would allow for effective cross-border impact assessments; • points out that e-services might open a very interesting field of development for the cross-border provision of public services. For example, by using automated translation interface, one of the first obstacles for CBC in general, and the provision of public services across borders in particular, the language barrier, could be overcome. An increased use of e-procedures will lead to a necessary harmonisation of administrative provisions, solving another good set of obstacles. Also, the development of Artificial Intelligence-based systems, could promote further European-wide provision of services;

History of Interoperability Policy

The European Commission has identified the need for interoperability between public administrations already back in 1994 and has since then supported programmes to develop, promote and use interoperability solutions in the EU for the use of public administrations, businesses and citizens.

The history of financing programmes supporting interoperability at EU level

- 1995 – 1997: Community contribution for telematics interchange of Data between Administrations ([IDA](#));
- 1999 – 2004: Second phase of the IDA programme ([IDA II](#))
- 2005 – 2009: Interoperable Delivery of Pan-European eGovernment Services to public Administrations, Business and Citizens ([IDABC](#)),
- 2010 – 2015: Interoperability Solutions for European Public Administrations ([ISA](#))
- 2016 – 2020: Interoperability solutions and common frameworks for European public administrations, businesses and citizens ([ISA²](#))

In 2004 the Commission published under the IDABC Programme the European Interoperability Framework for Pan-European eGovernment Services.

In 2010 it adopted a Commission Communication entitled ‘Towards interoperability for European public services’¹⁹¹ containing in annex the European interoperability strategy (EIS) and the European interoperability framework (EIF). Since then, the European interoperability framework has served as a reference throughout the Union and beyond and was the basis of most national interoperability frameworks (NIFs) and strategies.

In the context of the Communication on a **Digital Single Market Strategy** put forward by the Juncker Commission in 2015¹⁹², the interoperability agenda needed to be revised and brought into line with the **emerging challenges in the field of ICT** and the provision of European public services. European Interoperability Policy has been a prominent element of the 2016-2020 European eGovernment Action Plan¹⁹³. Interoperability was one of its underlying principles and the plan contained a dedicated action to ‘propose a revised European Interoperability Framework (EIF) ... support its take-up by national administrations with the aim to strengthen the interoperability of public services in the EU’, for the period 2016-2019. This led the Commission to publish an updated EIF in 2017¹⁹⁴.

The new EIF expanded on the previous version from 2004 adopted by the PEGSCO committee of the IDABC programme¹⁹⁵ and of the 2010 communication adopted by the Commission¹⁹⁶ and brought more targeted recommendations taking into account new technological and policy developments. The number of recommendations in the new EIF increased from 25 to 47 and several recommendations were updated or newly developed to support relevant EU policies and initiatives, such as the Directive on re-use of Public Sector Information¹⁹⁷ (subsequently revised and renamed as the Open Data Directive in 2019), the INSPIRE directive¹⁹⁸, the [eIDAS Regulation](#)¹⁹⁹, the [EU eGovernment Action Plan 2016-2020](#),

¹⁹¹ [COM\(2010\) 744 final ‘Towards interoperability for European public services.’](#)

¹⁹² COM(2015) 192 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Digital Single Market Strategy for Europe.

¹⁹³ COM(2016) 179 final of 19.4.2016, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016DC0179>

¹⁹⁴ COM(2017) 134 final.

¹⁹⁵ <https://wayback.archive-it.org/12090/20200212143524/https://ec.europa.eu/idabc/en/document/3473/5887.html>

¹⁹⁶ [COM\(2010\) 744 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Towards interoperability for European public services.](#)

¹⁹⁷ Directive 2013/37/EU.

¹⁹⁸ Directive 2007/2/EC of March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).

the [Single Digital Gateway](#) (proposed in 2017 and subsequently adopted as a Regulation in 2019)²⁰⁰, and the [European Cloud Initiative](#).

¹⁹⁹ Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC.

²⁰⁰ See the Staff Working Document accompanying the 2017 EIF Communication: <https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=CELEX:52017SC0112>

Table 14. Key conclusions of the EIF and ISA² evaluations

	Relevance
EIF	Enhanced EU policy for interoperability with more binding requirements. Coordination is required to create an EU-wide digital public service landscape. Having EU-wide rules would help ensure that cross-border aspects of digital public services are considered.
EIF	The needs and problems identified by the EIF are still being experienced by the stakeholders. To increase the relevance of the EIF, public administrations would benefit from a common, more practical, end-to-end approach to the EIF, from policy to implementation
ISA ²	The original needs and problems that the programme was intended to address are after the experience of the pandemic even more relevant. Several new needs could be identified: • Need for an enhanced interoperability governance involving EU countries and regional and local public administrations. • Need for digital-ready EU policies. • Need for structured and proactive collaboration and the exchange of best practices between all levels of EU public administrations (national, regional, local) involved in developing digital public services. • Need for strategic and collaborative interoperability planning across different policy programmes and funding initiatives in order to steer investments based on user needs towards a set of key mature solutions. • Need for systematic links with European standardisation work and increase awareness in the public sector at all levels of the key role of standards in supporting the twin digital/green transitions. • Need for promotion of successful solutions and continued awareness-raising of interoperability.
	Effectiveness
EIF	The recommendations contained in the EIF are usually high-level; further clarity and guidance would be required to ensure that they are implemented by Member States;
EIF	More granularity is required for efficient framework implementation, especially at the local level
EIF	Further advice is needed to the make the layered interoperability and conceptual models more actionable
EIF	Given the EIF's strategic and overall high-level recommendations, best practices for implementation might be added

ISA ²	ISA ² actions have contributed effectively to the implementation of different EU policies and actions (for example SDG, Open Data Directive, e-procurement, Inspire, ESS). Member States seek a more holistic and strategic approach . All relevant EU policies should be accompanied by interoperable implementation solutions.
ISA ²	The Joinup platform funded by ISA ² was an effective tool to facilitate the re-use of interoperability solutions but more could be done to boost the take-up of solutions and encourage re-use especially at regional and local level.
ISA ²	ISA ² was partly effective in developing, maintaining and promoting a holistic approach to interoperability. The latest political declarations however ask for a solution to ‘ensure interoperability’ .
ISA ²	ISA ² was less effective in contributing to effective, simplified and user-friendly digital public services especially at regional and local level .
	Efficiency
EIF	The implementation of national interoperability frameworks inspired by the EIF has clearly brought several benefits
EIF	Monitoring efforts should focus on the extent of re-use of developed tools and on providing a better overview of costs
ISA ²	For those packages where it was possible to apply cost-effectiveness techniques, costs per end-user (e.g.: business, citizens, etc.) have been estimated as low .
ISA ²	Benefits however risk to fade, in the absence of appropriate sustainability measures .
	Coherence
EIF	To increase interoperability governance and the EIF’s role, strengthened references in associated legal acts are needed.
EIF	Heterogeneity of solutions and strategies across the EU hinders interoperability at the EU level.
ISA ²	Prioritising a smaller set of actions would increase synergies.
ISA ²	ISA ² worked closely with a wide range of other relevant EU programmes, policies and initiatives . This could, however, be done more systematically.

	EU-added value
EIF	National or subnational governments cannot achieve cross-border interoperability alone. Economies of scale (through shared technologies) and experience enable the EIF to achieve its goals at cheaper costs than equivalent national or subnational projects (dialogue and shared solutions).
EIF	Foster coordination through common rules. Digital public services across the EU could be improved while simultaneously strengthening the public sector's resilience to unanticipated shocks.
EIF	The EIF has contributed to some extent to the advancement of common EU policies but more could have been achieved
EIF	Enhanced EU policy for interoperability with more binding requirements
EIF	Use of conditional interoperability solutions and interoperability-by-design in the development of digital public services could help achieve interoperable cross-domain and cross-border services throughout the EU.
ISA ²	EU-level approach is better suited to addressing the challenges related to interoperability .
	Sustainability (ISA² evaluation only)
ISA ²	Some concrete actions should be carefully assessed to enhance these activities and ensure they are sustainable: • Focusing on developing a smaller set of key mature solutions, continually developing them and encouraging their take-up. Concentrating on critical priorities and user needs could also increase user satisfaction. • Providing a one-stop-shop for mature interoperability solutions, to help incorporate them into the existing interoperability ecosystem, give existing solutions more visibility and boost their take-up regionally and locally with the support of the Member States. • Improving the quality of existing solutions by better considering user needs and involve users in co-creation. • Supporting experimentation and innovation by setting up an agile process for developing solutions and leveraging innovation procurement coupled with 'sandboxing' for testing solutions and getting better feedback. • Encouraging collaboration with open-source communities for the sustainable and open development of existing and future solutions.

Table 15. ISA² programme to the EIF and the interoperability Action plan

Package	Action number	Action name	Contribution to the EIF and the IAP
1. Key and generic interoperability enablers	2016.19	Trusted Exchange Platform (e-TrustEx)	e-TrustEx is a platform offered to public administrations at European, national and regional levels to undertake secure exchange of natively digital documents or scanned documents from system to system via standardised interfaces. • Contribution to the EIF: The action thus contributes particularly to Recommendation 15 of the revised EIF, through enabling the secure exchange of documents. • Contribution to the IAP: The platform supports public administrations in implementing EU policies that require the electronic exchange of information, contributing to the implementation of the eIDAS Regulation among others. In this context, e-TrustEx contributes to Action 15 of the IAP.
1. Key and generic interoperability enablers	2016.29	Catalogue of Services	The Catalogue of Services is one of the interoperability enablers for integrated public services according to the conceptual model defined by the revised EIF. To that end, the action is defining a technical specification (data model) and implementing a set of tools to facilitate the creation of catalogue of public services. • Contribution to the EIF: The action addresses Recommendation 44 of the revised version of the EIF on the catalogue of public services. • Contribution to the IAP: The Catalogue of Services responds in particular to Action 13 of the IAP.
2. Semantic interoperability	2016.07	SEMIC: Promoting Semantic Interoperability Amongst the European Union Member States	The Action supports the implementation of the EIF and the EIS by promoting semantic interoperability, through the definition and use of common specifications. • Contribution to the EIF: The action contributes primarily to Recommendation 16 of the revised EIF. In addition, the action covers the

Package	Action number	Action name	Contribution to the EIF and the IAP
			following underlying principles of the EIF: Reusability, Multilingualism, Openness, Semantic interoperability, Technical interoperability and Standardisation. • Contribution to the IAP: SEMIC supports several actions of the IAP, including: 12, 13, 14 and 18.
2. Semantic interoperability	2016.16	Public Multilingual Knowledge Management Infrastructure for the Digital Single Market	The creation of a Public Multilingual Knowledge Infrastructure aims to support EU public administrations in creating services that can be accessible and shareable independently from the language actually used, as well as allowing SMEs to sell goods and service cross-border in a DSM. • Contribution to the EIF: The action is based on several recommendations (primarily Recommendation 16 on taking into account multilingualism in the setting up of European public services) and principles of the new EIF, in particular those concerning multilingualism, accessibility, administrative simplification, transparency, and reusability of the solutions. • Contribution to the IAP: This action contributes to Action 7 of the IAP, with its focus on the particular area of multilingualism to improve the delivery of services and exchange of information.
3. Access to data/data sharing/open data	2016.03	Big Data for Public Administrations	This action will facilitate the sharing of open data between public administrations through the support to the execution of analytics projects on Big Data; increase the transparency of decision-making in public administrations by supporting knowledge sharing on evidence-based policy-making practices; support the re-use of open source data analytics tools developed by Member States of EU Institutions; and provide public administrations with the opportunity to test (open source) technologies in this domain before making a decision on the technical way forward. • Contribution to the EIF: This action contributes to several EIF principles including ‘openness’, ‘transparency’, ‘reusability’ and ‘technological neutrality’.

Package	Action number	Action name	Contribution to the EIF and the IAP
			Contribution to the IAP: This action contributes primarily to Action 14 of the IAP.
3. Access to data/data sharing/open data	2016.06	Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	This action contributes to several areas: developing, maintaining and promoting interoperable solutions for the production and dissemination of statistics by EU public administrations (including the EC) and 2) developing, maintaining and promoting a) a specification of the EIRA to support better interoperability and cooperation for the production and dissemination of Official Statistics in the European Statistical System; b) a common infrastructure for the exposure and consumption of shared statistical services. In addition, the proposal contributes significantly to the realisation of the ESS Vision 2020 objectives in the domain of sharing tools and improving statistical dissemination. - Contribution to the EIF: Through its focus on aligning infrastructures for shared statistical services, the action builds on the principles and recommendations of the EIF, in particular Recommendation 36. - Contribution to the IAP: The activities undertaken as part of this action feed into Actions 7 9, 22.
3. Access to data/data sharing/open data	2016.18	Development of an Open Data Service, Support and Training Package in the Area of Linked Open Data, Data Visualisation and Persistent Identification	The action supports open data initiatives by facilitating data re-use and sharing and offering tools to visualise data effectively. - Contribution to the EIF: The action contributes to the new EIF, namely the interoperability principles: openness, transparency, reusability, user-centricity and multilingualism, accessibility. - Contribution to the IAP: The action contributes to several priorities listed in the IAP: organisational interoperability (Actions 6 and 7); sharing of good practices (Action 11); governance structure (Action 2) and key enablers focused on EU open data initiative (Action 14).

Package	Action number	Action name	Contribution to the EIF and the IAP
4. Geospatial solutions	2016.10	European Location Interoperability Solutions for e-Government (ELISE)	ELISE has aimed to deepen the understanding of location interoperability enablers and barriers related to the transition towards digital government. • Contribution to the EIF: ELISE builds on several areas of the EIF including openness, reusability, technological neutrality, user-centricity, multilingualism, and administrative simplification. • Contribution to the IAP: ELISE brings contributions in particular to Action 17, through its support for the implementation of the INSPIRE Directive. ELISE also contributes to Actions 4, 6 & 19.
5. eProcurement/ eInvoicing - Supporting instruments	2016.05	European Public Procurement Interoperability Initiative	This action supports several activities designed to simplify procurement and facilitate the participation in online procurement as well the re-use of data in the field. • Contribution to the EIF: The action builds in particular on Recommendations 28 and 30 of the EIF, as well as facilitating the implementation of the once-only principle in the area of public procurement. • Contribution to the IAP: The ‘European Public Procurement Interoperability Initiative’ contributes in particular to actions 1, 7 and 18.
6. Decision making and legislation - Supporting instruments	2016.23	Legal interoperability (former ICT Implications of EU Legislation)	The ‘Legal Interoperability’ action supports policymaking across policy areas, bringing to the forefront the importance of considering potential digital impacts and the role of interoperability when developing new legislation. • Contribution to the EIF: The action implements Recommendation 27 on legal interoperability of the new EIF. • Contribution to the IAP: This ISA² action implements action 3 of Focus Area 1 on the governance and coordination of interoperability initiatives, and actions 19 and 20 of Focus Area 5 on supporting instruments for interoperability.

Package	Action number	Action name	Contribution to the EIF and the IAP
6. Decision making and legislation - Supporting instruments	2017.04	Inter-Institutional Register of Delegated Acts (RegDel)	This action focused on developing an IT tool setting up the Inter-Institutional Register of Delegated Acts, increasing transparency around delegated acts and thus responding to the 2016 commitment of the Commission in this sense. • Contribution to the EIF: This action contributes primarily to the transparency principle of the EIF and to Recommendation 5 of the new EIF by providing a transparent overview of delegated acts. • Contribution to the IAP: This action, by enhancing inter-institutional governance, contributes to Action 1 of the IAP.
8. Supporting instruments for public administrations	2016.20	Joinup – European Collaborative Platform and Catalogue	The action facilitates the sharing and re-use of solutions for public administrations and provides the stakeholders with the means to collaborate via a collaborative platform. • Contribution to the EIF: ‘Joinup’ builds especially on the reusability principle of the EIF, facilitating access and supporting the re-use of available interoperable solutions. • Contribution to the IAP: The activities ran as part of the ‘Joinup’ action have contributed to Action 10 of the IAP, which explicitly asked for ‘maintaining, improving and animating the Joinup platform for better user engagement and community building’, as well as action 21.
8. Supporting instruments for public administrations	2016.21	National Interoperability Framework Observatory	The NIFO action has monitored interoperability initiatives in the Members and developed the Monitoring Mechanism to keep track of the implementation of the EIF Recommendations by Member States. NIFO has also developed an EIF Toolbox to support Member States in the implementation of the EIF. • Contribution to the EIF: NIFO provides an overarching contribution to the EIF, by helping monitor the alignment of national initiatives with the EIF and the implementation of the EIF in the Member States. The action responds to the commitment from the 2017 EIF Communication that called for the development of a framework for monitoring the implementation of

Package	Action number	Action name	Contribution to the EIF and the IAP
			the EIF. This was achieved with the development of the EIF Monitoring Mechanism as part of the NIFO action. • Contribution to the IAP: NIFO has contributed to Actions 4 and 5 of the Action Plan.
8. Supporting instruments for public administrations	2016.32	European Interoperability Architecture (EIA)	This action helps define the needs and shortcomings with relation to a common interoperability architecture for European public services and contribute to defining such an architecture as well as map reusable solutions and guidelines services as interoperability building blocks. • Contribution to the EIF: The ‘EIA’ actions contribute in particular to Recommendation 23 of the EIF and to overall interoperability governance. • Contribution to the IAP: The ‘EIA’ action implements Action 22.
8. Supporting instruments for public administrations	2016.35	EUSurvey	EUSurvey contributes primarily to the multilingualism principle of the EIF. As a survey tool widely used in EU policymaking, EUSurvey has also contributed to Action 11 of the IAP on the engagement of stakeholders in the development of digital public services.
8. Supporting instruments for public administrations	2016.37	IMAPS	This action supports tools for the assessment of the interoperability maturity level of digital public services, helping to identify improvement priorities. • Contribution to the EIF: This action contributes to the principles of reusability and user-centricity (in particular, Recommendation 12 of the EIF) by creating a mechanism for analysis, design, assessment and further development of the European Public Services. • Contribution to the IAP: The IMAPS action contributes to action 20 of the IAP.
8. Supporting instruments for public	2017.01	Standard-Based Archival Data Management, Exchange and	The action contributes to supporting data standards in the field of archival information management, studying among others how Open Data formats can

Package	Action number	Action name	Contribution to the EIF and the IAP
administrations		Publication	be used in this area. • Contribution to the EIF: The action builds on several principles of the EIF including openness, transparency, reusability, technological neutrality, preservation of information, user-centricity. • Contribution to the IAP: This action contributes to implementing Action 14 of the IAP.
8. Supporting instruments for public administrations	2019.01	Interoperability Academy	This action was established in order to help increase awareness of interoperability, the EIF and the solutions developed under ISA². The action facilitates access to information and learning material in this sense. • Contribution to the EIF: This action promotes the principle of reusability. In addition, it provides an overall contribution to the EIF, by promoting the principle, models, and recommendations of the Framework and facilitating access to information about implementing the EIF. • Contribution to IAP: The Interoperability Academy contributes primarily to Actions 5, 8, 11 of the IAP.
9. Accompanying measures	2016.30	Raising Interoperability Awareness – Communication Activities	Contribution to the EIF: This action contributes to the principles of inclusion, accessibility and transparency by disseminating information about interoperability and the work of ISA². • Contribution to the IAP: The communication activities implement Action 8 of the IAP. • Contribution to IAP: The Interoperability Academy contributes primarily to Actions 5, 8, 11 of the IAP.

Source: [*Study supporting the final evaluation of the programme on interoperability solutions for European public administrations, businesses and citizens \(ISA²\)*](#)