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COMMISSION STAFF WORKING DOCUMENT

Final evaluation of the ISA² programme

Accompanying the document

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

Results of the final evaluation of the ISA² programme

{COM(2021) 965}

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Glossary

<i>Term or acronym</i>	<i>Meaning or definition</i>
ADMS	Asset description metadata schema
AI	Artificial intelligence
CEF	Connecting Europe Facility
CEPS	Centre for European Policy Studies
CPSV-AP	Core public service vocabulary application profile
DCAT-AP	Data catalogue vocabulary application profile for data portals in Europe
DG	Directorate-General
DG DIGIT	Directorate-General for Informatics
DIGIT.D2	Directorate-General for Informatics, Directorate D Digital Services, Unit D2 Interoperability
DSM	Digital single market
EC	European Commission
EEA	European Economic Area
EIA	European interoperability architecture
EIC/EICart	European interoperability cartography
eIDAS	Electronic identification and trust services
EIF	European interoperability framework
EIRA	European interoperability reference architecture
EIS	European interoperability strategy
ELISE	European location interoperability solutions for e-government
EQ	Evaluation question
ERDF	European Regional Development Fund
ESPD	European Single Procurement Document
EU	European Union

EVM	Earned value management
GDPR	General Data Protection Regulation
Horizon 2020	EU funding programme for research and innovation
IAP	Interoperability action plan (Annex I to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: European Interoperability Framework — Implementation Strategy. Interoperability action plan, Brussels, 23.3.2017, COM(2017) 134 final)
ICT	Information and communication technology
IDA	Programme on interchange of data between administrations
IDABC	Programme on interoperable delivery of pan-European eGovernment services to public administrations, businesses and citizens
IMAPS	Interoperability maturity assessment of a public service
Interoperability	As explained in Article 2(1) of the ISA² Decision , ‘interoperability’ means the ability of diverse organisations to interact towards mutually beneficial and agreed common goals. It involves the sharing of information and knowledge between the organisations, through their business processes and by means of the exchange of data between their respective ICT systems.
ISA	Programme on interoperability solutions for European public administrations
ISA ²	Programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens
ISA ² actions webpage	https://ec.europa.eu/isa2/actions_en
ISA ² dashboard	https://ec.europa.eu/isa2/dashboard/
ISA ² decision	L 318/1 Decision (EU) 2015/2240 of the European Parliament and of the Council of 25 November 2015 establishing a programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens (ISA ² programme) as a means for modernising the public sector, Brussels 4.12.2015.

ISA ² proposal	European Commission (2014), Proposal for a Decision of the European Parliament and of the Council establishing a programme on interoperability solutions for European public administrations, businesses and citizens (ISA ²) – Interoperability as a means for modernising the public sector, COM(2014) 357 final.
ISA ² solutions webpage	https://ec.europa.eu/isa2/solutions_en
ISA ² website	https://ec.europa.eu/isa2/isa2_en
ISSG	Inter-Service Steering Group
IT	Information technology
Joinup	Collaborative platform facilitating the sharing and reuse of IT solutions developed for public administrations
NGOs	Non-governmental organisations
NIFs	National interoperability frameworks
NIFO	National interoperability framework observatory
OECD	Organisation for Economic Cooperation and Development
PMKI	Public multilingual knowledge management infrastructure for the digital single market
REFIT	The European Commission's regulatory fitness and performance programme
RegDel	Inter-institutional Register of Delegated Acts
SDG	Single digital gateway
SCM	Standard cost model
SEMIC	The ISA ² programme action that promotes semantic interoperability among EU countries
SPI	Schedule performance index
SRSP	Structural reform support programme
sTESTA	Secure trans-European services for telematics between administrations
TSI	Technical support instrument

1. INTRODUCTION

The [ISA²](#) programme – interoperability solutions for public administration, businesses and citizens – aimed to **support the digital transformation of the public sector** by providing digital solutions that enable public administrations, citizens, and businesses across the EU to **reap the benefits of interoperable cross-border and cross-sector public services**. ISA²'s primary beneficiaries are **EU, national and regional public administrations**: by reusing the solutions offered by ISA² they can provide better – more interoperable, user-centric, and digital – public services. However, the programme also helps a broader group of stakeholders, namely **EU businesses and citizens**.

Established by the [ISA² Decision](#)¹ the programme was operational from 1 January 2016 to 31 December 2020 with a total budget of € 131 million distributed over the five-year period. It was open to EU countries, other EEA countries and candidate countries. In line with Article 13(3) of the ISA² Decision, **the Commission must carry out the final evaluation of the ISA² programme by 31 December 2021**. Besides fulfilling this legal obligation, the evaluation aims to improve the implementation of the [Digital Europe Programme](#) – which is funding public sector interoperability from 2021 onwards – and contribute to the development of [a new interoperability policy](#) for the EU's public sector.

The evaluation covers ISA² activities from the programme's start until October 2020 in all participating countries. The evaluation was based on an evaluation framework composed of seven evaluation criteria and 10 evaluation questions (see Annex 4). Five evaluation criteria stem from the [Commission's better regulation](#) requirements and two additional criteria from the ISA² Decision (see Box 3).

¹ Decision (EU) 2015/2240 of the European Parliament and of the Council of 25 November 2015 establishing a programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens (ISA² programme) as a means for modernising the public sector, Brussels 4.12.2015.

2. BACKGROUND ON THE INTERVENTION LOGIC OF THE ISA² PROGRAMME

The ISA² programme's ultimate objective was to **promote the ICT-based modernisation of the public sector in Europe** and to **help addressing the needs of businesses and citizens**, via improved interoperability of European public administrations. End-users, citizens and businesses should benefit from common, re-usable and interoperable front-office services resulting from better integration of processes and exchange of data through the back offices of European public administrations.

More specifically the programme aimed to do the following:

- Facilitate efficient and effective electronic cross-border or cross-sector interaction between European public administrations, businesses and citizens.
- Contribute to the development of a more effective, simplified, and user-friendly e-administration at the national, regional, and local administration levels.
- Promote a holistic approach to interoperability in the EU, by identifying, creating and operating interoperability solutions and facilitating their reuse by European public administrations. This will support the implementation of various EU policies and activities.

By working towards achieving the above objectives, the programme intended to address **the problem of existing or emerging 'electronic barriers that impede the proper functioning of the internal market'**².

It is important to note that ISA² was designed to be **part of a wider policy framework** related to the digitalisation of public administrations in the EU. In cooperation with the EU countries and the Commission, it promoted and supported the **European Interoperability Framework (EIF)**³, which has been in place since 2010 and was revised in 2017. Since the start ISA² was designed to be synergetic especially with the **Connecting Europe Facility (CEF)**⁴. Operating from 2014 to 2020 CEF has been a key programme that supported the cross-border interaction between the digital services infrastructures of EU countries. Chapter 5 supplies further details of the links between ISA² and the above-mentioned programmes and initiatives, under the coherence evaluation criterion (section 5.4).

² Recital (21) of the ISA² Decision.

³ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *European Interoperability Framework — Implementation Strategy*, Brussels, 23.3.2017, COM(2017) 134 final.

⁴ Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010.

The intervention logic presented in Annex 3 aims to clarify the reasoning followed by EU decision makers when setting up the ISA² programme. It includes a detailed description of:

- the **needs, problems and drivers** that the programme intended to address,
- the **objectives** set out for the programme (following a three-level hierarchy: global objective, specific objectives and operational objectives),
- the **inputs or activities** of the programme,
- the programme's **expected results**, and
- the **logical links** between these components.

The intervention logic elements and links supply a benchmark against which the final evaluation can assess the programme's achievements. The final evaluation of ISA² follows the same intervention logic discussed in the [interim evaluation of the programme](#)⁵. This approach ensures full comparability between the findings of the final evaluation and the interim evaluation of ISA.

ISA² is the fifth in a **series of European Commission programmes**⁶ providing and promoting interoperability solutions for public administrations in the EU ISA² succeeded the **ISA programme**⁷. The actions contributed to different kinds of interoperability solutions, among them open-source software, open specifications (e.g.: data models and frameworks) and managed services (e.g.: Joinup and EU Survey) based on the decision of the ISA² committee. **The results of the ISA programme represent the main baseline** used for the purpose of this evaluation. More precisely, the below recommendations stemming from the **final evaluation of the ISA programme**⁸, serve as points for comparison:

Box 1 Conclusions and recommendations from the ISA programme evaluation⁹

Strategic recommendations

1. The ISA² programme, which serves an EU policy, should continue to **align itself with other relevant EU policies**.
2. Support the revision and **implementation of the EIS** (European Interoperability Strategy)
3. Continue to focus on the current ISA activities but **more emphasis on legal and**

⁵ Commission Staff Working Document, *Interim evaluation of the ISA² programme*, SWD/2019/1615 final.

⁶ 1) Community contribution for telematics interchange of Data between Administrations ([IDA](#)), 1995-1997; 2) Second phase of the IDA programme ([IDA II](#)), 1999-2004; 3) Interoperable Delivery of Pan-European eGovernment Services to public Administrations, Business and Citizens ([IDABC](#)), 2005-2009; 4) Interoperability Solutions for European Public Administrations ([ISA](#)), 2010-2015; 5) Interoperability solutions and common frameworks for European public administrations, businesses and citizens ([ISA²](#)), 2016-2020.

⁷ Further details can be found at: <http://ec.europa.eu/archives/isa/>.

⁸ Report from the Commission to the European Parliament and the Council, *Results of the final evaluation of the ISA programme*, Brussels, 1.9.2016, COM(2016) 550 final.

⁹ <https://ec.europa.eu/isa2/sites/default/files/docs/publications/final-evaluation-full-report-final.pdf>

organisational interoperability – stronger focus on ICT impacts assessments of EU policies was an important need expressed by EU countries.

4. Update and implement a **communication strategy** for the programme, with a focus on targeted engagement including sector-specific stakeholders to ensure that interoperability features as part of EU-level solutions and programmes of other DGs.
5. **Develop a more systematic business-case approach** for the annual selection of new actions and to identify different financing options for ongoing actions based on its current work in the area of cost-benefit assessment of interoperability.

Operational recommendations

6. Respect the targets of the programme's envisaged **staff levels** including development of more knowledge on legal interoperability issues.
7. Build on the improvements in **coordination of activities related to interoperability and eGovernment** across the Commission
8. Continue to **document ISA solutions**, and their building blocks in EUCart and Joinup
9. Develop a more **systematic approach to support the use of common services** and generic tools, but also the application and implementation of common frameworks

The interim evaluation of the ISA² programme noted some progress concerning the above-listed areas and complemented them with recommendations to:

- go beyond national administrations when it comes to communication and awareness-raising activities thus target regional and local administrations directly.
- improve the quality of the interoperability solutions by better considering user needs.
- preserve and build on the ISA2 programme's achievements.

3. IMPLEMENTATION / STATE OF PLAY

3.1. How is the ISA² programme implemented?

Up to the end of 2020, the ISA² programme supported a total of 54 actions, grouped in nine packages, which were defined on a yearly basis **through an annual rolling work programme**.¹⁰ The nine packages include the following:

1. key and generic interoperability enablers;
2. semantic interoperability¹¹;
3. access to data / data sharing / open data;
4. geospatial solutions;
5. eProcurement / eInvoicing;
6. decision-making and legislation;
7. EU policies — supporting instruments;
8. supporting instruments for public administrations;
9. accompanying measures.

ISA² managed 39 actions in its first year of operation, 43 actions in 2017, 53 actions in 2018, and **54 actions under both the 2019 and 2020 rolling work programmes**. [Table 1](#) and [Table 2](#) provide a breakdown of the allocated budget and the number of actions per package and per year, respectively.

Table 1: Overview of allocated budget per package from 2016 to 2020 (in thousands of euros)

Package	2016	2017	2018	2019	2020	Total
1. Key and generic interoperability enablers	4,900	5,407	4,250	4,634	4,688	23,879
2. Semantic interoperability	2,008	1,831	1,503	1,989	1,928	9,259
3. Access to data / data sharing / open data	2,800	3,548	3,925	1,710	1,150	13,133
4. Geospatial solutions	983	2,240	1,900	2,200	2,300	9,623
5. eProcurement / eInvoicing	2,400	1,445	1,063	807	1,000	6,715
6. Decision-making and legislation	2,260	2,608	2,235	2,735	3,090	12,928
7. EU policies —	2,935	3,580	4,820	4,990	4,100	20,425

¹⁰ Some actions continued to get funding also in 2021. These activities however will not be reflected in this evaluation.

¹¹ In the 2016 and 2017 rolling work programmes, the semantic interoperability package was referred to as the 'information interoperability' package.

Package	2016	2017	2018	2019	2020	Total
supporting instruments						
8. Supporting instruments for public administrations	4,425	3,533	5,315	6,030	7,585	26,888
9. Accompanying measures	1,280	730	1,290	1,370	1,530	6,200
Total	23,991	24,922	26,301	26,465	27,371	129,050

Note: This table presents the allocated budget per package as presented in the ISA² Rolling Work Programmes. The Rolling Work Programmes also list non-allocated budget, which includes reserves.

Source: ISA² rolling work programmes (2016, 2017, 2018, 2019 and 2020), indicative planning and financial overview.

Table 2: Overview of the number of actions per package from 2016 to 2020

Package	2016	2017	2018	2019	2020
1. Key and generic interoperability enablers	6	6	7	7	7
2. Semantic interoperability	3	3	4	4	4
3. Access to data / data sharing / open data	5	5	7	7	7
4. Geospatial solutions	1	1	1	1	1
5. eProcurement / eInvoicing	1	1	1	1	1
6. Decision-making and legislation	6	9	10	10	10
7. EU policies — supporting instruments	3	3	5	5	5
8. Supporting instruments for public administrations	12	13	16	17	17
9. Accompanying measures	2	2	2	2	2
Total	39	43	53	54	54

Source: ISA² rolling work programmes (2016, 2017, 2018, 2019 and 2020), indicative planning and financial overview.

The programme in its entirety was overseen by the **Interoperability Unit of DG DIGIT** (DIGIT.D2), while individual actions were implemented by different Commission services, depending on the thematic scope. The EU countries were also involved in programme governance through two channels: the **ISA² Committee**, the programme's high-level governing body, and the **ISA² Coordination Group**, a technical body

mandated to ensure coherence between the programme's actions¹². All EU countries participated in the programme. Beyond the EU, ISA² has four additional members — Iceland, Montenegro, North Macedonia and Norway — and an agreement of cooperation had been in place with Uruguay since March 2018¹³ and a cooperation with Ukraine is in place since 2019¹⁴.

ISA² actions were selected and implemented through a process consisting of four steps taken each year:

1. **Submission:** Commission services, EU countries, and other countries participating in ISA² were invited to submit proposals for actions to be included in the rolling work programme via a call for proposals.
2. **Evaluation:** The submitted proposals were analysed by DIGIT.D2, which compiled a list of proposals that qualified to be included in the rolling work programme, based on the selection and prioritisation criteria as defined in the ISA² Decision. At this stage, the ISA² Committee gave an opinion on the proposed action list.
3. **Adoption:** The rolling work programme was adopted by the Commission and the budget got released.
4. **Implementation:** The actions in the adopted rolling work programme were implemented by the Commission services in charge.

The programme's overall performance and the progress of each action were frequently recorded through the quarterly and annual monitoring and evaluation reports, which fed into the [ISA² dashboard](#). The dashboard is an online interactive tool that facilitates the dissemination of information about action activities and achievements, and their efficiency, effectiveness and coherence. The efficiency of actions is measured using the earned value management (EVM) analysis (see section 5.3 Efficiency), effectiveness is presented in terms of performance indicators (see section 5.2 Effectiveness), and the coherence of actions is mapped using network analysis (see section 5.4 Coherence). Figure 1 illustrates the performance until Q1 2021, as captured by the ISA² dashboard based on the earned value management (EVM) mechanism.

¹² In addition, working groups on specific topics were organised as part of specific actions. For instance, in the field of geospatial interoperability solutions, the 'European Location Interoperability Solutions for e-Government' (ELISE) action set up the ISA² Working Group on Geospatial Solutions, bringing together representatives from Member States active in the field in order to set priorities and disseminate results. See: https://ec.europa.eu/isa2/actions/elise_en.

¹³ For more details, please see: https://ec.europa.eu/isa2/news/european-commission-reinforces-cooperation-uruguay-interoperability_en.

¹⁴ <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/document/cooperation-between-ukraine-and-digit-sphere-digital-government-closer-look>

Figure 1 Earned value analysis at programme level



Note: The cumulated planned value is the sum of the planned values of the programme's different actions for which the EVM is used. The cumulated earned value is the sum of the earned values of the programme's different actions for which the EVM is used. As the figure shows, the implementation of some actions continued in 2021 based on contracts signed in the previous year(s).

Source: Monitoring team of the ISA² programme (see also the [Efficiency view of the ISA² Programme](#)).

3.2. Important developments in the policy field

During the evaluation period from 1 January 2016 until 31 December 2020 digitalisation and more precisely interoperability have become more important at all levels of society and became a priority of the new elected Commission. The following developments can be highlighted:

Adoption of a new EIF

In 2017 EIF has been updated and extended as planned in the Communication on a [Digital Single Market Strategy for Europe](#)¹⁵ and the [eGovernment Action Plan 2016-2020](#)¹⁶. The new EIF was issued through a Communication¹⁷ and accompanied by an Interoperability Action Plan. ISA² remained the main resource to ensure:

- the implementation of EIF in the EU countries and sectors;
- the implementation of the Interoperability Action Plan;
- the monitoring of EIF's implementation and of the Interoperability Action Plan;
- the “governance of these actions” through the ISA².

¹⁵ 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.

¹⁶ COM (2016) 0179 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, EU eGovernment Action Plan 2016-2020 Accelerating the digital transformation of government.

¹⁷ COM(2017) 134 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Interoperability Framework - Implementation Strategy, p. 9.

The new EIF gave the ISA² programme a new policy framework with coherent objectives. The evaluation contributed to the assessment of the achievements of the EIF and more specifically its annex, the Interoperability Action Plan (IAP) (Box 2).

Box 2: ISA² contribution to the implementation of the IAP

The new EIF adopted in 2017 was accompanied by an Interoperability Action Plan (IAP) (annexed to the 2017 EIF Communication) listing key actions to be undertaken between 2017 and 2020. The EIF Communication acknowledged the ISA² programme as one of the main implementing instruments of the IAP and the EIF in general. Against this background, the evaluation of ISA² also considered how the programme contributed to the implementation of the IAP and thus to the implementation of the EIF in broader terms. There is a clear direct relationship between several ISA² actions and the actions listed in the IAP, while other ISA² actions provide broader contributions across several areas of the IAP, as described in Annex 6.k.

Commitment of EU countries and the European Commission

In the evaluation period the political commitment from EU countries and European Commission has been steadily growing:

- The [Tallinn Declaration on eGovernment](#)¹⁸, a declaration made by ministers in charge of eGovernment policy across the EU to spell out their commitment to a number of principles, including ‘interoperability by default’.
- The [Berlin Declaration on Digital Society and Value-Based Digital Government](#)¹⁹, which shows the commitment of the EU countries, alongside EU institutions, to tap into the potential of digital public services and take a value-based approach – incorporating digital sovereignty and interoperability - to the digital transformation of the public sector.
- In February 2020, the European Commission adopted the Communication ‘[Shaping Europe's digital future](#)’²⁰ under the headline ambition ‘Europe fit for the digital age’. The Communication sets out as a key action the development of a ‘**reinforced EU governments interoperability strategy**’, aiming to foster coordination and the adoption of common standards for public services and data flows.

A growing EU regulatory environment

While the ISA² Decision is already referring to a wide range of sectorial and cross-cutting interoperability activities on EU level, important initiatives have been brought in place after the programme’s start and more are to come in the coming months:

¹⁸ Tallinn Declaration on eGovernment, made at a ministerial meeting during the Estonian Presidency of the Council of the EU on 6 October 2017.

¹⁹ 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.

²⁰ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Shaping Europe's digital future, COM/2020/67 final.

- 2016 brought e.g. the [GDPR](#)²¹ with high impacts on processing of personal data for public services and the [Web Accessibility Directive](#)²²;
- The [Single Digital Gateway](#)²³, which facilitates online access to information, procedures and assistance regarding EU and national rules for citizens and businesses was introduced in 2018.
- In 2019 the [EU cybersecurity act](#)²⁴ and other legislation in the field as well as the [Open Data Directive](#)²⁵.
- In 2020 the European Commission proposed the [Digital Services Act](#)²⁶.

Digitalisation investments

Public administrations across the EU are investing massively in the digitalisation of their services. With the experience of the COVID crisis, the need for digital solutions has been more prominent than ever. Besides ISA³ other EU programmes have contributed to these efforts in the evaluation period:

- The [Structural Reform Support Programme \(SRSP\)](#)²⁷, implemented from 2017 to 2020, provided technical support to the EU countries for designing and implementing reforms in various areas, including the modernisation of public administrations. Support continues in the next multi-annual financial framework through the Technical Support Instrument (TSI) for the period 2021 to 2027²⁸.

²¹ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance).

²² Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies (Text with EEA relevance).

²³ Regulation (EU) 2018/1724 of the European Parliament and of the Council of 2 October 2018 establishing a single digital gateway to provide access to information, to procedures and to assistance and problem-solving services and amending Regulation (EU) No 1024/2012, OJ L 295, 21.11.2018, p. 1-38.

²⁴ Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act) (Text with EEA relevance)

²⁵ Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information, PE/28/2019/REV/1.

²⁶ 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.

²⁷ Regulation (EU) 2017/825 of the European Parliament and of the Council of 17 May 2017 on the establishment of the Structural Reform Support Programme for the period 2017 to 2020 and amending Regulations (EU) No 1303/2013 and (EU) No 1305/2013, OJ L 129, 19.5.2017, p. 1-16.

²⁸ Regulation (EU) No 2021/240 of the European Parliament and of the Council of 10 February 2021 establishing a Technical Support Instrument.

- Several other EU funding programmes, like [Horizon 2020](#)²⁹ (dedicated to research and innovation), the [European Social Fund \(ESF\)](#)³⁰ and the [European Regional Development Fund \(ERDF\)](#)³¹.

²⁹ Dedicated webpage presenting the Horizon 2020 projects on “ICT-enabled Public Sector Innovation”.

³⁰ Dedicated webpage presenting the ESF activities related to the modernisation of public institutions.

³¹ Dedicated webpage presenting the ERDF’s support for the ICT modernisation of public administrations.

4. METHODOLOGY

4.1. Fact-finding

To start the Commission outlined and agreed on the draft evaluation design (including the intervention logic and the evaluation questions). Then it reached out to external experts and asked them to support the evaluation process (see Annex 1). The consultant refined the evaluation design and — with the help and under the close monitoring of the Commission — moved to action. First, it collected data, then validated and analysed them, as explained in the following sections. At the end, the consultant summarised its findings in an [independent evaluation study](#) (referred to as the CEPS final study in this report)³².

Box 3 Evaluation framework

The evaluation was based on an evaluation framework composed of seven evaluation criteria and 10 evaluation questions (see Annex 4). The evaluation criteria are summarised below:

Relevance refers to the alignment between the programme's objectives and the evolving needs and problems experienced by stakeholders.

Effectiveness focuses on the extent to which the ISA² programme has met the objectives it intended to achieve, and generated the results it intended to produce.

Efficiency concerns the minimisation of costs borne by various stakeholders in achieving the objectives/results identified under the 'effectiveness' criterion.

Coherence is a measure of the degree to which the actions supported by the ISA² programme are consistent with each other (internal coherence) and with the EU policy framework at large and relevant global initiatives (external coherence).

EU added value captures the programme's impacts additional to those that would be achieved if the issues addressed by ISA² were left solely in the hands of national and sub-national authorities.

Utility refers to the extent to which the results generated by ISA² satisfy stakeholders' needs and the differing levels of satisfaction among different stakeholder groups (e.g. public administrations, businesses, citizens).

Sustainability measures the likelihood of the ISA² programme's results lasting beyond its completion.

³² CEPS (2021): Study supporting the final evaluation of the programme on interoperability solutions for European public administrations, businesses and citizens (ISA²), European Commission. DOI: 10.2799/94683

Data collection³³

The data collection phase involved a mix of quantitative and qualitative data collection methods and aimed to gather the evidence base to respond to the evaluation questions (EQs) specified in the evaluation framework (Annex 4). More specifically, data were drawn from two main sources: consultation activities (**primary data**) and desk research (**secondary data**). The data collection was complemented by an expert assessment, performed by five technical interoperability experts who were part of the consultant's evaluation team.

Primary data

Primary data were collected between December 2020 and April 2021 via the following consultation activities:

- targeted in-depth interviews;
- targeted online surveys;
- public consultation;
- feedback on the ISA² evaluation roadmap³⁴.
- two workshops, which aimed to raise awareness of the ongoing evaluation and discuss preliminary findings with stakeholders.

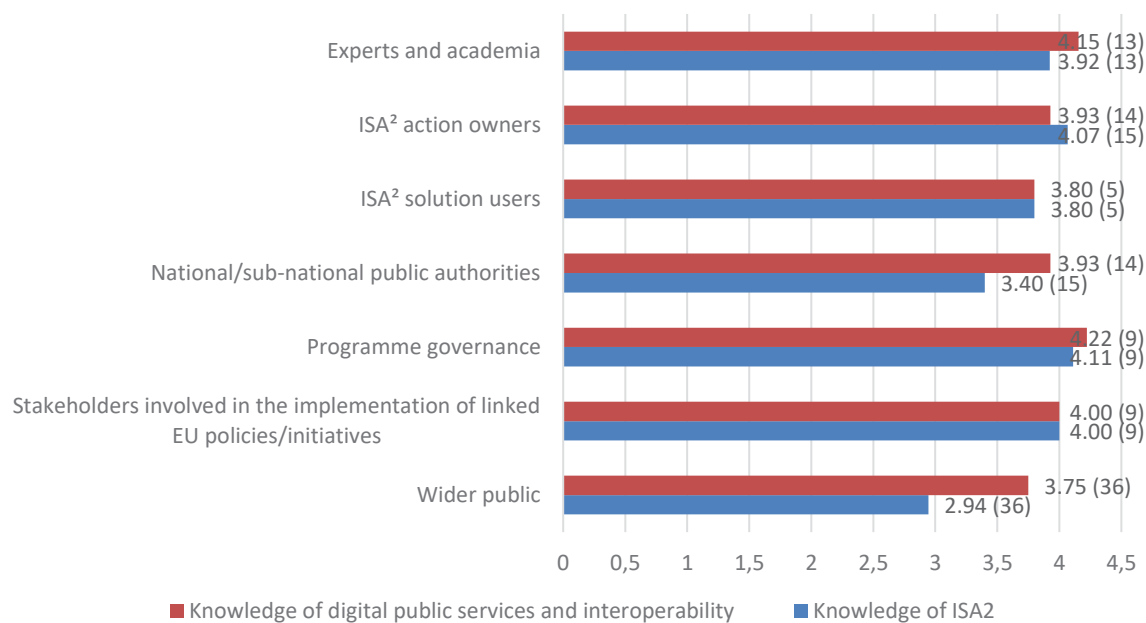
These activities resulted in a total of **102 responses** and reached out to different types of stakeholders, ranging from actors involved in the programme's governance to indirect beneficiaries (i.e., citizens and businesses). Overall, the **respondents were characterised by a high level of expertise** both generally in the field of digital public services and interoperability, as well as more specifically when it comes to the ISA² programme, which contributed to the quality and reliability of primary data.

On average, consulted stakeholders across stakeholder groups have a **very good knowledge of the field of digital public services and interoperability** (with an overall average of 3.9 out of 5 for the 100 respondents who completed this question). On average the respondents involved in the governance of ISA² are most familiar with the programme (with an average score of 4.11 out of 5, based on 9 responses), followed by ISA² action owners (average score of 4.07 out of 5 based on 15 responses). At the opposite end of the scale, the wider public is least knowledgeable compared to the other stakeholder groups (average score of 2.94 out of 5, based on 36 responses).

³³ For more details, please see Annex 1: Procedural information and Annex 2: Synopsis report of the consultation activities.

³⁴ The feedback of stakeholders can be consulted at: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12311-eGovernment-services-across-the-EU-ISA-programme-final-evaluation>

Figure 2 Consulted stakeholders' familiarity with digital public services and interoperability and the ISA² programme



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

Note: 1) Averages do not account for respondents answering ‘do not know/no opinion’ (DK/NO). 2) Total number of respondents: 100 (Knowledge of digital public services and interoperability) and 102 (Knowledge of ISA²).

Source: [CEPS final study](#).

Primary data provided inputs for the assessment of all evaluation criteria set out in this evaluation. In particular, the in-depth interviews as well as the targeted online surveys, which were tailored to targeted stakeholders, allowed for the collection of in-depth information for the evaluation process.

For more details, please consult Annex 2: Synopsis report of the consultation activities, which presents a breakdown of responses by consultation activity and stakeholder category along with respondent characteristics.

Chapter 5 of this report presents the aggregate results of the consultation activities using mainly **bar charts** showing the average scores of responses from each stakeholder group.³⁵

Secondary data

The desk research reviewed the following resources:

- publicly available documents and data sources, including the ISA² annual rolling work programmes, the ISA² dashboard, and the webpages dedicated to actions and solutions;

³⁵ 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.

- additional operational documents including monitoring and evaluation reports, overviews of communication activities, and lists of participants in the ISA² Committee and Coordination Group;
- policy documents, studies and reports relevant for public sector interoperability.

Annex 6 provides an overview of the supporting evidence collected from desk research. Note that, in order to better guide the data collection activities, **a sample of 21 actions was selected** from the total of 54 actions included in the 2020 Rolling Work Programme³⁶. The criteria used for sampling and the sampled actions are presented in Annex 5: Sample of actions.

Data validation

The collected data were **validated via triangulation** in order to ensure the robustness of evidence. Tool #4 of the Commission’s Better Regulation Toolbox defines triangulation as ‘the application and combination of several research methodologies in the study of the same phenomenon’³⁷. In fact, for all evaluation criteria and questions, data were **collected from multiple sources and via at least two different data collection methods** (e.g.: interviews, targeted questionnaire, public consultation, desk research).

Quantitative methods of data analysis

Besides the statistical analysis of data collected via consultation activities and the qualitative analysis of open responses provided by consulted stakeholders and information contained in documentary evidence, three specific quantitative methods were used in order to evaluate the programme's efficiency:

- The **standard cost model (SCM)**³⁸ is a method of 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 was used to measure the costs borne by action owners in preparing and submitting proposals for ISA² actions.

³⁶ The 2020 ISA² Rolling Work Programme is available on the ISA² website: https://ec.europa.eu/isa2/sites/isa/files/wp_2020_detailed_description_of_actions_part_1.pdf and https://ec.europa.eu/isa2/sites/isa/files/wp_2020_detailed_description_of_actions_part_2.pdf

³⁷ European Commission (2017), ‘[Tool #4 Evidence-based better regulation](#)’ in the Better Regulation Toolbox. Last accessed: 7 June 2021.

³⁸ European Commission (2017), ‘[Tool #60. The standard cost model for estimating administrative costs](#)’, in the Better Regulation Toolbox. Last accessed: 9 August 2021. SCM Network (2005), “[The International SCM Manual: Measuring and Reducing Administrative Burdens for Businesses](#)”

- **Cost-effectiveness analysis (CEA)**³⁹ is a method of assessing the merits of a policy in an interim and *ex post* evaluation setting. In a nutshell, CEA measures the value-for-money of past policies, i.e. the amount of benefit generated by unitary costs. **Costs are measured in monetary terms**, whereas **effectiveness is measured in ‘natural units’**, and the unit of account varies depending on the nature of the problem addressed (e.g. the number of users of key and generic interoperability enablers). The heterogeneity of performance indicators available for ISA² actions makes it difficult to draw conclusions about the programme's overall cost-effectiveness. Thus using CEA was only possible for certain action packages and indicators, as described in Chapter 5.3.
- In line with the PM² methodology developed by the Commission⁴⁰, the **earned value management (EVM)** and **earned schedule (ES)** methods are currently used to monitor and assess the programme's **efficiency**. EVM is a project management technique that helps determine work progress against a given baseline, so that costs, time, and scope of a certain activity are constantly tracked. In ISA²'s context, efficiency is assessed at action and programme levels. The implementation of EVM requires managers to calculate the **earned value**, i.e. a quantification of the ‘worth’ of the work done to date, and the **actual costs**, i.e. the **executed budget for achieving the work**, and to compare them with the **planned value** of such activity. This allows for a better understanding of the programme's performance. The ES is an extension of the EVM method which deepens the level of analysis to a ‘units of time’ layer. In the framework of the ISA² programme, tailored versions of the EVM and ES approaches are adopted⁴¹.

4.2. Limitations and robustness of findings

The availability of a mix of primary and secondary data, gained through the consultation activities and the data collection (Annex 4) allowed the evaluation team to draw robust conclusions for each evaluation question. However, it is necessary to point out that existing caveats may have affected the main findings:

- One constraint consisted in the lack of direct contact with solution users. Only action owners had access to the **contact details of their solution users** due to confidentiality and data protection reasons. Therefore, action owners were requested to: i) invite users to complete the targeted online survey; and ii) share with DIGIT.D2 the details of those users who gave their consent to participate in

³⁹ European Commission (2017), ‘[Tool #57. Analytical methods to compare options or assess performance](#)’, in the Better Regulation Toolbox. Last accessed: 9 August 2021.

⁴⁰ European Commission (2018), PM² project management methodology, available at: <https://data.europa.eu/doi/10.2799/957700>.

⁴¹ More specifically, the tailored version is based on the Earned Value Management Tutorial, Module 1: Introduction to Earned Value Management, prepared by Booz, Allen and Hamilton, Department of Energy, the United States of America, and on the guidelines on Earned Schedule in Action, developed by Kim Henderson, from the Project Management Institute (PMI) Oklahoma, 13.7.2007.

interviews. This two-step approach may have limited the number of answers received from solution users.

- Another limitation may be the potential '**consultation fatigue**' of respondents and complexity of consultations. With the programme having come to an end, stakeholders may have been confronted with multiple requests for feedback. Given the technical nature of the field of interoperability, the fact that several consultations with various degrees of complexity occurred at similar times might have resulted in some stakeholders being more selective about the consultations they wished to engage in.

Compared to the interim evaluation, however, a higher number of respondents contributed to the public consultation (43 respondents in the final evaluation and 14 respondents in the interim evaluation). This result may be due to the fact that the consultation activities were run jointly with the consultations contributing to the evaluation of the EIF and the impact assessment for a future interoperability policy for the EU public sector. The joint consultations may have attracted more respondents to the ISA² consultation. This outcome, in turn, counterbalances the low rate of responses from solution users (5 respondents in the final evaluation compared to 43 solution users in the interim evaluation).

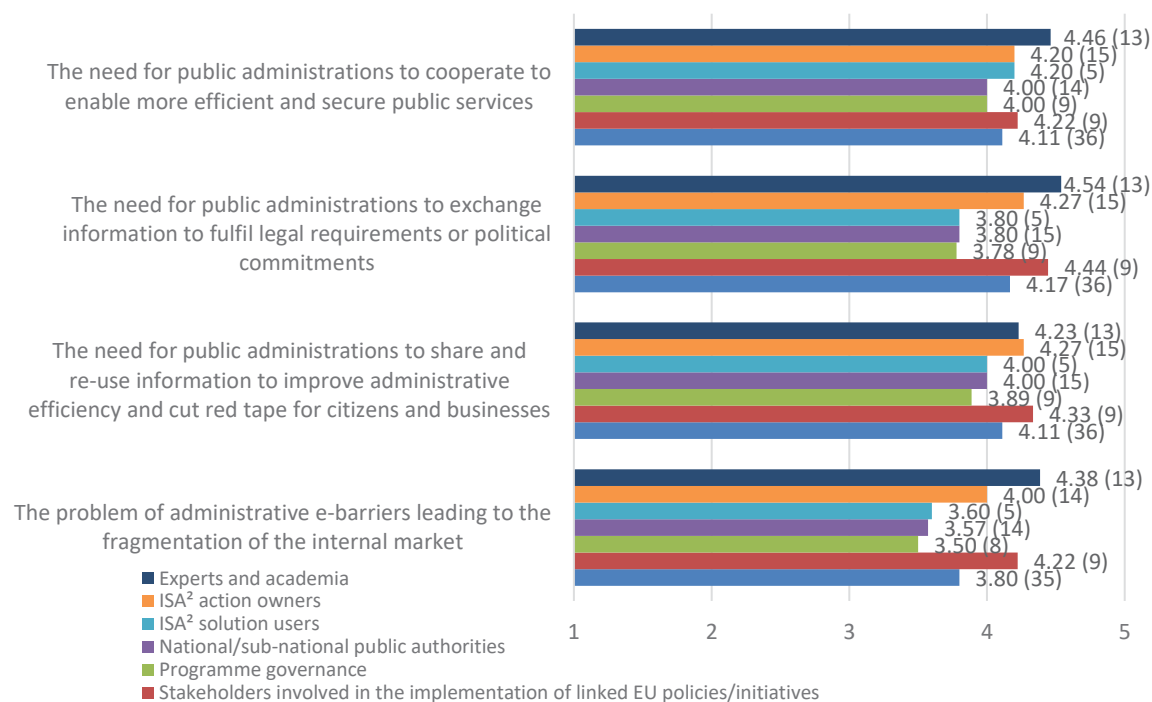
5. ANALYSIS AND ANSWERS TO THE EVALUATION QUESTIONS

In line with the evaluation framework (see Annex 4), the final evaluation focused on seven evaluation criteria: relevance, effectiveness, efficiency, coherence, EU added value, utility and sustainability. The overall analysis is based on evidence from both the [external evaluation report](#) and the Commission’s own sources. This chapter presents the analysis and provides the answers to the general evaluation questions.

5.1. Relevance

In the assessment of the criterion “relevance” the relationship between the needs and problems⁴² of stakeholders and the programme’s objectives and actions is analysed as well as the question of the continued suitability of the programmes objectives. The consulted stakeholders confirmed that the original **needs and problems as set out in the intervention logic (Annex 3) are still an issue for interoperability in the EU’s public sector**. Almost all respondents across the stakeholder groups indicated that the needs are still present to a great extent or completely (based on average scores of 4.2 out of 5 for the need for public administrations to cooperate to enable more secure and efficient public services, and 4.1 out of 5 for the other two needs).

Figure 3: Extent to which needs and problems originally addressed by ISA² are currently experienced by European public administrations, businesses and/or citizens (breakdown by group of stakeholders; average score and number of respondents)

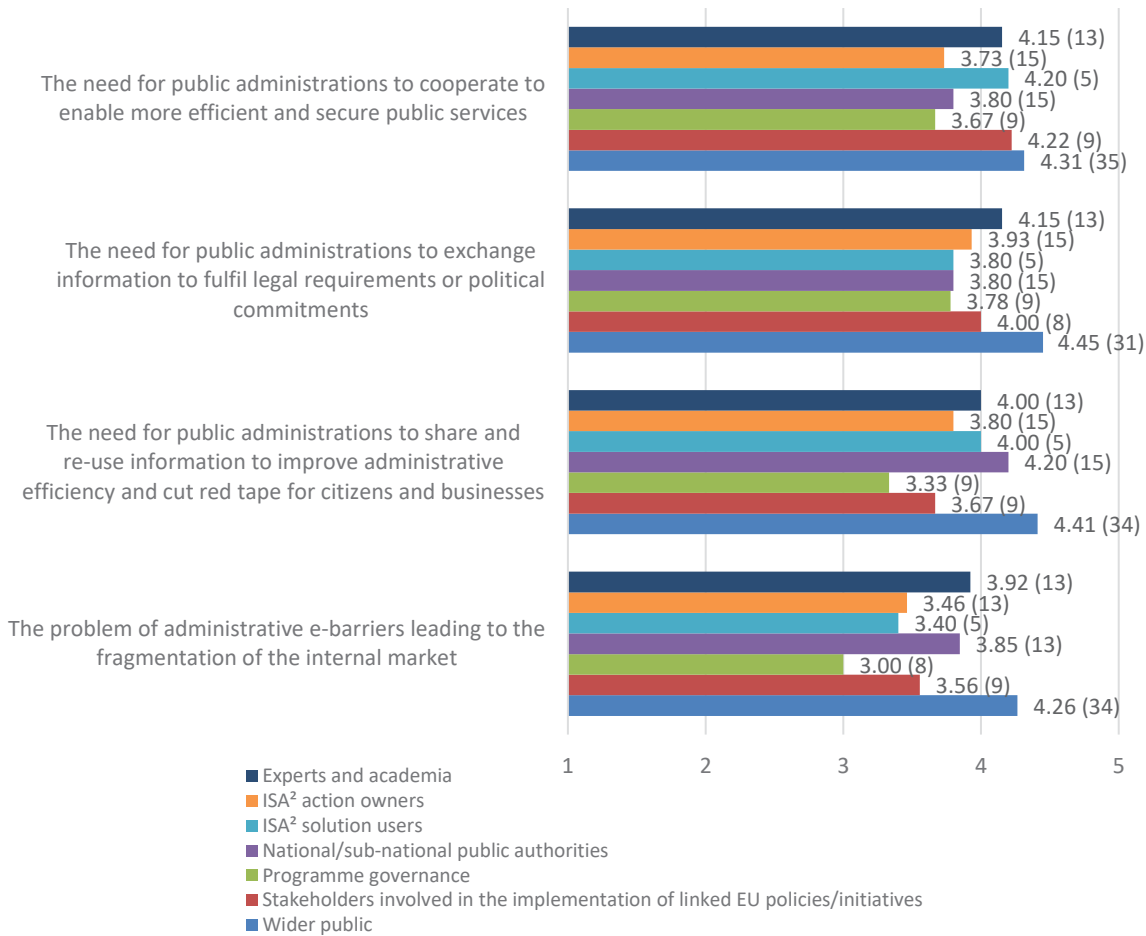


⁴² Needs are defined here as prerequisites for the efficient delivery of European public services; problems consist of specific bottlenecks that make it impossible to meet these needs.

Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.
 Note: 1) Averages do not account for respondents answering “don’t know/no opinion” (DK/NO). 2) Total number of respondents for each need and problem from top to bottom: 101, 101, 101, 98.
 Source: [CEPS final study](#).

The majority of consulted stakeholders agree that **achieving the objectives of the ISA² programme can contribute to addressing** the identified needs and problems (see Figure 4).

Figure 4: Extent to which achieving ISA² objectives contributes to addressing the needs and problems originally addressed by the programme (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: 1) Averages do not account for respondents answering “don’t know/no opinion” (DK/NO). 2) Total number of respondents for each need and problem from top to bottom: 101, 96, 100, 95.
 Source: [CEPS final study](#).

It is particularly interesting to note that respondents among experts and academia, as well as the wider public tend to have a more positive view of the programme compared to the other stakeholder groups. By contrast, programme governance stakeholders point to a more limited alignment. With an overarching perspective of the programme, this stakeholder group emphasised in particular the fact that the **needs cannot be tackled only through ISA² and thus other initiatives are important in the field to fully address the needs and problems.**

Recent academic sources and reports further substantiate the current needs and problems in the field of public sector interoperability (see Annex 6.a). The **need for coordination and cooperation**, *inter alia*, is considered as an important requirement for efficient and secure public services. A 2013 study on the need for the cross-border digital public services emphasised that limited cooperation among the public administrations is the most crucial barrier for improving the delivery digital public services.⁴³ The importance of the **cooperation and governance of interoperability initiatives among EU countries** is reiterated as a key element by De Abreu⁴⁴. The paper acknowledged that cooperation among EU countries improves the efficiency of public services, contributing to cost savings. The **limited sharing of information and re-use of data** is another recurring problem. The research by Kalvet et al. on the once-only principle shed more light on the main barriers to the development of cross-border services.⁴⁵ The barriers include existing heterogeneity of technological infrastructures, the limited legal interoperability and low awareness of the benefits stemming from the implementation of the once-only principle.

The last year of the functioning of the ISA² programme was also marked by the **COVID-19 pandemic**. The pandemic has exacerbated existing needs, including the need for coordination when implementing digital solutions, the need for interoperability in particular fields such as healthcare and mobility and the need to create joint solutions to support contact-tracing efforts and the vaccination campaigns (e.g.: vaccine certification schemes.). In this context, the ISA² programme reacted among others by facilitating the exchange of best practices and the re-use of solutions through a common repository, the “[Digital Response to COVID-19](#)” collection on Joinup.

Complementing the findings of the literature review, 38 respondents (out of the 59 stakeholders who participated in the targeted consultations) indicated that there are **additional needs and problems** related to the interoperability of public services. These needs, which are cross-cutting, cross-border and cross-sectoral, and they are experienced by public administrations at all levels, include:

- The need for **digital literacy and skills** to ensure that the tools developed can also be used effectively and thus improve take-up.
- Extended diffusion of **digital identity**.
- The need to **exchange best practices** between EU countries and public administrations at all levels in a structured and proactive way.

⁴³ Tinholt et al. (2013), *Study on Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers*. Publications Office of the European Union.

⁴⁴ De Abreu (2017), *Digital Single Market under EU political and constitutional calling: European electronic agenda's impact on interoperability solutions*. EU Law Journal. Vol. 3, No. 1, January 2017.

⁴⁵ Kalvet et. al (2018), *Cross-border e-Government Services in Europe: Expected Benefits, Barriers and Drivers of the Once-Only Principle*. In Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance (ICEGOV '18).

- The need to ensure a **feedback loop with citizens** to improve the functioning of digital tools and solutions.
- The need for **consistent governance** of the different initiatives in the field of interoperability at the EU level.
- The need to target **regional and local administrations** directly.

When it comes to the new needs and problems identified by consulted stakeholders, Figure 5 shows that a majority of the 38 respondents who indicated that there were additional needs also emphasised that achieving the ISA² objectives can contribute to addressing these needs at least to some extent. Nevertheless, some of the needs and problems go beyond the scope of what the ISA² programme is meant to achieve.

Figure 5: Extent to which achieving ISA² objectives contributes to addressing additional (current) needs and problems identified by consulted stakeholders (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: 1) Averages do not account for respondents answering “don’t know/no opinion” (DK/NO). 2) Total number of respondents during targeted consultation: 38.

Source: [CEPS final study](#).

In conclusion, the original needs and problems that the programme intended to address remain highly relevant and the objectives of ISA² are pertinent to addressing them. The COVID-19 pandemic has had an important impact on the programme’s relevance and that of interoperability initiatives more generally. In addition, the evaluation has identified a number of new needs and problems related to the interoperability of digital public services that go beyond the scope of what the programme was meant to achieve.

5.2. Effectiveness

The criterion “effectiveness” focuses on the extent to which the programme has achieved its objectives and generated the expected results.

Achievement of general and specific objectives

At the time of its adoption, the ISA² programme, through its solutions, aimed to contribute to a set of general, specific, and operational objectives. After five years, the programme and its solutions have contributed to the achievement of these objectives at least to some extent, according to the consulted stakeholders (see Figure 6) and the desk review of secondary data (see Box 4). At the level of the **general and specific objectives**, the majority of respondents confirm that the following objectives were achieved to some extent or to a great extent:

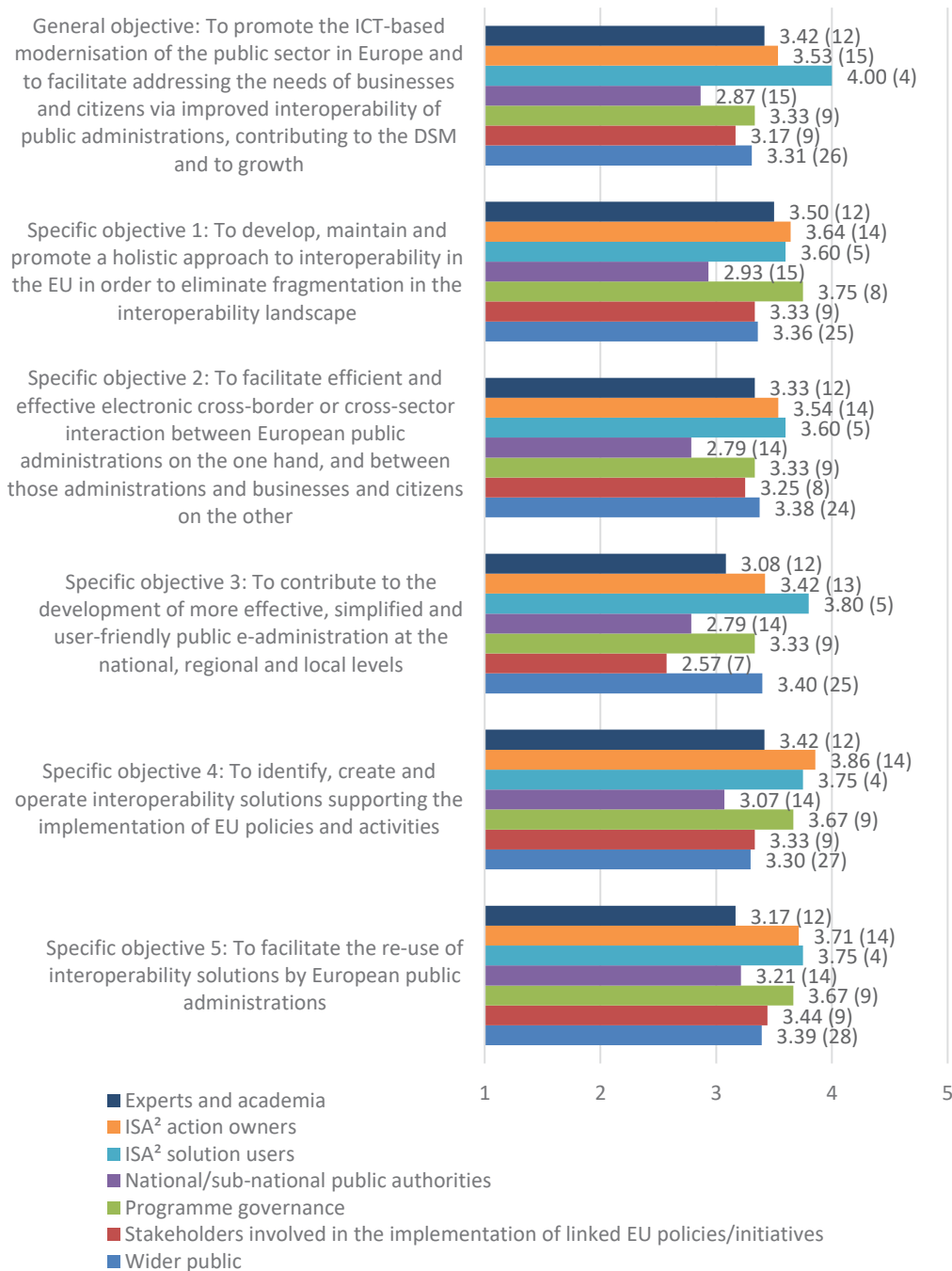
- **“Identifying, creating, and operating interoperability solutions supporting the implementation of EU policies and actions”** (specific objective 4; overall average score of 3.43 out of 5).
- **“Facilitating the re-use of interoperability solutions”** (specific objective 5; overall average score of 3.43 out of 5).
- **“Developing, maintaining and promoting a holistic approach to interoperability in the EU”** (specific objective 1; overall average score of 3.39 out of 5).

Limited contributions are seen (see Figure 6), especially by stakeholders involved in the implementation of linked EU policies/initiatives, when it comes to “developing more effective, simplified and user-friendly public e-administration at the national, regional and local levels” (specific objective 3; overall average score of 3.20 out of 5). The programme’s interim evaluation also identified more limited contributions in this sense⁴⁶.

Out of all consulted stakeholder groups, consulted ISA² solution users and action owners, who are decidedly more knowledgeable about the programme, generally consider that ISA² has contributed to a greater extent to the objectives. Respondents among national and sub-national public authorities gave the relatively lowest scores to the achievement of objectives. Nevertheless, it must also be noted that this stakeholder group also reported a relatively lower level of knowledge of the ISA² programme, in comparison to other stakeholder groups (see Figure 2 in Chapter 4.1).

⁴⁶ CEPS (2019), Evaluation study supporting the interim evaluation of the programme on interoperability solutions for European public administrations, businesses and citizens (ISA²), European Commission, p. 41. DOI: 10.2799/13397

Figure 6: Extent to which ISA² solutions contributed to achieving the programme’s objectives (breakdown by group of stakeholders; average score and number of respondents)



Note: 1) Averages do not account for respondents answering ‘do not know/no opinion’ (DK/NO). 2) Total number of respondents: 90 (General objective), 88 (Specific objective 1), 86 (Specific objective 2), 85 (Specific objective 3), 89 (Specific objective 4), 90 (Specific objective 5).

Source: [CEPS final study](#).

Box 4: Desk research findings - contributions of actions to key ISA² objectives

Supporting the implementation of EU policies and actions (specific objective 4)
 To support the implementation of the **Single Digital Gateway (SDG) Regulation**, a dedicated ISA² action was set up in 2018 (‘Interoperability requirements for the Single

Digital Gateway implementation’). The action provided technical support by identifying specific interoperability challenges for this initiative and outlining the IT architecture of the SDG. The work resulted in a [study](#)⁴⁷ published in 2018, comprising the common architecture for the Gateway, as well as functional, technical and business-process related requirements informing the implementation of the Regulation.

In the field of **open data** several actions have contributed to [providing big data opportunities for public administrations](#) and improving the [EU data reusability and visualisation](#). For example, by developing the ‘Catalogue of data visualisation tools (part of the [EU Open Data portal](#))’. The catalogue contains over 30 visualisation tools, trainings, examples and re-usable visualisations openly accessible to a variety of users.

In the field of **spatial data**, the [European Location Interoperability Solutions for e-Government \(ELISE\)](#) action has been supporting the implementation of the **INSPIRE Directive**. The action has developed several open source solutions, including the [ETF testing framework](#) and the [INSPIRE Reference Validator](#) (an implementation of the former), the Re3gistry software and the [INSPIRE Registry](#) (an implementation of the former) and supporting studies. The [INSPIRE Reference Validator](#) is a reusable tool which allows users to check whether metadata, data sets and network services are in line with the requirements defined in the INSPIRE Implementing Rules and the Technical Guidelines.

ISA² actions have also contributed directly to the implementation [e-procurement](#), the [European Statistical System](#), the [financial legislative acts](#), and [e-Justice](#).

Facilitating the re-use of interoperability solutions (specific objective 5)

When it comes to the re-use of solutions, several ISA² actions are working on **disseminating information** about existing interoperability solutions and encouraging users to take advantage of available resources. The [Joinup platform](#) hosts 2,934 Solutions created within 147 Collections (thematic collaborative spaces), with ISA² solutions counting among these. Several national and even local portals have been [integrated](#). The [Interoperability Academy](#), an ISA² action launched in 2019, fosters not only the dissemination of information around ISA² solutions, but also contributes to advancing digital skills in the public sector. As part of this action, a “[Catalogue of Educational Training Resources](#)” has been developed, bringing together learning resources generated as part of the ISA² programme and the CEF programme.

Developing a holistic approach to interoperability in the EU (specific objective 1)

At the more **horizontal level**, cutting across policy areas, ISA² has played an important part in raising awareness about interoperability, having set up structures for cooperation with the EU countries (the ISA² Committee). It supported the implementation of the European Interoperability Framework, e.g. through the [National Interoperability Framework Observatory \(NIFO\)](#) action. The ISA² actions contribute to the implementation of the EIF and to the 22 key actions outlined by the Interoperability Action Plan (see Annex 6.k).

⁴⁷ Everis (2018), “Study on functional, technical and semantic interoperability requirements for the single digital gateway (SDG) implementation”

Achievement of operational objectives

At the level of **operational objectives**, the majority of respondents indicated **significant contributions of the ISA² programme** to the following objectives (see Figure 7):

- “the maintenance, updating, promotion and monitoring of the implementation of the EIS, the EIF and the EIRA” (operational objective 7); and
- supporting and promoting “a platform allowing access to and collaboration on best practices, functioning as a means of raising awareness of existing solutions” (operational objective 9).

The following actions play a particularly important role: [NIFO](#), through its monitoring of national interoperability frameworks (NIFs) and the setting up of the EIF monitoring mechanism; the [European Interoperability Architecture \(EIA\)](#) action by contributing relevant building blocks for interoperability and supporting re-use through the [EIRA solution](#) and [Joinup](#), a platform facilitating the sharing of interoperability solutions and contributing to the creation of a community on interoperability across the EU.

Several **areas for improvement** still remain. More limited contributions from ISA² are seen when it comes to the “identification of legislation gaps at the Union and national level that hamper cross-border and cross-sectoral interoperability” and the “assessment of ICT implications of Union law” (operational objectives 3 and 4) as well as the “development of mechanisms to measure and quantify the benefits of interoperability solutions including methodologies for assessing cost-savings” (operational objective 5).

One of the recurrent issues pointed out by consulted stakeholders is the effect of the wideness of the range of actions supported by the programme on the overall effectiveness of the programme. While the programme is relatively small in terms of budget, ISA² aims to achieve a long list of detailed objectives focused in multiple areas. **Concentrating the efforts on a more limited set of actions and solutions may be more effective** and it may give more room for selected solutions to be scaled up more quickly and ultimately enhance take-up of the outputs, beyond what has been achieved so far, as emphasised by several representatives of public authorities at the EU and the national levels (who contributed to the targeted consultations).

Figure 7: Extent to which ISA² solutions contributed to achieving the programme’s operational objectives (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.

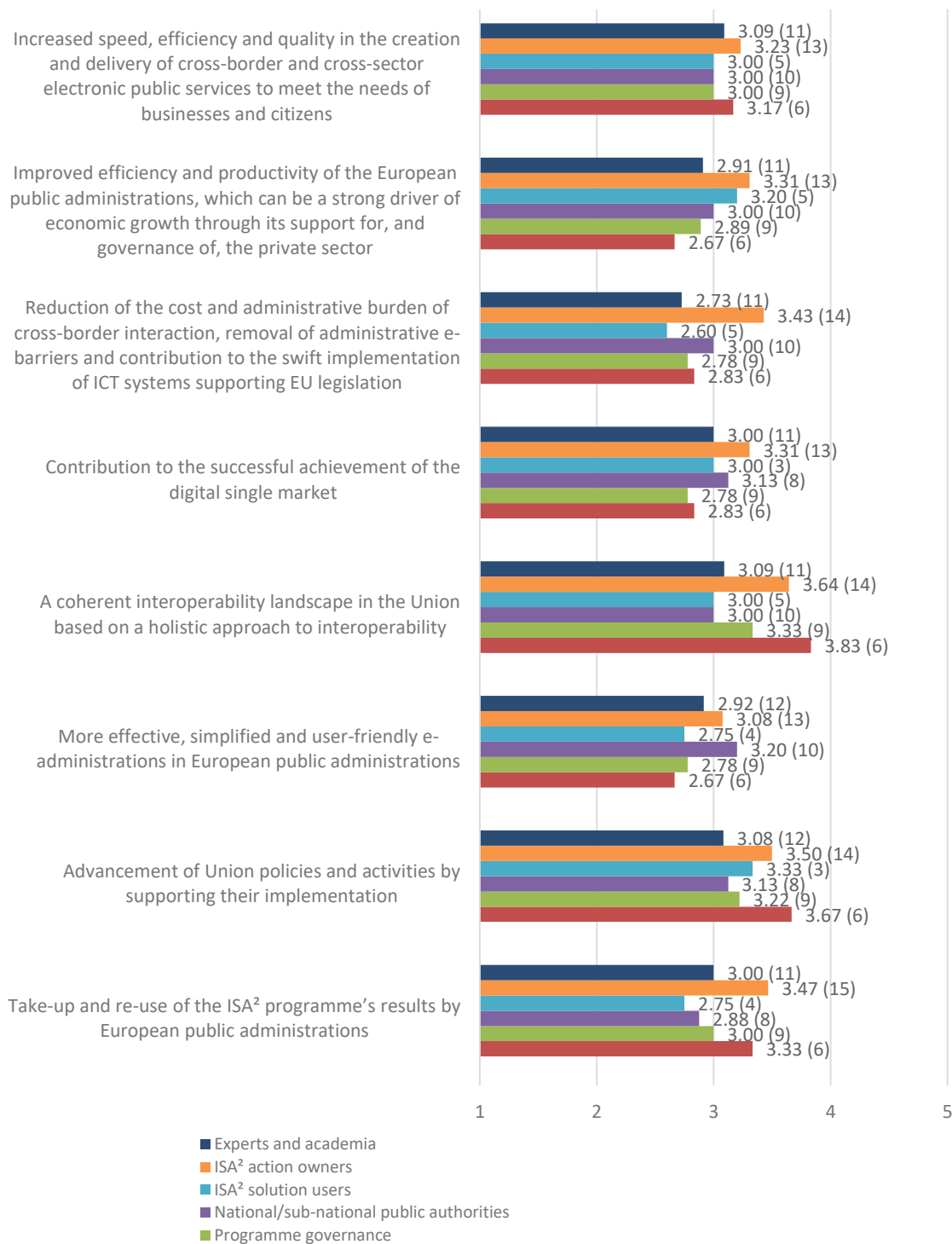
Note: 1) Averages do not account for respondents answering 'do not know/no opinion' (DK/NO). 2) The average score is based on the answers received through targeted consultations.

Source: [CEPS final study](#).

Expected and actual results of the programme

By comparing the **expected and actual results** of the ISA² programme (see Figure 8) a similar picture emerges to the alignment between the achievements of ISA² in relation to its objectives. To some extent, the actual results reflect the expected results, but more work remains to be done to fully achieve the expected results in the field.

Figure 8: Extent to which ISA² solutions achieved the programme's expected results (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: 1) Averages do not account for respondents answering 'do not know/no opinion' (DK/NO). 2) The average score is based on the answers received through targeted consultations. Total number of respondents for each result from top to bottom: 54, 54, 55, 50, 55, 54, 52, 53.

Source: [CEPS final study](#).

As shown by Figure 8, **ISA² has contributed particularly** to “a coherent interoperability landscape in the Union based on a holistic approach to interoperability”

and to the “advancement of Union policies and activities by supporting their implementation”

Conversely, according to the majority of respondents across stakeholder groups, results have been **achieved only to a limited extent** or to some extent when it comes to reducing the cost and administrative burden of cross-border interaction, removing the administrative e-barriers and contributing to the swift implementation of ICT systems supporting EU legislation. Many ISA² solutions focused on the back-office interoperability across domains and sectors. Even though this is a needed step towards seamless public service delivery to citizens and businesses, the results of the back-office integration may not be visible in the short term, as shown by the public consultation replies, due to the longer journey towards a full implementation. Similarly, only limited results are observed by the stakeholders when it comes to contributing to more effective, simplified and user-friendly e-administrations in European public administrations. The limitations identified reflect the feedback on the achievement of the objectives by emphasising that more could be done to develop methodologies for assessing cost-savings derived from the implementation of interoperability solutions. The take-up of the solutions (see Annex 6.b) – brought to maturity – and the relations with standardisation bodies could be improved too (see Box 5).

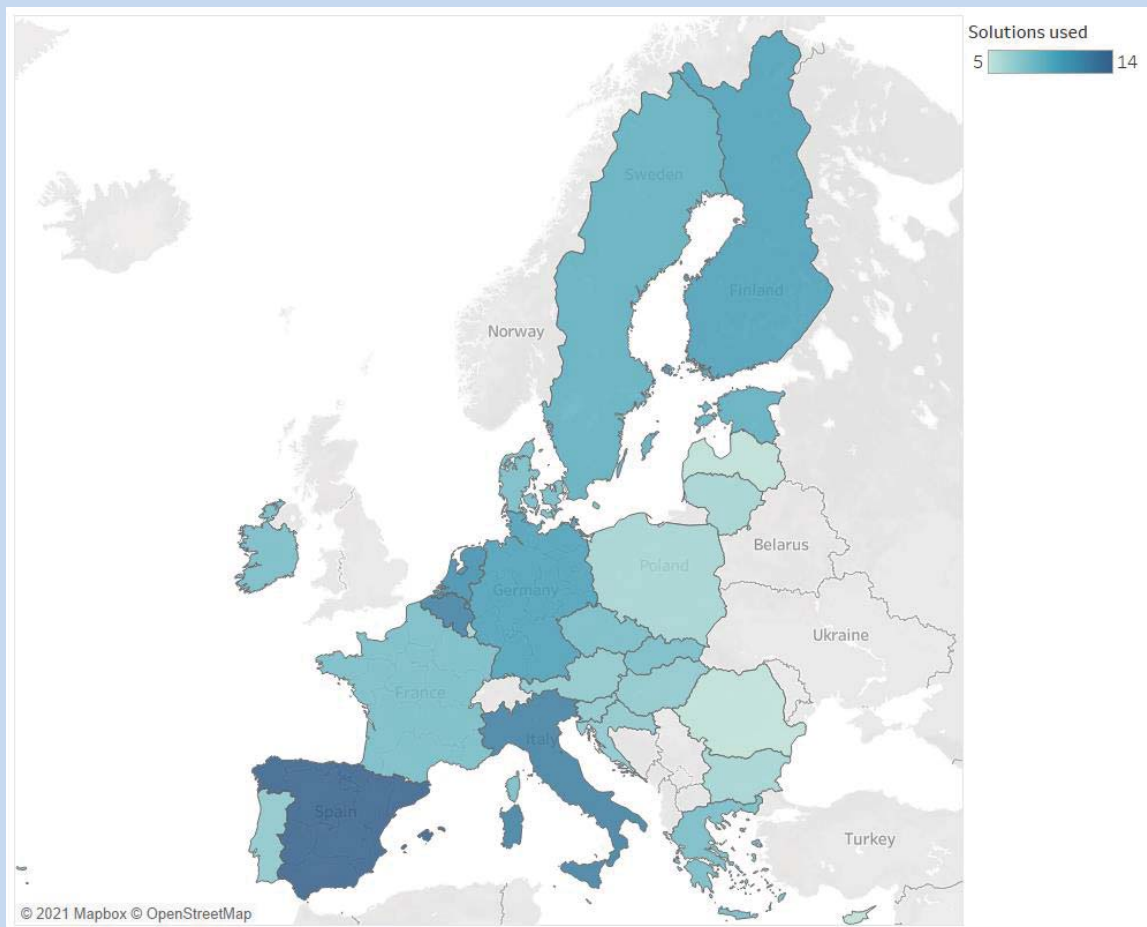
Box 5: Desk research findings – areas to improve effectiveness

Take-up of the ISA² solutions

The use and re-use of ISA² solutions varies between countries (see Figure 9). Based on the sample of 21 actions covered by the evaluation, it is possible to gain relative overview of the use and re-use of ISA² solutions by public administrations across the EU (see [interactive map](#) on the ISA² webpage). Nevertheless, while it is clear that solutions are being re-used across the EU countries, **more could be done to enhance their take-up and re-use, especially at regional and local levels**. For this, it seems crucial to raise awareness on interoperability beyond the technical audience. Two recently started actions in the field are the [Interoperability Academy](#) that aims to provide learning resources on the new [EU academy platform](#). Another example in this sense is the [Better legislation for smoother implementation](#) community on Joinup, which promotes the idea of [digital-ready policymaking](#) and the importance of considering digital aspects, including the use and reuse of existing solutions, already during the policy design phase.

The take-up of solutions may be increased in the future by ensuring clear dissemination to public administration and providing one-stop-shop solutions that allow users to clearly see and access available resources. In addition, **channelling the efforts to fewer actions and solutions and bringing these to maturity** would also help increase the take-up of the programme’s outputs, according to consulted stakeholders.

Figure 9: Overview of the use and re-use of solutions by public administrations in the EU countries, based on a sample of solutions



Note: The colour gradient denotes the number of individual ISA² solutions used or re-used by public administrations in the EU countries. The analysis counts only overall usage, not individual instances of solution re-use. This assessment is based on 17 solutions that are part of the sampled actions for this evaluation, building on available data on the ISA² solutions webpage.

Source: [CEPS final study](#).

Relations with standardisation bodies

Finally, the independent expert assessments contributing to this evaluation emphasised the role of standards developing organisations. **A stronger and systematic link with standard developing organisations** could help improve the programme’s achievements in several areas such as: further enhancing the coherence of the interoperability initiatives in the EU, supporting the development and updating of common standards and specifications, and mapping the landscape of interoperability solutions and specifications. A 2020 report prepared by the **High-Level Expert Group on Business-to-Government Data Sharing** emphasised the need to invest in mature solutions and common standards⁴⁸. In addition, the report of the High-Level Expert Group called for **the Digital Europe Programme to**

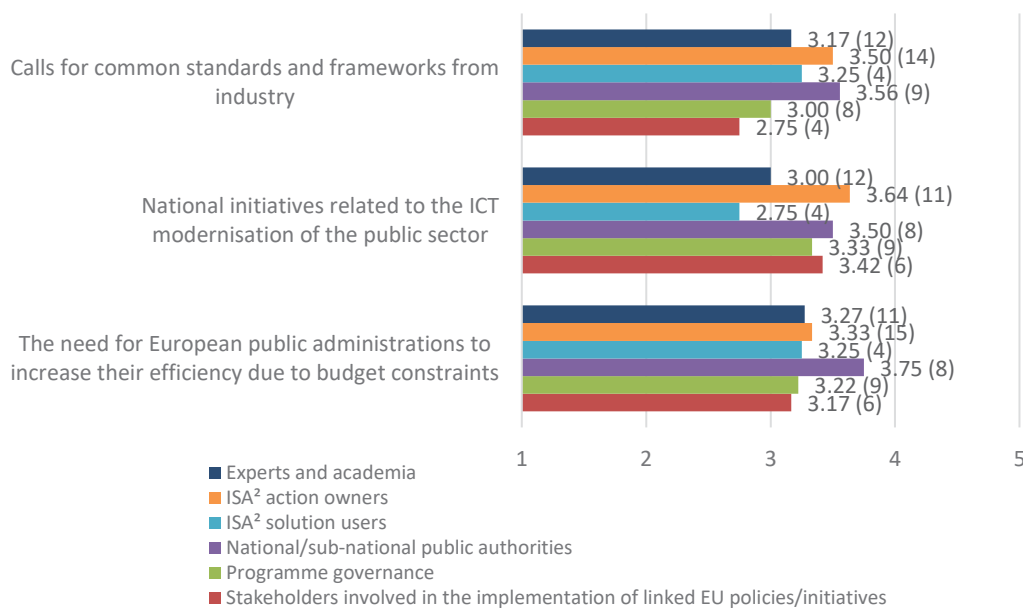
⁴⁸ High-Level Expert Group on Business-to-Government Data Sharing (2020), Report: Towards a European strategy on business-to-government data sharing for the public interest, European Commission. Available at: <https://digital-strategy.ec.europa.eu/en/news/experts-say-privately-held-data-available-european-union-should-be-used-better-and-more>

invest in common standards to facilitate data sharing, taking into consideration the results already achieved as part of the initiatives including the ISA² programme. Importantly, “the expert group recommends prioritising those standards that are most generally used over creating new ones”⁴⁹ and working together with European standardisation bodies. Moving forward, it will be crucial to agree upon and promote the use of a common set of standards to facilitate data exchanges in the public sector. The role of standardisation is further discussed in chapter 5.4 on ISA²'s coherence.

Influence of external factors

Respondents from all stakeholder groups confirmed that **several external factors contribute to the programme’s performance** (Figure 10). Particularly important is the need for public administrations to increase their efficiency due to budget constraints, as was emphasised by public authorities who consider that this factor has contributed to a great extent to the performance of ISA². In fact, the solutions provided respond to a need for common interoperable tools among public administrations and help mitigate budgetary concerns to a certain extent. Besides, ISA² action owners emphasised that national initiatives aimed at the ICT modernisation of the public sector are also contributing to a great extent to the performance of ISA².

Figure 10: Extent to which the following external factors are contributing to the performance of ISA² (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: 1) Averages do not account for respondents answering ‘do not know/no opinion’ (DK/NO). 2) The average score is based on the answers received through targeted consultations. Total number of respondents for each external factor from top to bottom: 51, 50, 53.

Source: [CEPS final study](#).

⁴⁹ Ibid. p 72.

When it comes to standardisation, experts emphasised its importance based on several trends. Addressing needs such as improved **security** and the introduction of new technologies could lead to wider calls for standardisation and common frameworks. Ensuring information security is likely to be one of the most important areas for the application of standards. In a similar vein, the use of **blockchain for public service execution** will need to rely on further developments in **standardisation**. A further relevant trend is the **increasing role of open source** in standardisation, which is likely to drive even more developments in the field of public sector interoperable solutions.

During the consultation activities, respondents to the targeted consultations identified further external factors having an impact on the performance of the programme. **The COVID-19 pandemic stands out as a unique factor**, a shock that has prompted discussions about the urgent need for digital and interoperable solutions to manage the ensuing public health crisis. The pandemic has thus been an **important factor in bringing the issues of interoperability into the spotlight**, underlining the importance of the ISA² programme. As part of ISA², the '[Digital Response to COVID-19](#)' collection was set up on Joinup to bring together a variety of resources including tools and data (such as open source software, open data, websites, platforms and events) that could be useful for public administrations, citizens and businesses in managing the pandemic.

Other external factors that influenced the programmes performance are the new ministerial declarations that reinforce the political support for interoperability initiatives – like the [Tallinn Declaration](#) in 2017 and the [Berlin Declaration](#) in December 2020 –, as well as technological advancements and the general digital transformation of the society.

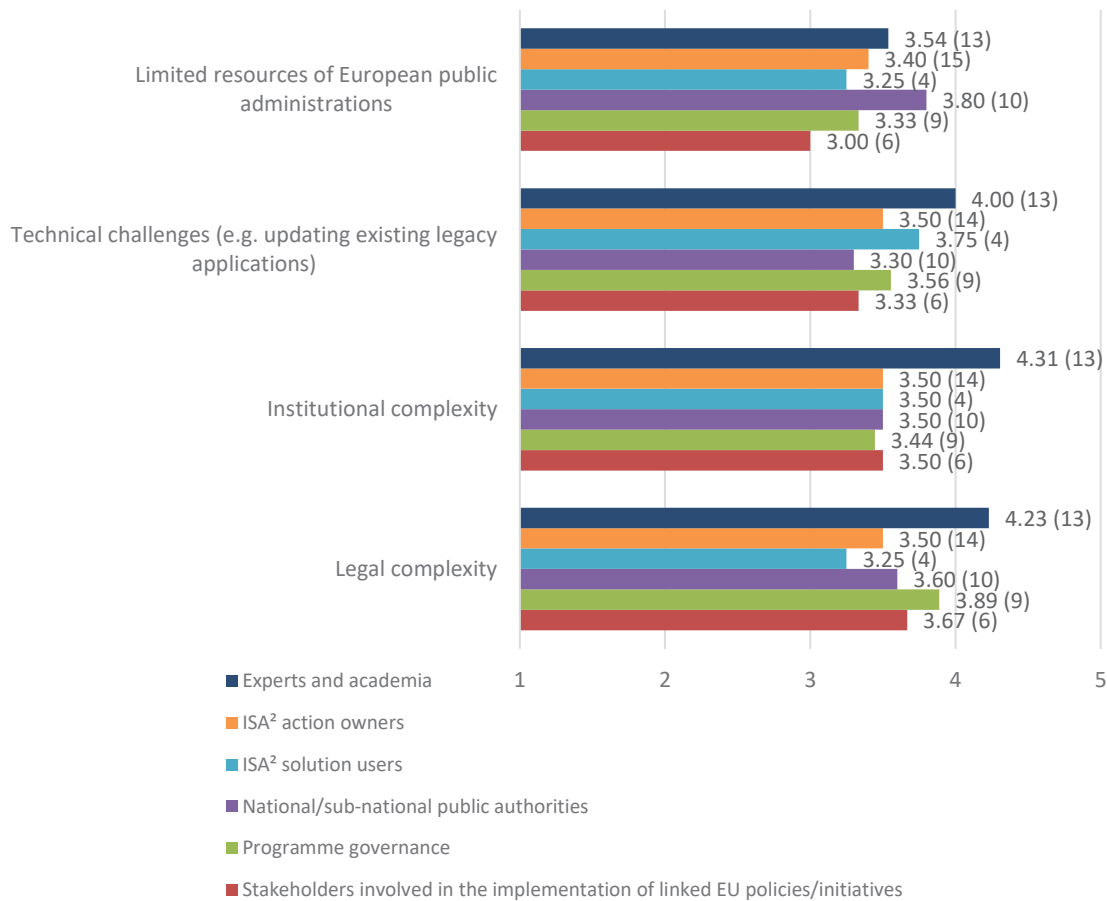
Nevertheless, there are also **factors that had a negative effect** on the programme's performance (Figure 11). **Legal and institutional complexity stand out** as factors having a negative impact to a great extent on how the programme delivers its results (across all stakeholder groups, the legal complexity scored an average of 3.73 out of 5 and the institutional complexities scored an average of 3.64 out of 5). Experts and academia have been the most vocal in expressing their concerns about the impact of these factors. On the one hand, legal complexities arise from **different rules and legal requirements that may limit the flexibility of public administrations to adopt flexible and interoperable solutions** for the delivery of (digital) public services. EU countries have called for action in the field of digital-ready policymaking including the exchange of best practice in the [Berlin Declaration](#). The Danish approach to foster digital-ready legislation has been very successful⁵⁰.

Institutional complexity, on the other hand, derives from the **different levels of governance in the EU and the different organisational setups of public administrations at the national, regional, and local levels**. Among the consulted stakeholder groups, experts and academia in particular consider that institutional

⁵⁰ Danish Agency for Digitalisation (2021: Evaluation of the effort to make legislation digital-ready (<https://joinup.ec.europa.eu/collection/better-legislation-smoother-implementation/news/digital-ready-legislation-denmark>)).

complexity can jeopardise the programme’s performance to a great extent (with average scores of 4.23 out of 5 based on 13 respondents). Institutional complexity is exacerbated by the presence of silos in institutions.

Figure 11: Extent to which the following external factors are jeopardising the performance of ISA² (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: 1) Averages do not account for respondents answering ‘do not know/no opinion’ (DK/NO). 2) The average score is based on the answers received through targeted consultations. Total number of respondents for each external factor from top to bottom: 57, 56, 56, 56.
 Source: [CEPS final study](#).

Stakeholders consulted via the targeted consultation activities also indicate that technical challenges have a negative impact on the performance of the programme. The **independent expert assessments** reinforce this point. For example, the update of existing legacy solutions does not only imply costs and efforts, but also the **strategic decisions** to be made. In particular, the question of which provider to choose becomes central – whether this means private companies, EU-based or not, or public sector solutions.

The feedback from stakeholders pointed out **additional negative factors** for the programme’s performance and needs that should be addressed:

- **Missing interest and understanding of interoperability from the non-technical audience:** As the subject is fairly technical in nature but needs action beyond the technical level to become effective the communication needs to be as clear as possible and fit for a wider audience with non-technical background. Important interoperability decisions cannot be delegated to a technical level but need commitment at policy level.
- Another factor linked to organisational interoperability is the need for **stronger connections between ISA² actions and the interoperability related activities of other services (DGs) of the Commission.**
- Finally, there continues to be a certain “**natural**” **resistance of public organisations to the disclosure of their data**, as documented in an analysis by Ruijter, Détienne, Baker, Groff, Meijer (2020)⁵¹.

ISA² outputs

Data show that **the 21 sampled actions have developed 72 outputs including 34 solutions in the form of common tools/services, frameworks, specifications or standards as well as 38 publications so far**, out of which **9 emerged under ISA²**. As shown in Table 3, the solutions fall into one of the following output categories: common tools/services, common frameworks and common specifications or standards. In addition, the sampled actions also created 38 **publications**, with the majority having been published in the programme’s second half (see Annex 6.d).

Table 3: Overview of solutions developed under the sampled actions, by type

Type of solution	Number of solutions	New solutions developed by ISA ²
Common tools/services	22	6
Common frameworks	9	2
Common specifications/standards	3	1
Publications		38
TOTAL	72	47

Source: CEPS final study.

Aside from the above listed four solution types, for the action Raising Interoperability Awareness – Communication Activities, which is part of the Accompanying measures package, the action outputs are represented by events organised as part of the ISA² programme or events to which ISA² representatives actively contributed (see Box 6 and Annex 6.e).

⁵¹ Ruijter, E., Détienne, F., Baker, M., Groff, J., & Meijer, A. J. (2020). The Politics of Open Government Data: Understanding Organizational Responses to Pressure for More Transparency. *The American Review of Public Administration*, 50(3), 260–274. <https://doi.org/10.1177/0275074019888065>

Box 6: Communication activities

Through the events organised as part of the ISA² programme, including conferences, workshops, and webinars, the programme reached diverse stakeholders from different countries, helping to promote interoperability among them. Throughout the duration of the programme, a total of 196 ISA² funded events have been organised across the EU, both online and in several countries: Belgium, Bulgaria, Finland, Greece, Italy, Luxembourg, Malta and Romania (see Annex 6.e). With the outbreak of the COVID-19 pandemic, most of the events organised in 2020 were exclusively online. In addition, ISA² representatives actively participated in events that took place in 20 EU countries and two non-EU countries, namely Montenegro and Serbia.

Performance indicators and principles of the programme

An array of metrics is in use to assess the effectiveness of ISA² solutions, for example, the number of users, instances of use, the number of downloads and page views. **The performance of ISA² solutions can thus be characterised in multiple ways, depending on the type of output.** Examples of the outputs include⁵²:

- 16,092 professionals working in the field of e-Government are registered on Joinup to access interoperability solutions and collaborate with each other.
- Over 29,200 surveys have been created so far using the ISA² EU Survey solution.
- The European Single Procurement Document (ESPD) solution has been downloaded over 35,000 times from Joinup.
- 36 educational and training resources have been published in the Interoperability Academy Catalogue of Educational and Training Resources, designed to enhance digital skills and support the delivery of digital and interoperable public services.
- 141 assessments of digital public services were performed using the Interoperability Maturity Assessment of a Public Service (IMAPS) solution between 2018 and 2020.

Additional performance indicators, collected as part of the desk review of secondary data, are presented throughout the chapter. A full overview is included in Annex 6.c.

The rolling work programme provides details on how the ISA² actions should consider **the principles listed in Article 4(b) of the ISA² Decision**. The overall judgment stemming from the desk analysis of the rolling work programme is **positive** (Annex 6.f). Examples of ISA² actions contributing to the principles include:

⁵² The data presented below reflects the state of play as of 14 January 2021.

- To ensure **transparency**, the ISA² programme has taken several measures: i) the rolling work programme provides an overview of the objectives of the actions, the planned and developed solutions, the expected impacts, and the budget allocated to each action; ii) the ISA² dashboard provides quarterly updates regarding the efficiency and effectiveness of actions in terms of costs, earned value management, effectiveness indicators and targets; iii) information on the level of take-up of solutions is made available via the ISA² webpage dedicated to solutions; and iv) the solutions developed can be accessed via the [Joinup](#) platform.
- Concerning **reusability and avoiding duplications**, the process of submitting proposals for actions played an important part, as the descriptions of proposed actions had to specify (i) the extent to which the action re-uses other readily available solutions and (ii) the re-usability of the action outputs.

In conclusion, the ISA² programme **achieved all its objectives at least to some extent**. The **main achievements of ISA²** consist in the support to the implementation of EU policies and actions through interoperability solutions, the facilitation of the re-use of interoperability solutions, and the contribution to the promotion of a holistic approach to interoperability in the EU.

More could be done in the future to fully achieve the objectives that were pursued by the programme. According to the consulted stakeholder, the **take-up of solutions** could be further increased for example by **focussing the efforts on developing a smaller set of key mature solutions**, continually developing them and nurturing their take-up.

External factors could improve but also jeopardise the way in which the programme achieves its objectives and delivers its results. The need of public administrations to increase their efficiency is an external factor that contributes to the programme's performance. In contrast, legal and institutional complexity are in many cases blocking cross-border and cross-sectoral interoperability.

An area of improvement is the **identification of legislation gaps**, both at the EU and national levels, that hamper cross-border and cross-sectoral interoperability and **the assessment of ICT implications of Union law**. In addition, considering the importance of **standardisation for interoperability**, a stronger and more systematic link with standards developing organisations could further improve the results achieved so far.

5.3. Efficiency

Efficiency relates to the extent to which the programme's objectives are achieved at a minimum cost. Throughout the duration of the ISA² programme, its efficiency has been tracked using the [Earned Value Management \(EVM\) methodology](#). Calculation of the EVM helped monitoring the work progress compared to planning, taking into account the costs, time needed, and scope of the ISA² actions. To support this, the ISA² dashboard

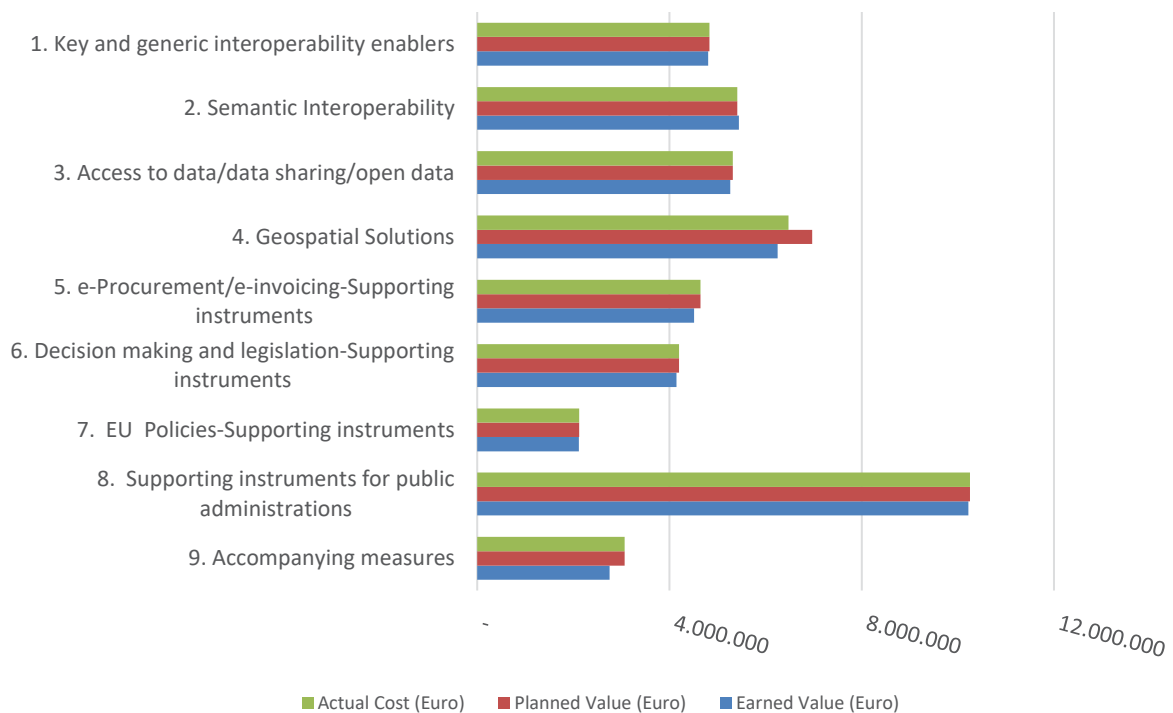
provides quarterly data on the earned value, planned value, and actual costs of each monitored action⁵³.

Based on data available on the ISA² dashboard, which covers the timeframe between June 2016 and October 2020 (the latest available data point at the time of data collection), the progress made in implementing the programme between 2016 and 2020 can be analysed. The **key indicators for this analysis** are the following:

- **Earned value**, namely the value of actual progress made compared to the budget;
- **Planned value**, i.e., the benchmark against which the value of the actual progress is measured in terms of time and costs; and
- **Actual cost**, representing the budget spent.

Figure 12 provides an overview of the main indicators for the third quarter of 2020. The 21 sampled actions were aggregated at the package level to provide a comparative view. The earned value is nearly equal to the planned value for all sampled actions, showing that **the work has progressed as expected. Final activities are being undertaken during 2021 to finalise the programme’s activities and transition to the Digital Europe Programme.**

Figure 12 Earned Value, Actual Costs and Planned Value of *sampled actions*, by package (Q4 2020)



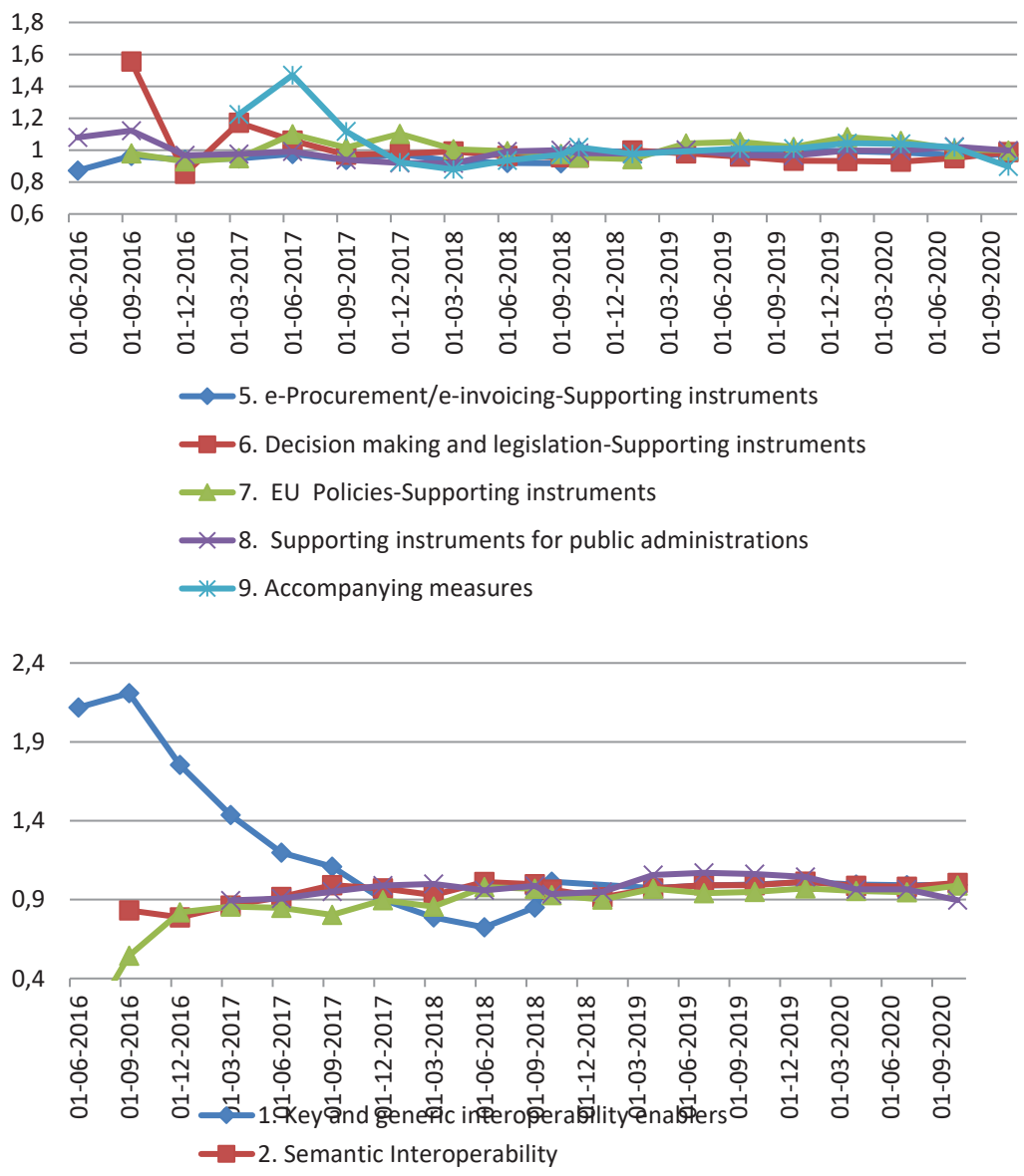
Source: [CEPS final study](#).

⁵³ The earned value represents a quantification of the work accomplished to date. The planned value is a quantification of how far along the work on the programme is supposed to be in terms of the schedule and cost estimate at a given point in the programme. The actual costs represent the executed budget.

To track how the programme's implementation has evolved over its lifetime, computing the **Schedule Performance Index (SPI)**, which represents the ratio of earned value to planned value, provides further insights (Figure 13). An SPI value higher than one indicates that a given ISA² package is ahead of schedule, while an SPI value below one suggests that the analysed package is behind schedule. From the programme's start in 2016 to the fourth quarter of 2020, the SPIs of the sampled actions grouped by packages have shown fluctuations but have been converging on one. In Q4 2020, the computed indices for most packages were almost equal to one.

The more striking fluctuations, as in the cases of the “1.Key and generic interoperability enablers” and “6.Decision making and legislation – Supporting instruments” packages, during the first two years of the programme can be explained by the fact that some of the actions rolled out under ISA² are continuations of actions from the previous edition of the programme. The ‘continuity’ factor can play an important role in the implementation of actions and contribute in the beginning to faster progress than expected. Given that some actions were started later on in the programme, as is the case of the “4.Geospatial solutions” package, data for the EVM analysis are not always available from Q2 of 2016, but only from a later point in time.

Figure 13 Schedule Performance Indices of the sampled actions grouped by packages

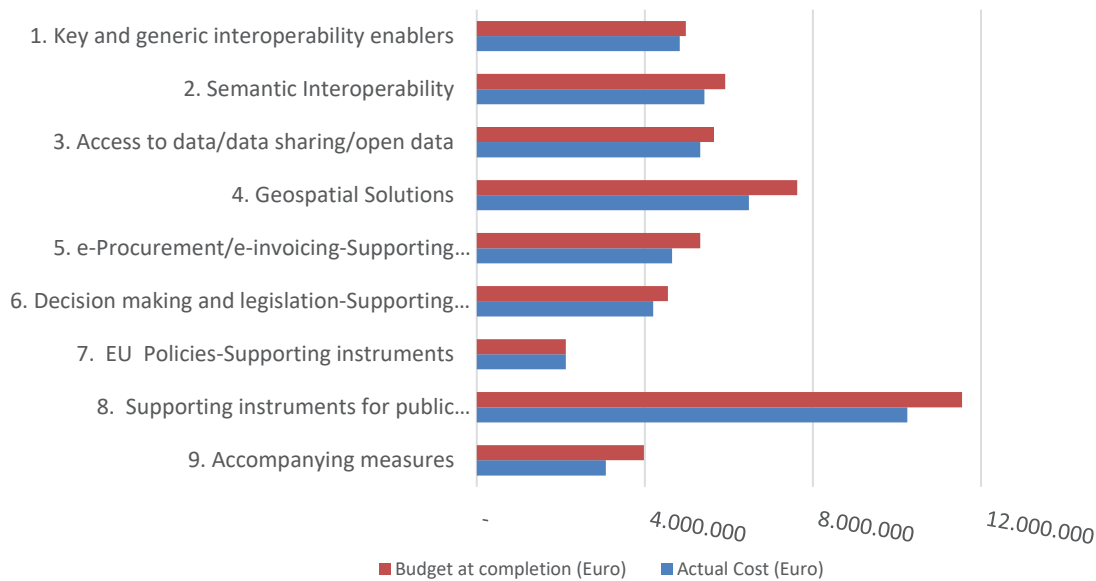


Source: [CEPS final study](#).

The assessment of the programme’s cost-effectiveness relies on the analysis of the costs per output. However, the application of this method in the case of the ISA² programme has an important limitation. Given the diversity of ISA² actions and types of outputs, a full-scale analysis and comparison of the cost-effectiveness of ISA² actions and solutions is difficult to carry out.

The ISA² dashboard provides an overview of the **budget at completion for the ISA² actions**⁵⁴ as well as the **actual costs incurred for implementing the actions**. Figure 14 presents the breakdown of the budget at completion compared to the actual costs for the sample of actions grouped by their respective packages for the period 2016 – 2020 (the latest data point available being October 2020). The actual costs of the packages shown tend to be close to their foreseen budgets. The average budget for an ISA² action between 2016 and 2020 was of € 2,025,193⁵⁵.

Figure 14 Budget at completion and actual costs of the sampled actions grouped by packages



Source: [CEPS final study](#).

To assess the costs per output the evaluation compares packages that use the same performance indicators. The sampled actions in two packages rely on the same indicator, namely the number of public administrations using the solutions that were developed: the “5. e-Procurement/e-invoicing-Supporting instruments” and “1. Key and generic interoperability enablers” packages. By taking the actual costs of the sampled actions in the two packages and the total number of public administrations using the solutions of the packages (the full overview of performance indicators can be consulted in Annex 3), the **average actual cost per public administration using the solutions** can be calculated (see Table 4). The average costs per public administration are estimated at €33,917 for the “e-Procurement/e-invoicing-Supporting instruments” package and €23,470 for the “Key and generic interoperability enablers” package.

⁵⁴ The Budget At Completion (BAC) is the sum of all undergoing and completed specific contracts financed by the ISA² budget allocated to ISA² actions. The analysis is based on the data available on the ISA² dashboard: <https://ec.europa.eu/isa2/dashboard/programme/efficiency>.

⁵⁵ Based on the data available on the ISA² dashboard. Last retrieved on 19 April 2021.

This analysis, however, does not capture the effectiveness of the actions in terms of end-users. **The services of public administrations are used by thousands of citizens and businesses**, meaning that **ultimately the costs are much lower relative to the number of end-users**, and thus the benefits greater than the costs.⁵⁶

Table 4 Costs per user (public administrations) for ISA² solutions

Package	Actual costs of sampled actions in the package (€)	Number of public administrations using the solutions of the package	Average actual cost (€)
e-Procurement/e-invoicing-Supporting instruments	4,646,617	170	27,333
Key and generic interoperability enablers	4,975,794	212	23,470

Note: The calculations are based on the sampled actions of the indicated ISA² packages over the period 2016 - 2020. The total number of public administrations using the solutions of the “Key and generic interoperability enablers” package consists of approximately 200 public administrations using “e-TrustEx” and 12 public administrations using “Core Public Service Vocabulary Application Profile (CPSV-AP)”. The total number of public administrations using the solutions of the “eProcurement / eInvoicing – Supporting instruments” package includes 70 public administrations using Open e-Prior, roughly 75 solutions either using the ESPD data model or the open source version of the ESPD service developed under ISA², and 25 connections from Member State solutions to eCertis. The full overview of the number of users and other performance indicators is presented in Annex 3. The overview of costs per package is presented in Figure 14.

Source: [CEPS final study](#).

The **annual process of selection of actions to be included in the Rolling Work Programme** was a central part of the functioning of ISA². The preparation and submission of a proposal to be included in the ISA² Rolling Work Programme required the applicant to perform several activities such as:

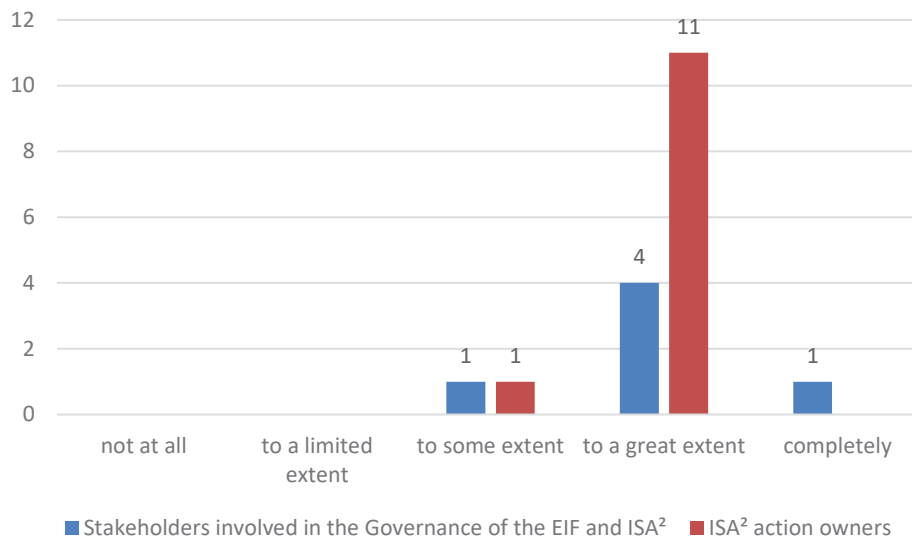
- i) finding out about the call for proposals;
- ii) studying the documents of the call for proposals and understanding the rules and procedures;
- iii) preparing a concise description of the proposed action in compliance with the “work programme entry template”;
- iv) collecting the required internal authorisations to submit the proposal; and
- v) submitting the proposal by e-mail.

Figure 15 shows that consulted action owners and stakeholders involved in the governance of the selection process for actions to be included in the programme was to a great extent fit for purpose (the assessment is based on the responses received from 12

⁵⁶ For instance, in the case of the “e-Procurement/e-invoicing-Supporting instruments” package, the eCertis solution recorded 3000 unique visitors (June 2021) from a wide range of users, the ESPD solutions was downloaded over 35,000 times, and the Open e-Prior solutions counts over 300 suppliers connected via the portals. When taking into account the wide base of users, beyond public administrations themselves, the costs per end user are estimated to be much lower. Similarly, for the “Key and generic interoperability enablers”, approximately 16.7 million documents have been exchanged between connected EU institutions, as well as public and private entities in the Member States using the e-TrustEx solution, and the CPSV-AP solution has been downloaded over 700 times from Joinup (Annex 6.c).

action owners and six stakeholders involved in the governance of the programme). **Respondents emphasised that one of the positive aspects was that EU countries could submit proposals, alongside European Commission services.** Nevertheless, only a limited number of proposals were received from the EU countries. In the future new ways of fostering active involvement of EU countries and other public administrations should be explored.

Figure 15 Extent to which the selection process of the actions is fit-for-purpose (number of respondents by stakeholder category)



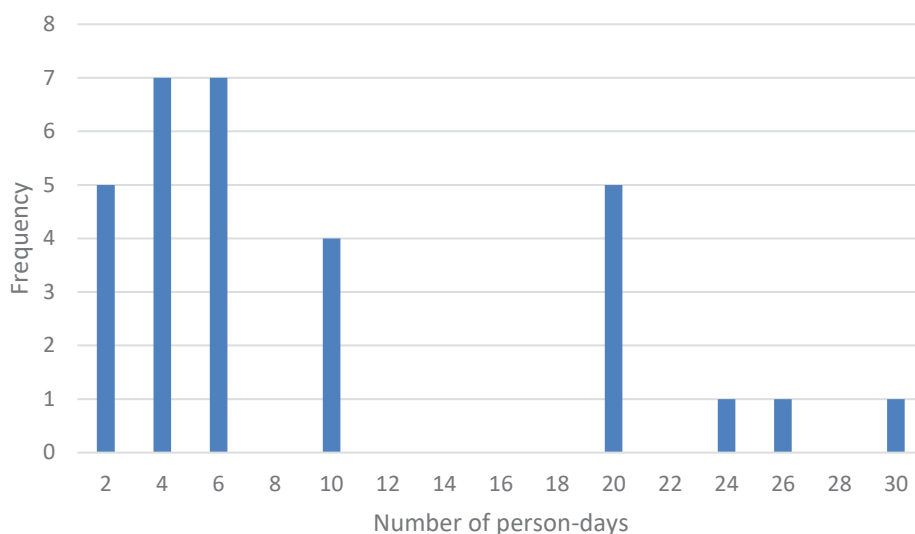
Note: Averages do not account for respondents answering “don’t know/no opinion” (DK/NO).

Source: [CEPS final study](#). Total number of respondents: 18.

In addition, twelve respondents (action owners and stakeholders involved in the governance of the programme) provided further details based on their experience in having submitted proposals and the proposals having been accepted and included in the rolling work programmes of ISA². The time spent on preparing the proposals varied from two to three person-days up to 25 person-days to complete the proposal (see Figure 16 Figure 16 Number of person-days required for preparing a proposal for an ISA² action

). The differences in the reported time required to prepare a proposal reflect the types of actions put forward such as new actions or previous actions for which one can rely on previously accumulated experience. Further information from the ISA² interim evaluation shows that the amount of time spent on preparing a new proposal – instead of updating an existing one – can be up to 30 person-days. This suggests that a greater effort may be expected at the beginning of the programme, as applicants get acquainted with the requirements of the selection process and draft initial proposals for actions. The subsequent applications would focus mainly on updating previously accepted proposals, reducing the time required.

Figure 16 Number of person-days required for preparing a proposal for an ISA² action



Note: This chart presents the distribution of person-days needed to prepare an ISA² proposal grouped in intervals of two days to facilitate the overview of data. This chart combines the feedback from action owners and programme governance stakeholders consulted for the final evaluation of the programme as well as the interim evaluation of the programme.

Source: [CEPS final study](#).

To get an overview of the **administrative costs** associated with the preparation of proposals for ISA² actions, the **Standard Cost Model** can be applied. Applying this methodology based on the respective Better Regulation Tool⁵⁷, the estimates of person-days spent preparing proposals for ISA² actions are multiplied by a standard tariff, which in this case is represented by the hourly labour cost in the respective EU countries⁵⁸, factoring in an average person-day composed of eight hours. Building on the feedback from consulted stakeholders and the findings of the interim evaluation study, the standard cost model analysis in this case can distinguish between the updating of a proposal for an existing action (with an estimated average time spent of up to 6 days) and the preparation of a proposal for a new action, for which the time spent increases significantly, from 10 person-days to 30 person-days.

Against this background, the time spent in the process of preparing proposals for ISA² actions can thus be translated into costs as follows (the underlying data can be consulted in Annex 6.g):

⁵⁷ European Commission, Better Regulation “Toolbox”, 7 July 2017, Tool #60. Available at: https://ec.europa.eu/info/sites/info/files/better-regulation-toolbox_2.pdf. Last accessed: 11 August 2021.

⁵⁸ The data on hourly labour cost were retrieved from Eurostat: Eurostat, Labour cost levels by NACE Rev. 2 activity (based on the available data for 2019), available at: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lc_lci_lev&lang=en

- A **renewed proposal** has cost approximately € 1,126;
- A **new proposal** has cost approximately € 5,669.

To put these numbers into context, it is worth noting that the average budget for an ISA² action between 2016 and 2020 was € 2,025,193⁵⁹. The costs incurred in preparing a proposal are thus very small, as illustrated in the following scenario. Let us assume that a proposal for a new action was prepared and included in the 2016 Rolling Work Programme and then updated annually through 2020 (four updates in total). **The total administrative costs throughout the programme's duration would thus amount to an average of € 10,173, which in relative terms would represent only 0.5% of the average total budget of the action.**

In the case of ISA², one respondent pointed out that the part of the application form regarding the work programme was complicated. **The templates should be shorter, and the level of granularity should be reduced to provide more flexibility and ease in modifying the planned activities.**

In conclusion, the work across ISA² packages has progressed as expected relative to the planned work and budget. The heterogeneity of performance indicators makes it difficult to draw conclusions about the programme's overall cost-effectiveness. 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 and thus benefits are greater than costs for the ultimate beneficiaries of the solutions developed.**

The **process of selecting actions to be funded by ISA²** is considered relatively **efficient and fit for purpose**. The costs of preparing and submitting proposals as part of the selection process were very small relative to the average budget of an ISA² action.

EU countries could submit proposals, alongside European Commission services. Nevertheless, only a limited number of proposals were received from the EU countries.

5.4. Coherence

Article 13(4) of the ISA² Decision requires that the coherence of ISA² actions is assessed; this is referred to as the programme's '**internal coherence**'. In addition, Article 13(6) pays specific attention to the programme's '**external coherence**' in order to 'identify potential overlaps, examine coherence with areas for improvement, and verify synergies with other Union initiatives, in particular with the CEF'. To assess both the internal and the external coherence of the programme, findings from desk research on links between ISA² actions and the relationship between ISA² and other relevant EU programmes/policies/initiatives were used in addition to the information provided by stakeholders.

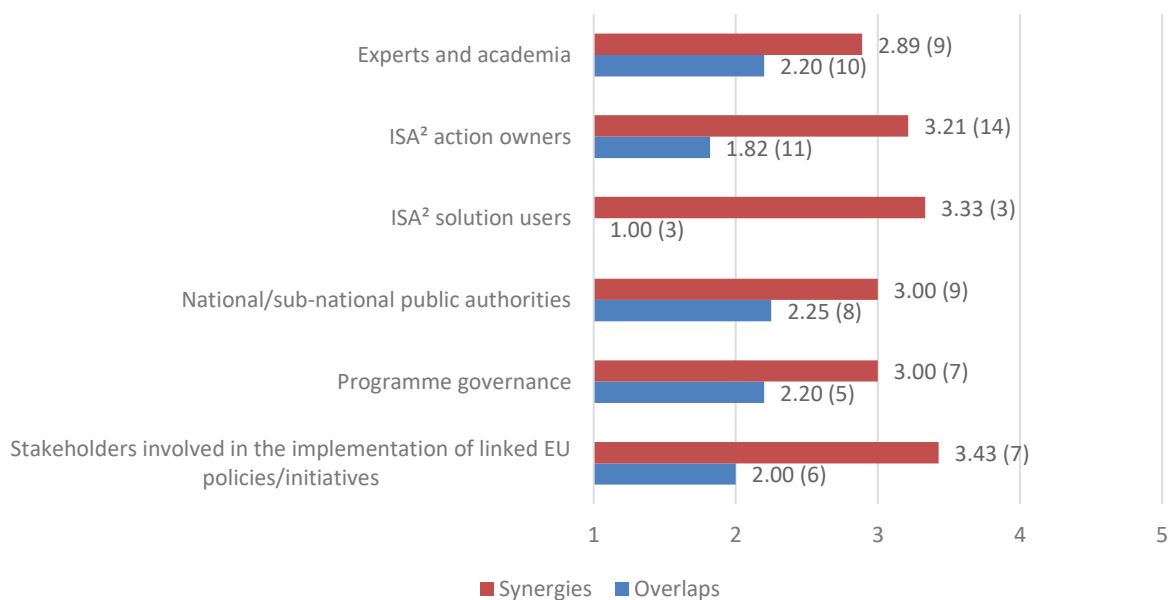
⁵⁹ Based on the data available on the ISA² dashboard. Last retrieved on 19 April 2021.

Internal coherence

Given that the ISA² programme currently supports 54 actions across nine work packages with multiple Commission services involved in the implementation of the actions⁶⁰, **coordination and coherence among the multiple activities rolled out was an essential part of the programme's performance** (internal coherence). To this end, assessing the level of synergies or overlaps between ISA² actions is relevant.

The stakeholder consultation and desk research show to some extent synergies between the actions. Consulted ISA² action owners, stakeholders involved in the implementation of linked EU initiatives, and solution users (with the caveat that only three solution users expressed their views on this matter) see the most synergies (Figure 17). Yet respondents also emphasised that the programme's fragmentation into multiple different actions makes it difficult to fully tap into all synergies.

Figure 17 Extent to which synergies and overlaps between ISA² actions exist (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: [CEPS final study](#). Total number of respondents: 49 (Synergies) and 43 (Overlaps).

Consulted stakeholders see only **limited overlaps between the ISA² actions** (see Figure 17), which tend to be mostly functional overlaps needed for the cohesive functioning of the programme.

⁶⁰ Besides DG DIGIT, other Commission services and institutions include the JRC, which is involved in the ELISE action, and the Publications Office, which engages in the action “Development of an open data service, support and training package in the area of linked open data, data visualisation and persistent identification”. For further details please see: https://ec.europa.eu/isa2/actions_en

Additional evidence from the desk review of information available on the ISA² dashboard allows gaining an **overview of the network of ISA² actions and the links between them**, i.e., actions being re-used or contributing to other actions. There are multiple instances of re-use and contributions, as shown in Table 5. Several actions play a central role, with their solutions and outputs being widely re-used by other actions, such as is the case for the SEMIC and Joinup actions.

Table 5 Number of links between the sampled actions

Actions	Number of other ISA ² solutions that are used by the action	Number of other ISA ² actions that use the solutions of the action
1. Key and generic interoperability enablers		
Trusted Exchange Platform (e-TrustEx)	5	9
Catalogue of Services	3	3
2. Semantic Interoperability		
Public Multilingual Knowledge Management Infrastructure for the DSM (PMKI)	2	0
SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	6	23
3. Access to data/data sharing/open data		
Big Data for Public Administrations	6	0
Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	6	2
Development of an Open Data Service, Support and Training Package in the Area of Linked Open Data, Data Visualisation and Persistent Identification	2	0
4. Geospatial Solutions		
European Location Interoperability Solutions for e-Government (ELISE)	9	2
5. eProcurement/eInvoicing-Supporting instruments		
European Public Procurement Interoperability Initiative	8	4
6. Decision making and legislation-Supporting instruments		
Legal interoperability	9	0
REFIT Platform	0	3
Inter-Institutional Register of Delegated Acts	1	1
7. EU Policies-Supporting instruments		
European Citizens' Initiatives and European Parliament Elections	3	0
8. Supporting instruments for public administrations		
Joinup - European Collaborative Platform and Catalogue	7	14
NIFO	9	0
EIA	7	9
EUSurvey	2	0
Interoperability Maturity Model	11	4
Standard-Based Archival Data Management, Exchange and Publication	0	1
9. Accompanying measures		
Raising Interoperability Awareness - Communication Activities	1	0

Source: [CEPS final study](#)

Based on the findings from consulted desk research and the review of desk evidence on ISA² actions and solutions, concrete examples of synergies include:

- As part of the [ELISE](#) action, instances of synergies include the supply of indicators from Location Interoperability Framework Observatory (LIFO) to the [NIFO](#) and the re-use of [DCAT-AP](#), which is developed under the [SEMIC](#) action, for the Geo-DCAT, an extension of DCAT-AP which described geospatial datasets, dataset series and services.

- The [Innovative Public Services](#) action, exploring how new digital technologies can enhance the provision of public services, has synergies with actions including: the [Legal interoperability](#) action (which also experimented with potential applications of new technologies) and the [FISMA: Financial data standardisation](#) action (which explored the use of machine learning for reporting), as well as the [ELISE](#) action (which carried out studies on disruptive technological developments for linked-to-location data).
- The [Interoperability Academy](#) action is fostering re-use by increasing awareness of the solutions developed as part of other ISA² actions.
- The [European public procurement interoperability initiative](#) action re-uses the [Interoperability Test Bed](#) action and the Core Vocabularies developed as part of the [SEMIC action](#), and the [EIRA](#) solution developed as part of the [EIA](#) action.⁶¹
- There are synergies between the actions which deal with semantic and technical specification and the [Interoperability Test Bed](#).

External coherence

At the EU level, various programmes, policies and initiatives contribute to the modernisation and digitalisation of public administrations across the EU and support interoperability actions. The evaluation of how the ISA² programme delivered its results during its period of operation needs to consider the **interrelations between the programme and other relevant EU policies rolled out at the same time as ISA²**.

Table 6 shows **the number of links between ISA² actions and other EU programmes, policies and/or initiatives**. By showing an overview of the number of EU programmes, policies and/or initiatives that each of the sampled actions rely on as well as the number of other EU programmes, policies and/or initiatives that use the solutions provided by the sampled actions. Multiple links are observed for the following actions: [Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System, e-TrustEx](#), [Catalogue of Services](#), [SEMIC](#), and [Legal interoperability](#).

Table 6 Number of links between the sampled actions and other EU programmes/policies/initiatives

Actions	Number of other EU programmes / policies / initiatives that the action relies on	Number of other EU programmes / policies / initiatives that use the solution(s) provided by the action
1. Key and generic interoperability enablers		
Trusted Exchange Platform (e-TrustEx)	4	1
Catalogue of Services	3	2
2. Semantic Interoperability		
Public Multilingual Knowledge Management Infrastructure for the DSM (PMKI)	1	1
SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	6	2
3. Access to data/data sharing/open data		

⁶¹ In addition, the first case of EIRA and the Interoperability Test Bed solutions being used for public procurement applications was recorded for the municipality of Valencia, Spain, based on feedback from the action owners.

Actions	Number of other EU programmes / policies / initiatives that the action relies on	Number of other EU programmes / policies / initiatives that use the solution(s) provided by the action
Big Data for Public Administrations	0	2
Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	9	1
Development of an Open Data Service, Support and Training Package in the Area of Linked Open Data, Data Visualisation and Persistent Identification	3	1
4. Geospatial Solutions		
European Location Interoperability Solutions for e-Government (ELISE)	3	4
5. eProcurement/e-invoicing-Supporting instruments		
European Public Procurement Interoperability Initiative	7	0
6. Decision making and legislation-Supporting instruments		
Legal interoperability	3	2
REFIT Platform	0	1
Inter-Institutional Register of Delegated Acts	0	1
7. EU Policies-Supporting instruments		
European Citizens' Initiatives and European Parliament Elections	2	0
8. Supporting instruments for public administrations		
Joinup - European Collaborative Platform and Catalogue	1	0
NIFO	0	1
EIA	3	1
EUSurvey	1	0
Interoperability Maturity Model	0	1
Standard-Based Archival Data Management, Exchange and Publication	0	3
9. Accompanying measures		
Raising Interoperability Awareness - Communication Activities	1	1

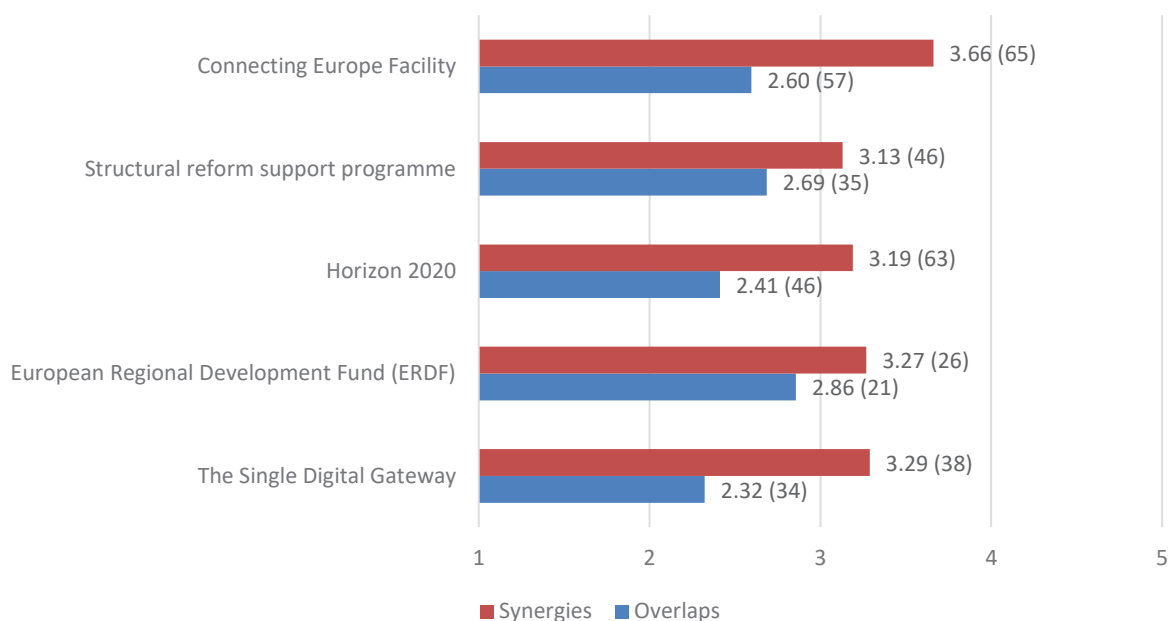
Source: [CEPS final study](#)

Consulted stakeholders noted that ISA² is particularly synergetic with the CEF, the Single Digital Gateway (with synergies existing to some extent or to a great extent), and European Regional Development Funds (ERDF) (see Figure 18). CEF, through its [building blocks](#), and ISA², through the solutions developed, both contributed to enhancing the interoperability landscape in the EU. An ISA² action rolled out in 2018 supported the work towards the SDG, namely the [Interoperability requirements for the SDG implementation](#) action. ISA² continues to contribute to the ongoing work on the semantic modelling of evidence types.

While a great extent of synergies has been identified between ISA² and the ERDF, the consulted stakeholders also pointed out that there are overlaps at least to some extent between the two programs that could create duplications. Although generally expected to be more limited, synergies between ISA² and the Structural Reform Support Programme⁶² arose from the complementarities between the two initiatives.

⁶² The SRSP was active between 2017 and 2020, having been replaced by the Technical Support Instrument (TSI) for the period 2021 to 2027. For further details please see: https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/technical-support-instrument-tsi_en

Figure 18 Extent to which synergies and overlaps between ISA² and other relevant EU programmes exist (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: [CEPS final study](#).

Respondents also pointed to **synergies between ISA² and the INSPIRE Directive** (with the ELISE action promoting the re-use of harmonised geospatial data under the INSPIRE Directive). With regard to recent policy developments, there are **strong synergies between ISA² and both the [European Digital Strategy](#) and the [European Data Strategy](#)**. Interoperability is a key element in effective open data re-use and in the success of the proposed European data spaces.

The ISA² programme also contributed to several actions listed in the [eGovernment Action Plan](#) for the period from 2016 to 2020. In particular, the following ISA² activities are relevant with respect to the specific scope of the eGovernment Action Plan⁶³:

- Through the activities undertaken as part of the [European public procurement interoperability initiative](#) action, ISA² supported the actions #1, #5, and #6 of the eGovernment Action Plan focusing on the development of eProcurement.
- Through its support for the implementation and monitoring of the EIF, the ISA² programme also contributed to actions #4 and #6 of the eGovernment Action Plan calling for support for the take-up of the new EIF.

⁶³ COM (2016) 0179 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, EU eGovernment Action Plan 2016-2020 Accelerating the digital transformation of government, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016DC0179>

- The role played by the “ELISE” action in implementing the INSPIRE Directive also fed into action #19 of the eGovernment Action Plan on the deployment and take-up of the INSPIRE Directive data infrastructure.

In addition, it is important to discuss the role played by standardisation in the field of interoperability. In this context, it is worth assessing the coherence between the [Multi-Stakeholder Platform for ICT standardisation](#) and ISA² to draw lessons for the future. The Platform brings together experts acting as an advisory group for the Commission on matters related to the implementation of ICT standardisation policies. Among their duties, the group members support the Commission in preparing the annual rolling plan for ICT standardisation which serves to outline those key EU policy areas for which ICT standards and specifications are necessary for the successful implementation of the policies. Regarding the work conducted under ISA², the rolling plan puts the emphasis on further developing existing specifications and enhancing their take-up, for instance with regard to the Core Vocabularies and CPSV-AP, turning specifications into internationally accepted standards, such as is the case with the DCAT-AP specifications⁶⁴, and building on the existing work done in the field of e-Procurement solutions⁶⁵ as part of ISA². Stakeholders emphasised the need for

- systematic links between the public sector interoperability work and the EU standardisation to make sure that needs for public sector interoperability are taken into account, to help that future interoperability initiatives fully benefit from the outcome of ongoing standardisation and to promote mature interoperability solutions within the standardisation work.
- Increased awareness in the public sector on the key role of standards in the digital transformation strategy and in fully supporting the twin green and digital transitions, engaging national standards organisations and national trade associations.

Finally, **public sector interoperability is an issue that is brought up in international fora** as well. At the international level, the work of the [OECD on Digital Government](#) lends itself to a comparison with the activities undertaken under ISA² and the EIF.

In particular, the “[Recommendation on Digital Government](#)”, adopted in 2014 and comprising high-level recommendations, and the “[Digital Government Toolkit](#)” are relevant, with the toolkit providing support for the implementation of the high-level recommendations. The OECD approach is similar to the EIF and ISA² in the sense that a strategic framework is established through the high-level recommendations of the OECD, while the EIF serves as the strategic framework for the specific EU approach in the field.

⁶⁴ See the thematic group on “Big Data, Open Data and Public Sector Information” of the 2021 rolling plan on ICT standardisation, available at: <https://joinup.ec.europa.eu/collection/rolling-plan-ict-standardisation/big-data-open-data-and-public-sector-information>.

⁶⁵ See the thematic group on “e-Procurement, Pre- and Post-award” as part of the 2021 rolling plan on ICT standardisation, available at: <https://joinup.ec.europa.eu/collection/rolling-plan-ict-standardisation/e-procurement-pre-and-post-award-0>

To complement the recommendations, the OECD brings in a more practical component through the “Digital Government Toolkit”. In the EU, the practical aspect is represented by ISA². The [OECD recommendations](#) and the work done as part of the EIF and ISA² are mutually reinforcing in their messages, particularly when it comes to:

- ‘Ensuring greater transparency, openness and inclusiveness of government processes and operations’ as part of digital government strategies (Recommendation 1).
- ‘Creating a data-driven culture in the public sector’ as part of digital government strategies, with a strong focus on access and re-use of data (Recommendation 3).
- ‘Ensuring coherent use of digital technologies across policy areas and levels of government’ in developing digital government strategies (Recommendation 6).

Yet the approach taken by the OECD is broader and less granular than what the EIF and ISA² set out to achieve. The toolkit provides an overview of principles, best practices related to the principles, and a self-assessment of the stages of development in digital government. The approach to the toolkit is again not as granular as the tools and solutions provided by ISA² in support of the implementation of the EIF. Overall, while the OECD provides guidance and a set of recommendations to help public authorities design the main directions of their digital government strategies, such an approach does not guarantee a harmonised landscape of digital and interoperable public sectors. The approach taken through ISA² brings added value through more concrete interoperable solutions that support enhanced cross-border interoperability (see Chapter 5.5 for a discussion of the EU added value of the programme).

In conclusion, analysing **the links between sampled actions**, there are **multiple instances of re-use and contributions across ISA² actions**. Several actions play a central role, with their solutions and outputs being widely re-used by other actions. ISA² actions could **to some extent create synergies** with each other and **limited overlaps**. However, the programme’s fragmentation into multiple different actions makes it difficult to fully benefit from all synergies. This finding is reinforced through the analysis of the effectiveness of ISA² (see Chapter 5.2).

Multiple links are observed between **ISA² actions and other relevant EU programmes, policies and initiatives**. Interoperability actions were an enabler for the implementation of different EU policies with high digital impacts. Overlaps remain relatively limited, but they can appear between ISA² and funding instruments for public sector digitalisation. ISA² actions have contributed to the work of the [Multi-Stakeholder Platform for ICT standardisation](#).

Looking at **international initiatives**, ISA² takes an approach that is consistent with the recommendations on Digital Government put forward by the OECD. The ISA² programme went further than international initiatives by providing concrete interoperable solutions to help harmonise interoperability in the public sector.

5.5. EU added value

The EU added value captures the programme's impacts additional to those that would be achieved if the issues addressed by ISA² were left solely in the hands of national and sub-national authorities and the contribution to the advancement of common EU policies.

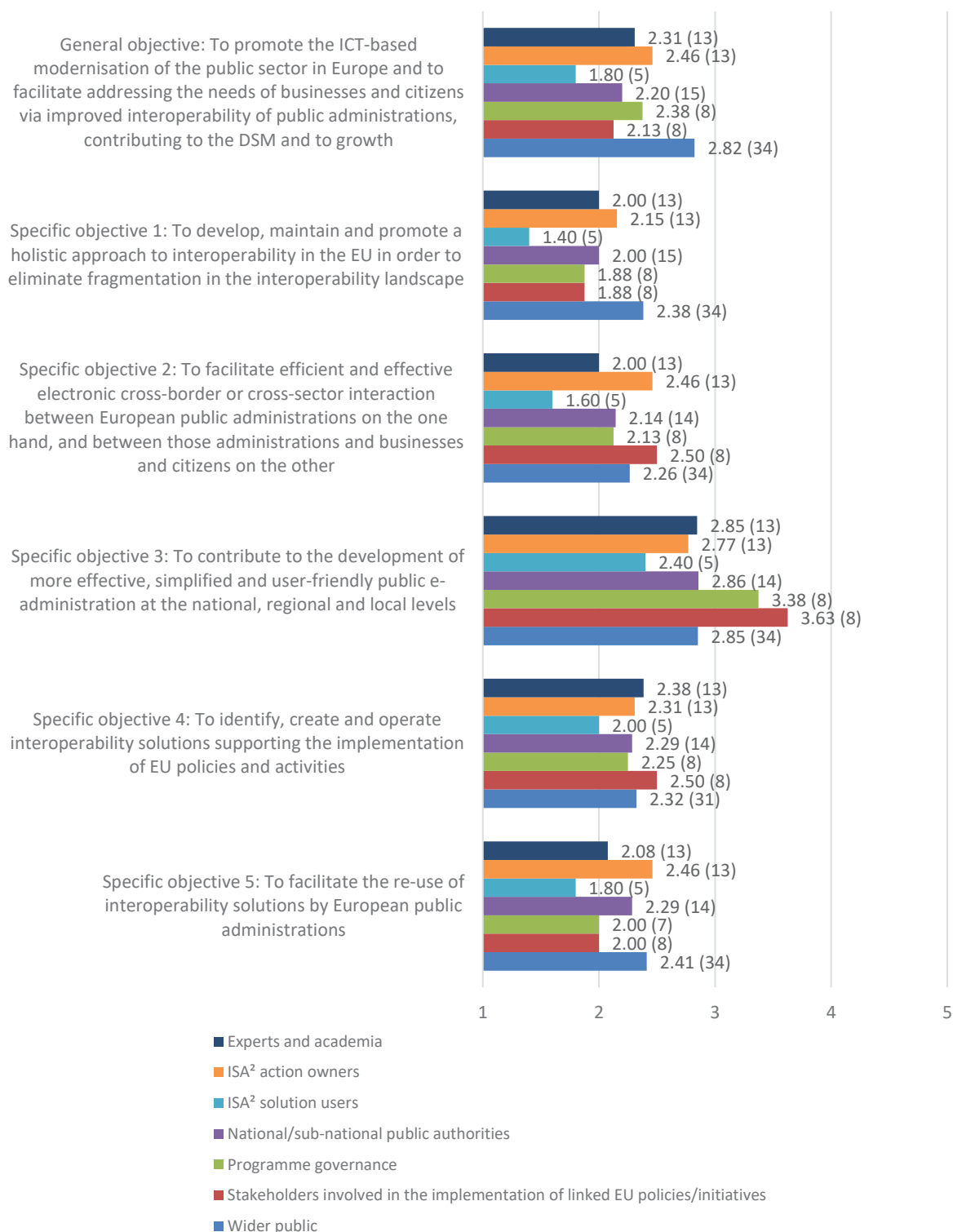
A very tangible proof of the EU added value was the clear call for European interoperability solutions for the public sector with the still on-going COVID crisis. In response to some of the disruptions experienced, and to facilitate cooperation, the exchange of best practices and solution re-use, the ["Digital Response to COVID-19" collection](#) was set up on the Joinup platform as part of the ISA² programme. This collection has brought together a variety of resources including tools and data (such as open-source software, open data, websites, platforms and events) to support public administrations, citizens and businesses in managing the pandemic. There is a key finding from the pandemic experience: ongoing work on **interoperability can help build resilience across the EU** and equip the public sector to respond more effectively to the general needs of citizens, businesses and public administrations, but it can also become a key component in times of an unexpected crisis.⁶⁶

In general, **most respondents confirm that national or sub-national initiatives alone would have brought only limited contributions toward most of the objectives** (see Figure 19). Consulted solution users, national and sub-national public administrations and stakeholders responsible for the programme governance themselves consider that initiatives taken at the Member State level as opposed to the EU level would have only brought limited achievements and thus an **EU-level approach is better suited to address the challenges related to the interoperability** of public administrations and services.

The only exception is “Specific objective 3: To contribute to the development of more effective, simplified and user-friendly public e-administration at the national, regional and local levels”. As the focus in this case is substantially on the different levels of public administration within EU countries, the respondents pointed out that national or sub-national initiatives would be necessary at least to some extent to ensure that the objective is achieved.

⁶⁶ For related literature see Annex 6.a. Further examples for recent projects on the topic: <https://strategy-project.eu/the-importance-of-interoperability-in-crisis-management-a-view-from-standardisation-bodies/> (EU funded); <https://www.rti.org/insights/data-standardization-interoperability-covid-19> (focus on Health records); <https://www.oecd-ilibrary.org/docserver/3f62817d-en.pdf?expires=1629703443&id=id&accname=guest&checksum=DD7163916DD3B0AE5F6CD8989C5DF80E> (highlighting importance of interoperability for AI); <https://www.itu.int/en/ITU-T/webinars/20200727/Pages/default.aspx> (ITU webinar on the topic)

Figure 19 Extent to which national or sub-national interventions would be able to achieve the ISA² objectives in the absence of the programme (breakdown by group of stakeholders; average score and number of respondents)



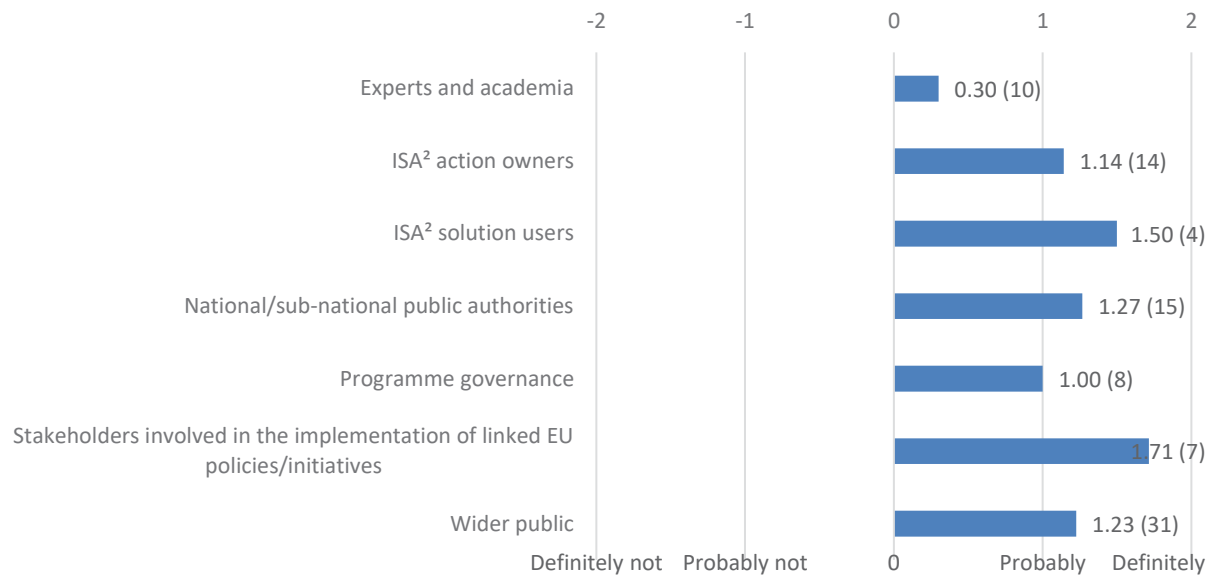
Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.

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

Source: [CEPS final study](#). Total number of respondents: 96 (General objective), 96 (Specific objective 1), 95 (Specific objective 2), 95 (Specific objective 3), 92 (Specific objective 4), 94 (Specific objective 5).

Respondents across all stakeholder groups confirm that **ISA² can probably achieve its objectives at costs that are lower than the costs of national or sub-national interventions** (see Figure 20). In particular, consulted solution users and stakeholders involved in the implementation of linked EU policies/initiatives consider that the costs are almost definitely lower.

Figure 20 Extent to which an EU-level intervention would be able to achieve the objectives of ISA² at a lower cost than comparable national or sub-national interventions (breakdown by group of stakeholders; average score and number of respondents)



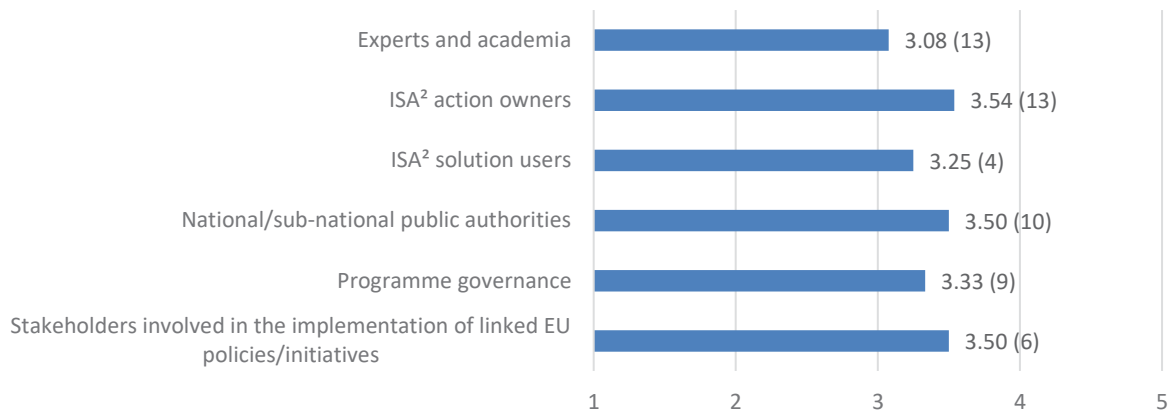
Score: (-2) definitely would not; (-1) probably would not; (1) probably would; (2) definitely would;

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

Source: [CEPS final study](#). Total number of respondents: 89.

The focus of the **ISA² programme is to apply a cross-cutting approach**, aiming to enhance interoperability both across sectors and across borders. The latter aspect is particularly important in understanding to what extent the programme has brought additional EU value by contributing to a more coherent interoperability landscape. In this respect, consulted stakeholders consider that ISA² has contributed to some extent to enhancing cross-border interoperability (see Figure 21). While noting the achievements of the programme, respondents also pointed out two aspects that need to be considered in this analysis. First, the programme is relatively small and is part of a wider landscape of initiatives and policies that are needed to support cross-border interoperability. **Many EU instruments have complemented the programme** (see chapter 3.2). Second, **achievements in terms of cross-border interoperability also depend on their legal basis, the take-up of solutions and this aspect depends on the public administrations involved**. The extent to which the programme can work closely with public administrations and promote public administrations’ take-up of the solutions play an important role.

Figure 21 Extent to which ISA² contributed to enhancing cross-border interoperability in the EU (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).

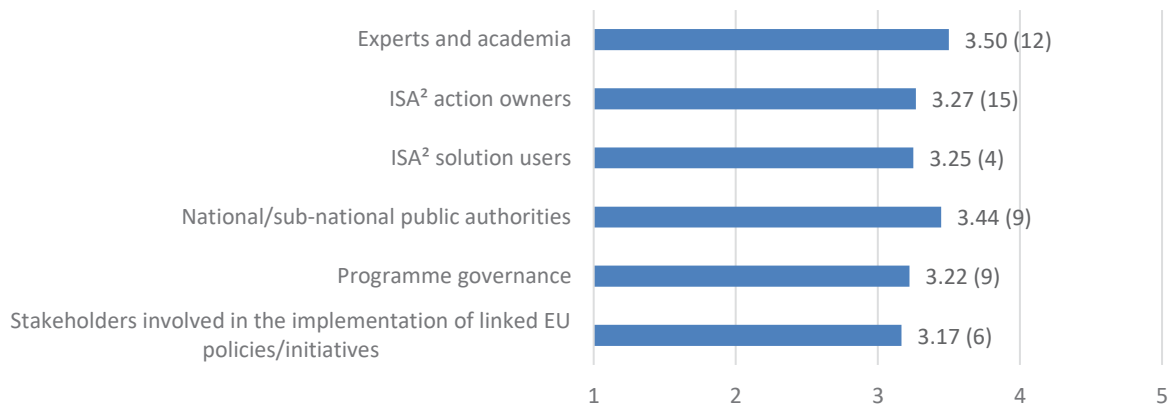
Source: [CEPS final study](#). Total number of respondents: 55.

The performance indicators for the sampled actions and solutions as well as the overview of the take-up of solutions by EU countries provide additional evidence of the cross-border contributions of ISA². There are **instances of re-use of ISA² solutions by public administrations in the EU countries, with some solutions being consistently taken up** (for further details see Annex 6.b).

One of the key ways in which ISA² contributed to cross-border interoperability was the **awareness raising about the importance of interoperability**. Through its communication activities, ISA² reached varied stakeholders in different EU countries. The “Interoperability Academy” complemented these awareness raising efforts by trying to empower stakeholders with more information, help enhance skills and promote the ISA² solutions in order to improve the overall interoperability landscape in the EU (even if it has only been implemented starting with 2019).

Respondents across stakeholder groups generally consider that ISA² contributed to some extent to the advancement of common EU policies (see Figure 22). Importantly, the extent of the contribution depends on the specific EU policies that are considered.

Figure 22 Extent to which ISA² contributed to the advancement of common EU policies (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: [CEPS final study](#). Total number of respondents: 55.

ISA² played a central role in the **implementation of the current EU interoperability policy**. As one of the main implementing instruments of the European Interoperability Framework (EIF) and the Interoperability Action Plan (IAP), ISA² has provided **the operational arm of the strategic framework for public sector interoperability in the EU**. The 2017 Communication on the new EIF defined five focus areas to guide the implementation of the EIF. The IAP annexed to the Communication put forward a list of 22 actions grouped under the five focus areas thus setting strategic priorities until 2020.

The contributions of ISA² actions range from overarching support for monitoring the implementation of the EIF to specific support to certain principles, recommendations, and parts of the IAP. The ISA² governance was also overseeing the implementation of the EIF. Noteworthy examples, highlighting the different types of contributions, include the following:

- At the overarching level, the [NIFO action](#) played a central role. The NIFO action has helped implement the commitment stated in the 2017 EIF Communication to create a framework for monitoring the progress in implementing the EIF⁶⁷. This has led to the development of the [EIF Monitoring Mechanism](#) with the first results available for 2019. The Monitoring Mechanism takes stock of the three main components of the EIF and the accompanying 47 recommendations, basing the analysis on 68 KPIs. Beyond the EIF Monitoring Mechanism, NIFO also monitors the developments made across the EU in terms of digital public administrations and interoperability (through the yearly Digital Public

⁶⁷ COM(2017) 134 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Interoperability Framework - Implementation Strategy, p. 9.

Administration factsheets as well as digital policy reports)⁶⁸ and developed the [EIF Toolbox](#) to support public administrations with the implementation of the EIF.

- When it comes to contributions to specific parts of the EIF, several examples are illustrative of the breadth of topics covered by ISA² actions:
 - The [EIA](#) action helped define the needs and shortcomings related 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.
 - The [Public Multilingual Knowledge Management Infrastructure for the Digital Single Market](#) action aimed to support EU public administrations in creating services that can be accessible and shareable regardless of the language actually used, as well as allowing SMEs to sell goods and service cross-border in a DSM.
 - **Legal Interoperability**: 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. This ISA² action implements:
 - **Action 3 of the IAP**, by raising awareness on the importance of considering interoperability early on in the legislative process and by developing a methodology for legal interoperability screening;
 - **Actions 19 and 20 of the IAP**, by having put forward guidelines for ICT impact assessment as part of the Better Regulation Toolbox (Tool #27) and guidelines for digital-ready policy proposals.
 - [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. 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**).
 - [Interoperability Academy](#): This action was established 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. The Interoperability Academy contributes primarily to **Actions 5, 8, 11 of the IAP**.
- Concerning the **governance of the implementation of the EIF and the IAP**, the ISA² governance played a crucial role. When moving to the Digital Europe Programme with a wider portfolio beyond public sector interoperability, the DEP governance body might not be the right place to **provide an enhanced governance of interoperability in the EU** (see also findings in Chapter 5.1).

Further details on the contribution of sampled actions to the implementation of the EIF can be consulted in Annex 6.k.

⁶⁸ For an overview of the Digital Public Administration factsheets and the reports published as part of the NIFO action please see: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-policy-hub>.

The contribution of ISA² actions to the EIF was taken into account already in the design stage of the actions: the template used for submitting new or updated proposals for ISA² actions for the yearly selection included the requirement to explain how the proposed action would contribute to the implementation of the EIF and the IAP⁶⁹.

Beyond the EIF, the contribution of ISA² to wider policies such as the **Digital Single Market Strategy (DSM)**⁷⁰ is deemed more limited, due to the fact that ISA² is only one of the instruments that are meant to contribute to such overarching policies. The programme's actions have contributed to specific areas of the DSM Strategy from the perspective of interoperability as a key enabler of digitalisation. Importantly, a key action listed in the 2015 Communication on the DSM Strategy under the ambition of “Boosting competitiveness through interoperability and standardisation”, namely the revision of the EIF, was achieved under ISA² in 2017, with subsequent monitoring of the implementation of the revised Framework having been ensured through the programme as well. Further details on how specifically ISA² has contributed to the EIF and the DSM can be consulted in Annex 6.h.

In conclusion, ISA² provided **clear EU added value**. National or sub-national initiatives alone would have made only limited contributions towards most of the objectives. In addition, **ISA² was able to achieve these objectives at a lower cost** than comparable national or sub-national initiatives. These conclusions hold true across the different stakeholder groups and are further corroborated by expert assessment. **Instances of re-use of ISA² solutions by public administrations in the EU countries contribute to enhancing cross-border interoperability**. However, the extent of take-up remains an issue.

ISA² actions contributed to different areas of EIF implementation, by already considering this option in their design stage. They also contributed by providing overarching support for monitoring the implementation of the EIF. The governance of the EIF implementation was ensured until the end of the programme through the ISA² governance.

5.6. Utility

Article 13(4) of the ISA² decision requires an assessment of the programme's **utility**. Utility refers to (i) the extent to which the results of ISA² meet stakeholders' needs; and (ii) the level of stakeholder satisfaction with ISA² solutions.

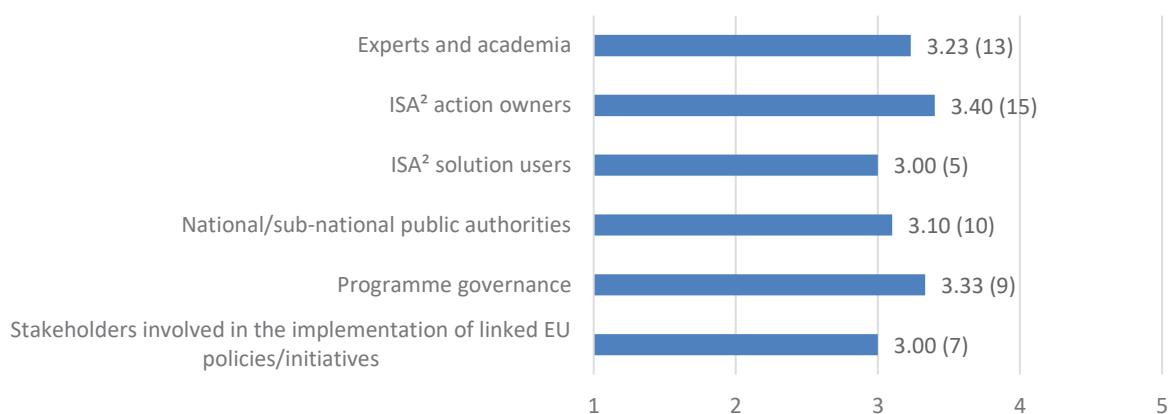
The assessment of the way in which the ISA² solutions respond to the needs and problems of stakeholders complements the analysis of the programme's relevance (see Chapter 5.1) and introduces the additional dimension of the utility of ISA² and its

⁶⁹ See, for instance, the 2020 Rolling Work Programme: https://ec.europa.eu/isa2/library/isa%C2%B2-work-programme_en.

⁷⁰ 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.

outputs. Stakeholders generally consider that the **ISA² solutions have contributed to some extent to addressing the main needs and problems** identified at the time the programme was implemented (see Figure 23)⁷¹. In terms of consulted stakeholder groups, ISA² action owners and programme governance respondents consider that ISA² solutions have made a relatively higher contribution to addressing the needs and problems of stakeholders (with average scores of 3.4 and 3.3, respectively, out of 5) compared to consulted solution users and stakeholders involved in the implementation of linked EU policies and/or initiatives and solution users (with average scores of 3 out of 5). The differences between groups are, however, relatively small.

Figure 23 Extent to which ISA² solutions contributed to addressing the needs and problems originally addressed by the programme (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: [CEPS final study](#). Total number of respondents: 59.

The level of stakeholder satisfaction has been requested for different ISA² actions in different occasions.⁷² However, there is little data on an overall stakeholder satisfaction. As part of the continual monitoring of the ISA² programme, a survey was conducted on the perceived quality and perceived utility of selected ISA² actions, with feedback being received for three selected actions⁷³. The survey ran between December 2020 and February 2021 and targeted the users of solutions developed as part of the three actions.

⁷¹ The needs and problems are:

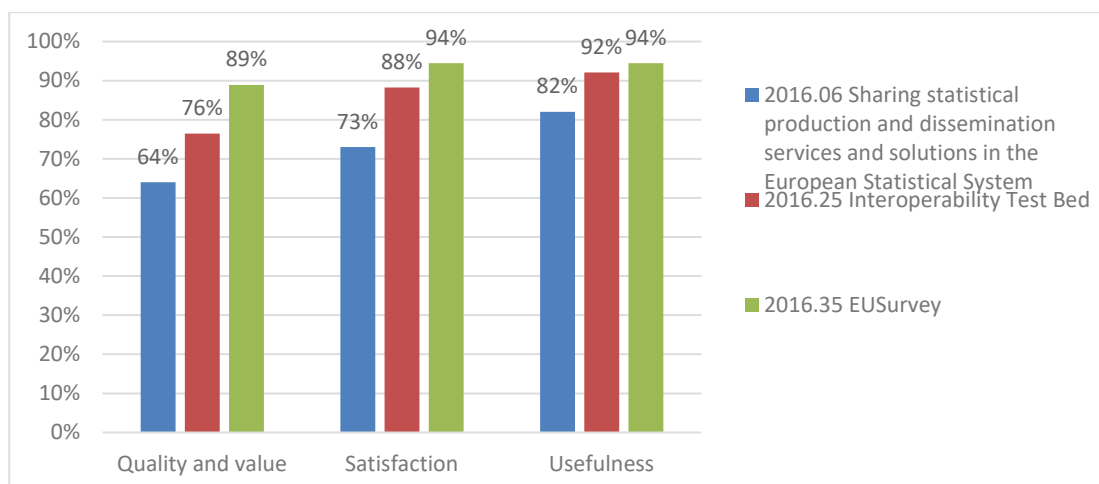
- The need for cooperation among public administrations with the aim to enable more efficient and secure public services;
- The need for exchanging information among public administrations to fulfil legal requirements or political commitments;
- The need for sharing and reusing information among public administrations to increase administrative efficiency and cut red tape for citizens and businesses; and
- The problem of administrative e-barriers leading to a fragmented market.

⁷² For example, conferences and other events organised in the framework of the ISA² programme.

⁷³ Action 2016.06 “Sharing statistical production and dissemination services and solutions in the European Statistical System”; Action 2016.25 “Interoperability Test Bed”; Action 2016.35 “EU Survey

Similar to the evaluation process, the number of answers recorded was relatively small (see Figure 24).

Figure 24 Overview of the feedback to the perceived quality and utility survey (share of respondents indicating positive feedback)



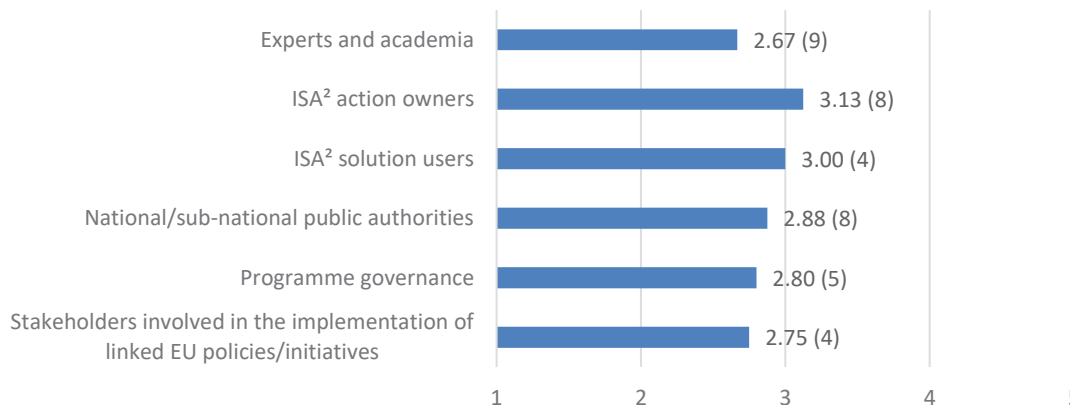
Note: The results are based on the feedback from 11 stakeholders for action 2016.06, 17 stakeholders for action 2016.25 and 18 stakeholders for action 2016.35. The percentage reflects the share of stakeholders indicating positive and very positive feedback to the survey questions.

Source: [CEPS final study](#).

The majority of consulted users rate positively the quality of the solutions developed as part of the three actions. They find the solutions useful in their work and are generally satisfied with the solutions. In the case of EU Survey, these results are almost unanimous. **The fact that EU Survey is a mature solution which is used widely is reflected in these scores.** Within the European Commission, [EU Survey](#) has supported different units to conduct large consultations. The relatively lower perception of quality and satisfaction for the solution “Sharing statistical production and dissemination services and solutions in the European Statistical System” is because the action’s outputs are still at the development stage and more needs to be done to achieve more results and increase user satisfaction. This comparison of actions reconfirms one of the findings from Chapter 5.2 effectiveness of the ISA² programme: bringing solutions to maturity is essential for providing more benefits and results, translating into a more satisfied user base.

As mentioned in Chapter 5.1, as part of the analysis of the relevance criterion, stakeholders responding to the targeted consultations indicated a series of **additional needs and problems in the field of interoperability in the public sector**. In the view of stakeholders ISA² was less prepared to contribute to these additional needs and problems (see Figure 25).

Figure 25 Extent to which ISA² solutions contributed to addressing and additional needs and problems identified by consulted stakeholders (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: [CEPS final study](#). Total number of respondents: 38.

The programme in general has worked towards enhancing coordination, having set up a network of Chief Information Officers (CIOs) from the EU countries. However, several respondents (in particular four stakeholders out of the 10 interviewed for this evaluation) recognised that the **challenges in the field are quite broad and ISA² and its solutions are only one part of the panorama of relevant measures**. This finding becomes even more important when facing the new or accentuated challenges such as those deriving from the COVID-19 pandemic. Several recommendations for improving satisfaction with the solutions were made by respondents from all stakeholder groups:

- **Working more closely with the EU countries.**
- **Better engaging users and cooperation with civil society organisations**
- **Financial instruments and additional technical support:** for example, future initiatives could provide funding-based incentives if public administrations contribute to or participate in initiatives to advance interoperability in the EU’s public sector⁷⁴.
- **Agile process:** to better respond to user needs, an agile approach to developing solutions could be adopted, allowing more flexibility for changes to be made. This approach should be complemented with the concept of “sandboxing” by setting up some facilities to test solutions and gather better feedback.
- **Promotion and communication.**

⁷⁴ Examples from literature further substantiate this point. See for instance: Leyden (2017), “Innovation in the public sector”, and Heichlinger, Bosse (2017), “Promoting Public Sector Innovation: Trends, Evidence and Practices from the EPSA”, in: Innovation in the Public Sector. Country experiences and Policy Recommendations, UNECE, Available at: https://unece.org/DAM/ceci/publications/Innovation_in_the_Public_Sector/Public_Sector_Innovation_for_web.pdf

- **Focused efforts:** importantly, to increase user satisfaction, the efforts should be concentrated on critical priorities, devoting the time to fewer, but more mature tools.
- Explicit **promotion of open standards and Free Software.**

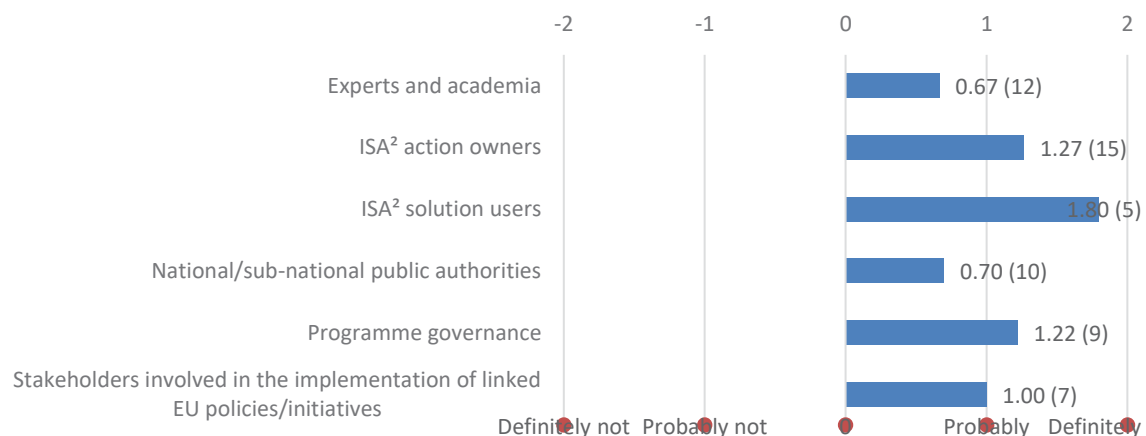
In conclusion, according to consulted stakeholders, solutions developed or maintained by ISA² have **contributed to addressing the original needs** identified in the field of interoperability. Mature solutions and those that show potential should be continued as part of the Digital Europe Programme.

The feedback received from respondents in terms of **user satisfaction** tends to be **positive**. Nevertheless, both primary and secondary data show that additional measures could increase the programme’s utility.

5.7. Sustainability

Sustainability is the last evaluation criterion to be assessed as part of the final evaluation according to Article 13 of the ISA² decision. Sustainability measures the likelihood that the results of the ISA² programme last beyond its completion. The **sustainability of the programme’s results depends significantly on the type of outputs**, given the diversity of actions and solutions of the ISA² programme which range from guidelines to software applications to services. **Consulted stakeholders generally have a positive view of the sustainability of ISA² solutions**, which are seen as likely to continue to deliver results even after the programme ends (see Figure 26). Importantly, solution users consider that this will almost definitely be the case. Solutions which have become central to their needs will continue to be sought after by solution users.

Figure 26 Likelihood that results achieved so far would last if funding for actions covered by the programme would not be available in the future (breakdown by group of stakeholders; average score and number of respondents)



Score: (-2) definitely would not; (-1) probably would not; (1) probably would; (2) definitely would;

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

Source: [CEPS final study](#). Total number of respondents: 58.

If no additional funds will be available, the current assets will continue to be used, e.g.: the validation and conformity testing of datasets under INSPIRE. Widely used solutions such as Joinup and EU Survey will continue to operate, but maintenance costs would still

need to be covered. For less mature solutions there will be a need for further investment, as part of, for instance, the Digital Europe Programme.

Further evidence from desk research shows the nuances of sustainability, depending on the extent to which solutions would require further maintenance and updating to continue delivering results. Solutions may require lower or higher levels of maintenance and updating depending on their type: solutions in the form of guidelines and specifications can remain as a reference point and may require updating to keep up with developments in the field, but **software solutions will likely require more frequent maintenance and support to remain accessible and useful**. While maintenance is generally considered to be necessary for software tools, one can also distinguish between **consistent upgrades to keep up with technological developments** and more **regular maintenance work to ensure that the tool continues to cater to users' needs**. A breakdown by the sampled solutions is available in Annex 6.1.

ISA² also plays an important role in promoting interoperability solutions and creating a space for discussions on the topic. Without promotion and awareness-raising, developed solutions run the risk of becoming “invisible” to potential users, thus the maintenance of mature solutions and the further development of less mature solutions should also account for the need to promote visibility.

Overall, **what has been achieved so far should be nurtured further**. At least a selection of key solutions in the development stage could continue to be developed and improved up to the maturity stage, in line with key findings noted in Chapters 5.2 and 5.6 on the programme's effectiveness and utility.

The option of cost recovery looks into the possibility of charging solution users some or all of the efficient costs of an interoperability solution. To answer the question different types of costs related to interoperability solutions have to be distinguished:

1. Costs for the creation, development and maintenance of software code.
2. Costs for the creation development and maintenance of open specifications.
3. Costs for the management and operation of the service (once software is installed).
4. Costs for adaptation and deployment of an interoperability solution in a given context.

For cost types 1 and 2 charging for the re-use of software code or specifications conflicts with the ISA² paradigm of openness and reuse. When it comes to managed services (category 3), the ISA² programme was designed to maintain and operate existing interoperability services on an interim basis; mature solutions were to be operated and financed by EU countries' public administrations or other means (Article 11 Decision (EU) 2015/2240). It seems questionable that developing a cost recovery model makes

sense if the service is only provided on an interim basis. The interim evaluation of the ISA² programme⁷⁵, **brought up other issues**:

- Public procurement rules may need to be applied by public authorities in the EU if access to ISA² solutions were to be conditional on a fee, opening the competition to solutions from other providers as well.
- For some solutions, other legal obstacles might prevent the introduction of such a fee if the solutions are designed to, for instance, enhance the transparency of the policymaking process or a mandatory to use for basic government functions.

When it comes to the fourth category of costs for adaptation and deployment of open interoperability solutions, there are different examples of sharing such costs (e.g.: for the implementation of CEF building blocks). It could be interesting to explore further ways of providing co-funding (e.g.: through grants) to share the costs for interoperability solution.

Stakeholders suggested to consider fostering the further development of some of its solutions in **open-source communities** or encouraging companies to build services around free ISA² solutions under the European Union Public Licence (EURL)⁷⁶ or another suitable open-source licence.

In conclusion, overall, consulted stakeholders tend to have a **positive view of the sustainability of results** achieved so far. However, while the programme's global results are expected to last (as the progress made in the field of interoperability will not be lost), certain issues may arise when considering the specificities of different solutions and future steps towards improved interoperability.

For cost recovery, different types of costs have to be carefully distinguished. Charging costs for the software code is not coherent with the programme's overall paradigm and the ongoing developments in the field.⁷⁷ Other ways for ensuring sustainability while keeping costs low (e.g.: the possibility of co-financing service costs through grants) are coherent with the EIF.

⁷⁵ CEPS (2019), Evaluation study supporting the interim evaluation of the programme on interoperability solutions for European public administrations, businesses and citizens (ISA²), European Commission pp. 92-93. DOI: 10.2799/13397

⁷⁶ See: <https://eupl.eu/>.

⁷⁷ See e.g. recently published study on the impact of open source software (OSS) and open source hardware (OSH) on the European economy conducted by Fraunhofer ISI and OpenForum Europe (<https://digital-strategy.ec.europa.eu/en/library/study-about-impact-open-source-software-and-hardware-technological-independence-competitiveness-and>).

6. CONCLUSIONS

ISA² has consistently brought benefits across multiple areas, contributing to developing and supporting digital solutions, frameworks and specifications to enhance the interoperability of public services in the EU. While the **generally positive** evaluation corroborates some of the conclusions of the interim evaluation exercise, there are **areas where there is clearly room for improvement in the development of new measures** to support the digitalisation and interoperability of the EU's public sector at all levels. This chapter summarises the evaluation's main findings, emphasising the elements that worked well, those that could be improved on, whether further measures might be necessary in the future, and the overall lessons learnt.

6.1. Successful elements of the intervention

The roll-out of the ISA² programme was successful on several counts:

1. Its objectives remained highly relevant.
2. The actions and solutions developed partly achieved the programme's objectives.
3. The implementation of the programme was relatively efficient and fit for purpose.
4. While managing a complex framework of multiple actions across different fields, the programme generally retained its coherence.
5. The programme, as an EU-level intervention, brought clear added value compared to national initiatives alone.

The evaluation showed that the programme's relevance increased over time (Chapter 5.1). The COVID-19 crisis increased the need for interoperable solutions for public administrations, resulting also in the reuse of some ISA² solutions.

The evaluation confirmed that ISA² was **relatively effective in achieving several objectives**: supporting the implementation of EU policies, facilitating the re-use of interoperability solutions and contributing to the promotion of a holistic approach to interoperability in the EU (Chapter 5.2). The programme responded to the need of public administrations for common interoperable tools and the solutions it provided helped them alleviate budgetary constraints to a certain extent. ISA² actions have contributed directly to the implementation of the [EIF](#), the [SDG](#), [e-procurement](#), the [Inspire Directive](#), the [ESS](#), [financial legislative acts](#), [e-Justice](#), to name but few. In the broader EU policy framework context, ISA² was found to be particularly synergetic with other EU programmes and initiatives in the field of public sector digitalisation and modernisation (Chapter 5.4). These include the CEF and ERDF programmes.

The **implementation of the programme** was considered efficient (Chapter 5.3). The work across ISA² packages progressed as expected, with final work undertaken in 2021 to bring the activities of the programme to an end and facilitate the transition to the Digital Europe Programme. The benefits of ISA² were also estimated to be greater than the costs for the ultimate beneficiaries of the solutions developed, with the caveat that the diversity of ISA² actions and outputs makes it difficult to carry out a full-scale analysis and comparison of the cost-effectiveness of actions. An analysis of packages with

comparable indicators for the sampled actions shows that the costs of implementing and maintaining the actions and their solutions are low relative to the broad base of end-users (i.e., citizens and businesses).

The **process of selecting actions** to be included in the rolling work programme was **relatively fit for purpose**. First, the costs of preparing and submitting proposals as part of the selection process were very low relative to the average budget for an ISA² action. Considering the preparation of a new proposal at the beginning of the programme and its update for every yearly iteration of the rolling work Programme, the administrative costs of preparing and updating the proposal over 5 years amounted to only 0.5% of the total average budget allocated to accepted proposals. Second, EU countries could also submit proposals for actions, but in practice only a limited number of them did so.

Building on the selection process of actions and the overall governance of the programme, the evaluation confirmed partial **synergies between the programme's actions**, noting that overlaps remained limited (Chapter 5.4). The evaluation also confirmed the **added value** of an EU interoperability intervention interoperability (Chapter 5.5). National or sub-national initiatives alone would have made only limited contributions towards achieving most ISA² objectives. In fact, almost by definition the objectives require an EU approach. The programme also probably achieved its objectives at costs that were lower than the costs of national or sub-national interventions. The EU added value of the programme lies in the support it provides for cross-border interoperability. Re-use of ISA² solutions by national or local public administrations contributes to enhancing cross-border interoperability.

From the perspective of **international initiatives**, the ISA² approach is consistent with recommendations on digital government put forward by the OECD (Chapter 5.4). Given the practicality of the programme's approach, its clear added value lies in the interoperable solutions it helped to develop, which in turn help harmonising interoperability in the public sector.

6.2. Less successful elements of the intervention

ISA² achieved much in various areas. Nonetheless, there is room for **improvements**.

The ISA² programme was not designed to establish structured and proactive **collaboration** and the exchange of best practices between countries. Furthermore, the evaluation showed insufficiencies in the current EU **interoperability governance**. While ISA² solutions are re-used throughout the EU, more could be done to enhance the **take-up of solutions**, especially at regionally and locally (Chapter 5.2). In this respect, there are two main areas with room for improvement, namely focusing on bringing solutions to maturity and ensuring dissemination.

More action is needed to remove **barriers** in EU or national legislation to cross-border and cross-sectoral data flows. A growing number of EU initiatives have a significant impact on the ICT infrastructure (Chapter 3.2) which makes the problem even more relevant in the future. EU countries have called for action on this including the exchange

of best practice in the [Berlin Declaration](#). The Danish approach to foster digital-ready legislation has been very successful⁷⁸. Another unexplored avenue is building closer strategic cooperation with EU and international **standardisation work**.

The evaluation also emphasised that, given the range of ISA² actions and solutions, it was difficult to do a full-scale analysis and comparison of their cost-effectiveness (Chapter 5.3). While generally internally coherent, ISA² was also quite complex. The numerous actions it supported created fragmentation, leaving some synergies incompletely explored. The evaluation showed that external coherence could be developed by creating more systematic links with related EU policies and aligning funding instruments in the area of digitalising public services to ensure they provide coherent and interoperable results (Chapter 5.4). In terms of utility (Chapter 5.6), ISA² solutions partly addressed the main needs of stakeholders, but more could be done to increase the utility of solutions. A key takeaway here is the need to **focus on a smaller set** of solutions and bring them to maturity.

Finally, some of the achievements could be enhanced even further: a good feature of the selection process of actions was that EU countries could submit proposals. However, only few proposals were submitted.

6.3. Will issues be resolved over time or do they need to be addressed with specific measures?

The findings of the evaluation on the sustainability of solutions and the programme's overall relevance need to be considered in order to understand how the issues identified are likely to evolve over time.

The **sustainability of the programme's results depends significantly on the types of solutions**, given the range of actions and solutions, from guidelines to software applications (Chapter 5.7). However, stakeholders agree that the issues the programme addressed will not be resolved over time. On the contrary, benefits risk to be lost, if no further actions were taken.

The **COVID-19 pandemic** has highlighted the **relevance of the programme, and of interoperability more generally** (Chapter 5.1). The pandemic has made existing needs even more pressing, including the need for coordination when implementing digital solutions. It has also given rise to specific interoperability challenges, such as the need for interoperability in developing digital solutions to manage the effects of the pandemic. What is evident is that the operational achievements of ISA² need to be complemented with more consistent interoperability governance in the EU.

⁷⁸ Danish Agency for Digitalisation (2021: Evaluation of the effort to make legislation digital-ready (<https://joinup.ec.europa.eu/collection/better-legislation-smoother-implementation/news/digital-ready-legislation-denmark>)).

6.4. Lessons learnt

The lessons learnt from ISA² relate to three key areas:

1. The importance of interoperability for the implementation of EU policies.

ISA² actions have successfully contributed to a wide range of EU policies. A growing number of policies⁷⁹ have significant impact on the digital infrastructure of the EU public sector. The impact goes beyond EU countries level. Regional and local public administrations are in many countries at least co-responsible for providing digital public services. They stand to benefit from **relevant EU policies accompanied by implementation solutions that are interoperable by default.**

2. The need to develop a strategic approach to EU public sector interoperability.

The European Commission and the EU countries have issued far-reaching commitments on interoperability – the latest being the 2030 Digital Compass: the European way for the Digital Decade⁸⁰, that emphasises the need to “**ensure interoperability** across all levels of government and public services”. With the Berlin declaration EU countries highlighted the importance of interoperability for digital sovereignty, identifying it as a pre-requisite for a value-based digitalisation. In the future a thorough assessment is needed on how to deliver on these upcoming commitments and needs.

3. The need to build on the achievements of ISA² to further enhance the development and take-up of mature and user-friendly interoperability solutions.

The COVID-19 crisis showed that the EU is increasingly being asked to supply interoperable solutions that countries can re-use or create links to. ISA² solutions have created value that needs to be tapped upon in the future ensuring sustainability of the achievements.

⁷⁹ The following relevant were presented in 2021: the Regulation on the Digital Green Certificate, a framework for a European digital identity, the [Data Governance Act](#) and a Regulation laying down harmonized AI.

⁸⁰ COM/2021/18 final Communication from the Commission To The European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions “2030 Digital Compass: the European way for the Digital Decade.



Brussels, 17.12.2021
SWD(2021) 965 final

PART 2/2

COMMISSION STAFF WORKING DOCUMENT

Final evaluation of the ISA² programme

Accompanying the document

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

Results of the final evaluation of the ISA² programme

{COM(2021) 965}

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Glossary

<i>Term or acronym</i>	<i>Meaning or definition</i>
ADMS	Asset description metadata schema
AI	Artificial intelligence
CEF	Connecting Europe Facility
CEPS	Centre for European Policy Studies
CPSV-AP	Core public service vocabulary application profile
DCAT-AP	Data catalogue vocabulary application profile for data portals in Europe
DG	Directorate-General
DG DIGIT	Directorate-General for Informatics
DIGIT.D2	Directorate-General for Informatics, Directorate D Digital Services, Unit D2 Interoperability
DSM	Digital single market
EC	European Commission
EEA	European Economic Area
EIA	European interoperability architecture
EIC/EICart	European interoperability cartography
eIDAS	Electronic identification and trust services
EIF	European interoperability framework
EIRA	European interoperability reference architecture
EIS	European interoperability strategy
ELISE	European location interoperability solutions for e-government
EQ	Evaluation question
ERDF	European Regional Development Fund
ESPD	European Single Procurement Document
EU	European Union

EVM	Earned value management
GDPR	General Data Protection Regulation
Horizon 2020	EU funding programme for research and innovation
IAP	Interoperability action plan (Annex I to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: European Interoperability Framework — Implementation Strategy. Interoperability action plan, Brussels, 23.3.2017, COM(2017) 134 final)
ICT	Information and communication technology
IDA	Programme on interchange of data between administrations
IDABC	Programme on interoperable delivery of pan-European eGovernment services to public administrations, businesses and citizens
IMAPS	Interoperability maturity assessment of a public service
Interoperability	As explained in Article 2(1) of the ISA² Decision , ‘interoperability’ means the ability of diverse organisations to interact towards mutually beneficial and agreed common goals. It involves the sharing of information and knowledge between the organisations, through their business processes and by means of the exchange of data between their respective ICT systems.
ISA	Programme on interoperability solutions for European public administrations
ISA ²	Programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens
ISA ² actions webpage	https://ec.europa.eu/isa2/actions_en
ISA ² dashboard	https://ec.europa.eu/isa2/dashboard/
ISA ² decision	L 318/1 Decision (EU) 2015/2240 of the European Parliament and of the Council of 25 November 2015 establishing a programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens (ISA ² programme) as a means for modernising the public sector, Brussels 4.12.2015.

ISA ² proposal	European Commission (2014), Proposal for a Decision of the European Parliament and of the Council establishing a programme on interoperability solutions for European public administrations, businesses and citizens (ISA ²) – Interoperability as a means for modernising the public sector, COM(2014) 357 final.
ISA ² solutions webpage	https://ec.europa.eu/isa2/solutions_en
ISA ² website	https://ec.europa.eu/isa2/isa2_en
ISSG	Inter-Service Steering Group
IT	Information technology
Joinup	Collaborative platform facilitating the sharing and reuse of IT solutions developed for public administrations
NGOs	Non-governmental organisations
NIFs	National interoperability frameworks
NIFO	National interoperability framework observatory
OECD	Organisation for Economic Cooperation and Development
PMKI	Public multilingual knowledge management infrastructure for the digital single market
REFIT	The European Commission's regulatory fitness and performance programme
RegDel	Inter-institutional Register of Delegated Acts
SDG	Single digital gateway
SCM	Standard cost model
SEMIC	The ISA ² programme action that promotes semantic interoperability among EU countries
SPI	Schedule performance index
SRSP	Structural reform support programme
sTESTA	Secure trans-European services for telematics between administrations
TSI	Technical support instrument

Annex 1: Procedural information

1. LEAD DG, DECIDE PLANNING/CWP REFERENCES

DG Informatics (DIGIT), PLAN/2020/7027.

2. ORGANISATION AND TIMING

Following the invitation by the Director-General of DIGIT in July 2020, the first Interservice Steering Group (ISSG) meeting took place on 15 September 2020. Altogether the ISSG met seven times with participants from DG CNECT, DEFIS, DIGIT, ECFIN, EMPL, ENER, ENV, ESTAT, FISMA, GROW, the JRC, JUST, MOVE, NEAR, OP, REFORM, REGIO, RTD, SANTE, SG and TAXUD. The ISSG convened for the last time on 14 September 2021, marking the end of the below evaluation activities:

Period	Activity
June 2020 – October 2020	Onboarding of the external consultants
November 2020 – June 2021:	Running the evaluation process:
o November 2020 – April 2021	o Data collection
o March 2021 – June 2021	o Data analysis and synthesis
July 2021 – September 2021	Preparation of the Commission report for interservice consultation and adoption

To the general public, the Commission announced the final evaluation in an [evaluation and fitness check roadmap](#) on 16 October 2020.

3. EXCEPTIONS TO THE BETTER REGULATION GUIDELINES

Not applicable

4. CONSULTATION OF THE RSB (IF APPLICABLE)

Not applicable

5. EVIDENCE, SOURCES AND QUALITY

Evidence & sources

Data have been drawn from two main sources:

1) **Primary data** were collected through the below consultation activities:

Consultation activity	Timeframe
Online kick-off workshop: “How interoperability can achieve seamless data flows and services for the EU’s public sector”. The workshop aimed at raising awareness about the Evaluation of ISA ² , the Evaluation of the EIF and the Impact Assessment of for a Future Interoperability Strategy for the EU’s public sector and engaging stakeholders in the process.	3 December 2020
Targeted online survey: A targeted online survey was administered via EUSurvey and was conducted jointly with two other online surveys dedicated to the evaluation of the EIF and the impact assessment of a future interoperability policy for the EU’s public sector.	19 January 2021 – 7 March 2021 (the surveys remained open after the initial deadline set on 15 February 2021 to accommodate some last-minute requests from stakeholders)
In-depth interviews: Interviews were conducted with selected key stakeholders to collect detailed data and information contributing to the evaluation of ISA ² . The interviews were complemented by expert assessments conducted by the five independent experts who were tasked with completing the questionnaire that served as the basis for the in-depth interviews.	1 February 2021 – 8 March 2021
Public consultation: This activity covered the impact assessment for a future interoperability strategy for the EU’s public sector, with the option for stakeholders to contribute to the evaluations of the EIF and ISA ² as well. The questionnaire dedicated to the ISA ² evaluation was available in English, German, and French, as was the case for the entire public consultation.	1 February 2021 – 26 April 2021 (12 weeks)
Validation workshop: “What are the key achievements and lessons from ISA ² for the future of interoperability in the EU’s public sector?”. This workshop was organised as part of the DigitALL Public Conference marking the end of the ISA ² programme and CEF. The aim of the workshop was to discuss and validate the preliminary findings of the final evaluation of the ISA ² programme, collect further information and additional feedback on the different aspects of the programme, and engage stakeholders in the public consultation.	22 April 2021

2) **Secondary data** were gathered by reviewing:

The annual rolling work programmes of ISA ²
The ISA ² dashboard
The Europa webpages on ISA ² actions and solutions (including the Joinup platform)
Monitoring and evaluation reports prepared as part of the regular monitoring of the programme
Reports on the perceived quality and utility of selected actions and solutions – published in 2021
Overview of communication activities of events organised by ISA ² and events in which ISA ² was represented

Lists of participants in ISA ² Committee meetings and in ISA ² Coordination Group meetings
Studies, reports, presentations, workshop summaries and brochures related to the ISA ² actions and solutions
Relevant policy documents and literature

Quality

To support the ISA² final evaluation, in September 2020 the Commission tasked the Centre for European Policy Studies (CEPS) with delivering an independent evaluation study by June 2021. The ISSG members closely monitored the work of CEPS. They discussed the consultant's various deliverables at the ISSG meetings and also commented on the documents in writing. The ISSG accepted CEPS [final evaluation study](#) after the 6th meeting of the ISSG on 25 June 2021. This final 'sign off' by the ISSG also built on the quality assessment results, which concluded that the external contractor's study and work met the required quality standards.

Annex 2: Synopsis report of the consultation activities

Introduction

Interoperability is a key enabler of any digital transformation, as it allows organisations to interact and achieve mutually beneficial goals. Between 2016 and 2020, the ISA² programme (Interoperability Solutions for European Public Administrations, Businesses and Citizens) – through its actions – supported the development of digital solutions that enable public administrations, businesses and citizens in Europe to benefit from interoperable cross-border and cross-sector public services.

During the final evaluation of the ISA² programme, and in line with the consultation strategy, consultation activities were carried out to collect information, views and opinions from the relevant stakeholders on the programme’s performance by considering seven evaluation criteria:

- **Relevance** – the alignment between the programme’s objectives and the current needs and problems experienced by stakeholders;
- **Effectiveness** – the extent to which the programme has achieved its objectives;
- **Efficiency** – the extent to which the programme’s objectives are achieved at a minimum cost;
- **Coherence** – the alignment between the programme and comparable EU initiatives as well as the overall EU policy framework;
- **EU added value** - the additional impacts generated by the programme, as opposed to leaving the subject matter in the hands of EU countries;
- **Utility** – the extent to which the programme meets stakeholders’ needs; and
- **Sustainability** – the likelihood that the programme’s results will last beyond its completion.

Types of consultation activities conducted

To collect the necessary primary information and data from the relevant stakeholders to feed into the ISA² evaluation, the following **consultation activities**¹ were performed:

- The **online kick-off workshop** “How interoperability can achieve seamless data flows and services for the EU’s public sector”, conducted on 3 December 2020 and aimed at raising awareness about the ISA² evaluation and engaging stakeholders in the process.

¹ The evaluation process of the ISA² programme ran simultaneously with the evaluation of the European Interoperability Framework and the impact assessment of a future interoperability policy for the EU’s public sector. Given the important synergies between the two evaluations and the impact assessment, a joint consultation strategy for the targeted and public consultations was proposed in order to ensure coordination and the best allocation of resources for collecting primary data from the stakeholders.

- An **online survey** (19 January – 7 March 2021²), targeting specific stakeholder groups.
- **In-depth interviews** (1 February – 8 March 2021) with 9 selected stakeholders to collect detailed data and information from key stakeholders contributing to the evaluation. Expert assessments complemented the interviews conducted by the five independent experts who were tasked with completing the questionnaire that served as the basis for the in-depth interviews.
- A 12-week long **public consultation** (1 February – 26 April 2021), which was available in English, German, and French.
- The **validation workshop** “What are the key achievements and lessons from ISA² for the future of interoperability in the EU’s public sector?”, held on 22 April 2021, allowed to discuss and validate the preliminary findings of the final evaluation of the ISA² programme and to collect further information and additional feedback on the different aspects of the programme.

In addition to the above-listed consultation activities, two stakeholders provided [feedback](#) on the **ISA² evaluation roadmap** in November 2020. One contribution emphasised the need to bring interoperable solutions and the needed skills for their reuse to the local level. The other one called for promoting the use of open-source software and open standards.

Methodology and tools used to process data

The consultation questionnaires were mainly based on ‘Likert scale’ questions, meaning that respondents were asked to give their opinion on a scale from (1) to (5) or from (1) to (4), depending on the type of question:

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

This approach helped the comparison of answers between respondents. In addition to the Likert scale questions, a number of open-ended questions were included to gather more in-depth information from consulted stakeholders. In addition, the interviews allowed more detailed feedback to be collected.

Consulted stakeholder groups

The consultation activities targeted several groups of stakeholders, i.e. stakeholders of the ISA² programme as well as stakeholders of public sector interoperability. The following grouping of stakeholders was used to analyse the feedback to the consultation activities for the ISA² evaluation:

² The official deadline for contributing to the online surveys was initially set on 15 February 2021. The deadline was extended to 7 March 2021 to allow for more contributions.

- Experts and academia (including standardisation organisations and the independent expert assessments);
- ISA² action owners (Commission representatives in charge of specific actions defined under ISA²);
- ISA² solution users (both at EU and national level);
- National and sub-national interoperability actors (national and sub-national public authorities with good knowledge of the programme);
- Programme governance (Commission and EU countries representatives who were directly involved in the governance of ISA²);
- Stakeholders involved in the implementation of linked EU policies (Commission representatives who are in charge of EU initiatives potentially linked to ISA²);
- Wider public (including citizens, businesses, NGOs, and respondents from public authorities with a more limited knowledge of the ISA² programme).

With a **total of 102 respondents**, the consultation activities reached all stakeholders listed above. Table 7 presents the breakdown of responses by stakeholder groups and consultation activity.

Table 7 Overview of respondents engaged by the consultation activities by stakeholder group

Stakeholders	In-depth interview	Online survey	Public consultation	TOTAL
Experts and academia	5*	8	-	13
ISA ² action owners	3	12	-	15
ISA ² solution users	1	4	-	5
National/sub-national public authorities	-	10	5	15
Programme governance	2**	7		9
Stakeholders involved in the implementation of linked EU policies/initiatives	3	4	2	9
Wider public	***	***	36	36
TOTAL	14	45	43	102

* The five in-depth interviews conducted with the group of experts and academia correspond to the five expert assessments.

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

*** Invited to participate in the public consultation only.

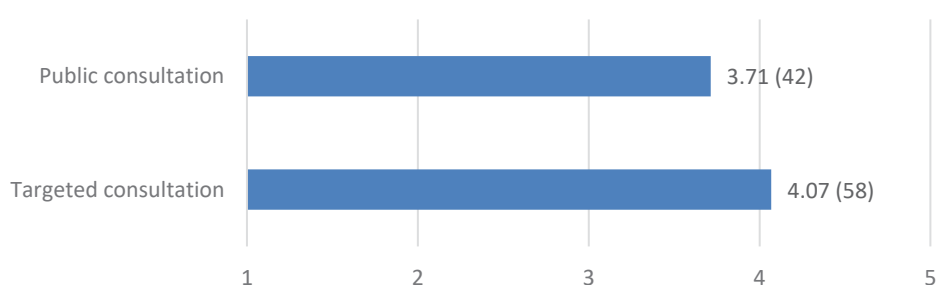
Source: [CEPS final study](#).

In what follows, the feedback received during the consultation activities are presented according to the type of consultation, i.e. public versus targeted consultation. As to the latter, 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.

Characteristics of respondents

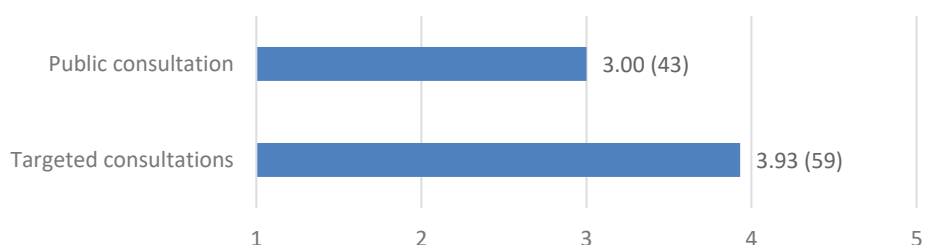
Overall, the consulted respondents claimed to have a high level of knowledge both when it comes to digital public services and interoperability (see Figure 27) and the ISA² programme (see Figure 28). As to digital public services and interoperability, ISA² solution users and the wider public have a slightly lower level of knowledge of the field, while experts and academia have the greatest level of knowledge among the stakeholders' groups. Similarly, most respondents are generally familiar to some extent or to a great extent with the ISA² programme, with the wider public scoring lowest among the stakeholders.

Figure 27 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.
Note: Averages do not account for respondents answering “don’t know/no opinion” (DK/NO).
Source: [CEPS final study](#).

Figure 28 Knowledge of ISA² (breakdown by type of consultation; average score and number of respondents)

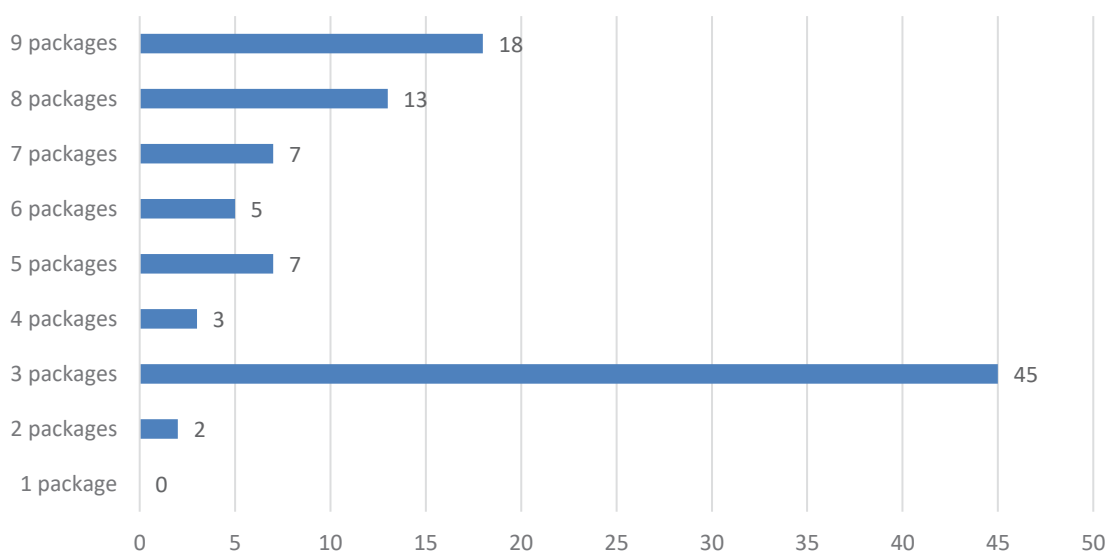


Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.
Note: Averages do not account for respondents answering “don’t know/no opinion” (DK/NO).
Source: [CEPS final study](#).

Finally, almost half of the total respondents (45) are familiar with at least three packages of ISA² (see Figure 29)³. Considering the breadth of actions and the variety of stakeholders of the programme, it is natural that some of the consulted stakeholders may be less familiar with some areas of the programme and more familiar with those with which they have interacted more closely.

³ The ISA² actions are grouped in nine work packages defined in the annual rolling work programmes. See: https://ec.europa.eu/isa2/library/isaisa%C2%B2-work-programme_en

Figure 29 Knowledge of ISA² action packages (number of respondents familiar with a given number of packages)



Note: 1) Stakeholders were considered to be familiar with a package if they indicated that they had knowledge of the package “to some extent”, “to a high extent” or “to the fullest extent”. 2) Total number of respondents: 100

Source: [CEPS final study](#).

In terms of geographic distribution, the targeted consultation reflects inputs from both the EU and national levels; representatives from the relevant EU institutions, as well as representatives from EU countries⁴.

Results

The consultation activities revealed a **general consensus among the different stakeholder groups** consulted and confirmed that **ISA² performed well in all the seven evaluation criteria under investigation**. The feedback from the consultation activities is summarised as follows:

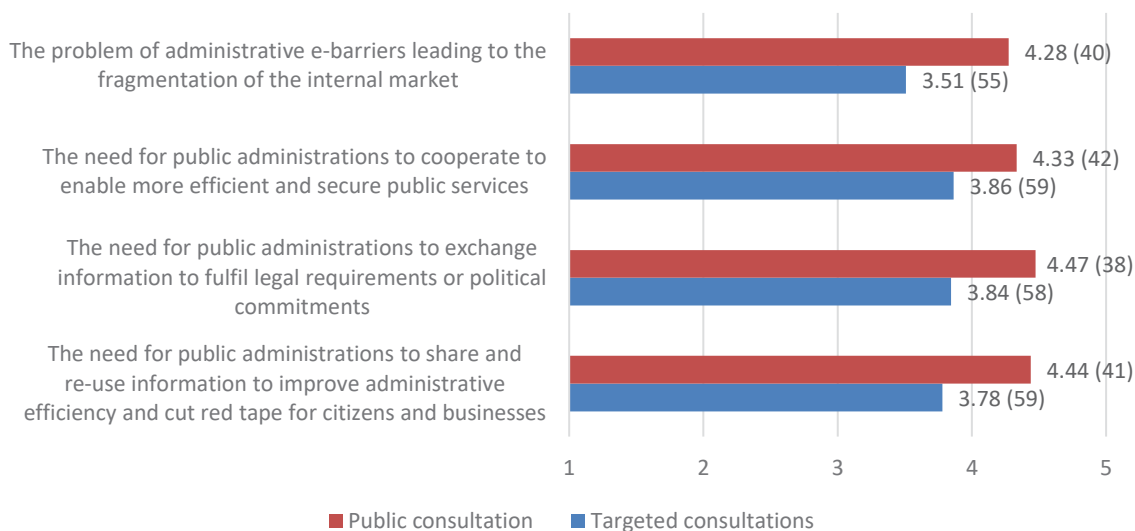
Relevance

The ISA² programme is deemed relevant by consulted stakeholders as it has contributed to addressing public administrations’ needs to cooperate and enable more efficient and secure public service, to exchange information in order to fulfil legal requirements or political commitments, and to share and re-use information to improve administrative efficiency and cut red tape. In particular, the wider public, consulted through the public consultation, considers that ISA² has contributed to a great extent to existing needs and problems. By contrast, targeted respondents identify a more limited contribution (see Figure 30). The feedback also confirms that such needs and problems

⁴ Feedback received from the representatives at the national and regional levels covers the following Member States: Austria, Belgium, Cyprus, Denmark, Finland, Greece, Hungary, Italy, Malta, the Netherlands, Spain, and Sweden.

are still an issue for interoperability in the EU’s public sector. Not surprisingly, respondents to the targeted consultation consider the underlying needs and problems to be relatively more important for European public administrations than respondents to the public consultation.

Figure 30 Extent to which achieving ISA² objectives contribute to addressing the needs and problems originally addressed by the programme (breakdown by type of consultation; average score and number of respondents)



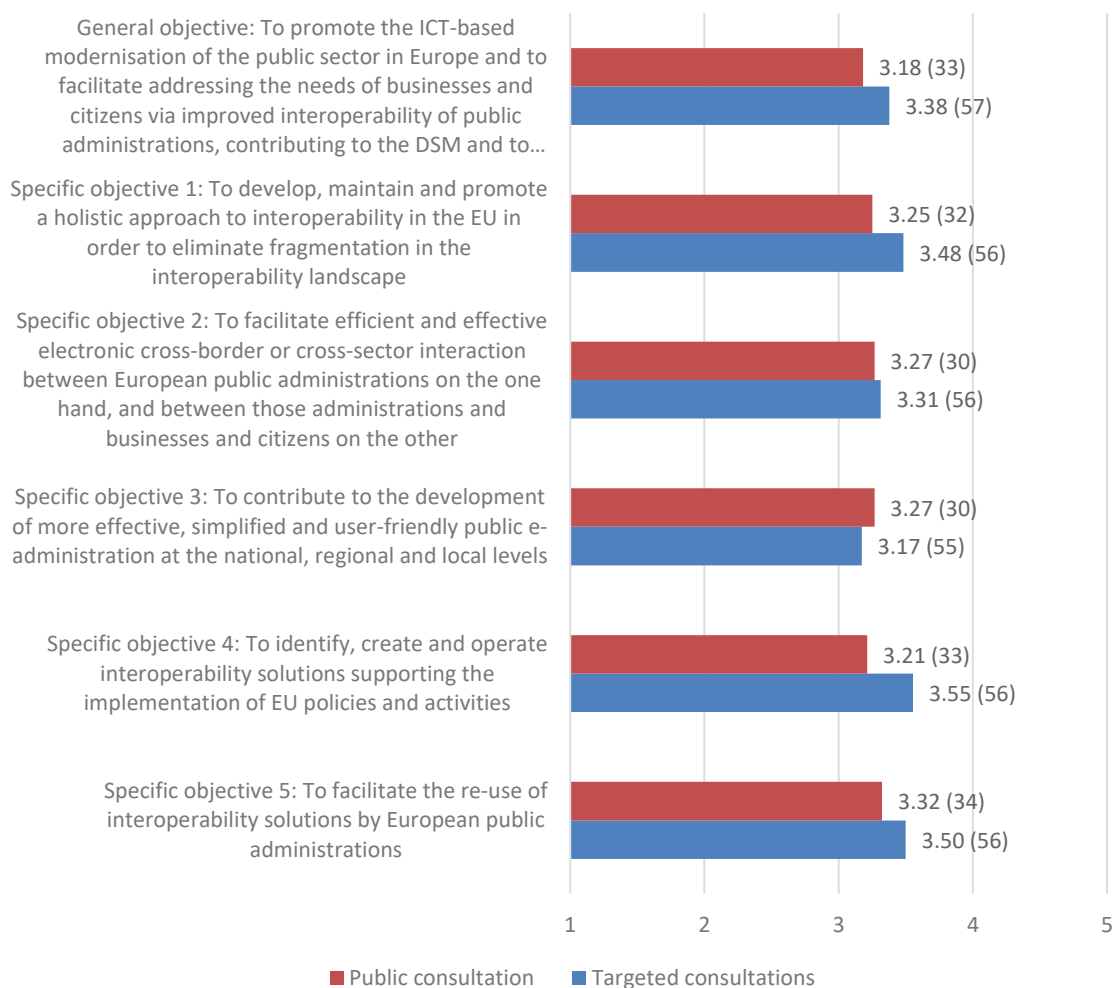
Score: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a great extent; or (5) completely.
 Note: Averages do not account for respondents answering “don’t know/no opinion” (DK/NO).
 Source: [CEPS final study](#).

Consulted stakeholders emphasised additional needs: the need for coordination and interoperable digital solutions deriving from or exacerbated by the COVID-19 pandemic, the need for digital skills, the need to exchange best practices, the need for feedback loop with citizens to ensure the good functioning of the digital tools and solutions, and the need for consistent governance of interoperability initiatives.

Effectiveness

ISA² is considered **effective** in creating and operating interoperability solutions for the implementation of EU policies and actions and facilitating the re-use of such solutions. The programme has also contributed to promoting a holistic approach to interoperability in the EU. When it comes to these aspects, Figure 31 shows that respondents to the targeted consultation are overall slightly more optimistic about the results of the ISA² solutions in achieving the programme’s objectives.

Figure 31 Extent to which ISA² solutions contributed to achieving the programme’s 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.
 Note: Averages do not account for respondents answering “don’t know/no opinion” (DK/NO).
 Source: [CEPS final study](#).

Nonetheless, respondents placed particular emphasis on the fact that the re-use of interoperability solutions could be further enhanced, building on the facilitating role played by ISA². In addition, results have been **achieved only to a limited extent** or to some extent when it comes to reducing the cost and administrative burden of cross-border interaction, removing the administrative e-barriers and contributing to the swift implementation of ICT systems supporting EU legislation.

Several respondents emphasised that **concentrating the efforts on a more limited set of actions and solutions could lead to enhanced achievements**.

External factors could improve but also jeopardise the way in which the programme achieves its objectives and delivers its results. The vast majority of respondents confirmed that the **calls for common standards and frameworks from public**

administrations are important external factors contributing to the performance of the programme. In contrast, **institutional complexity** in the form of multiple layers of governance and differences between national public administrations from various EU countries and local public administrations within EU countries could lead to coordination issues that hamper cross-border and cross-sectoral interoperability.

Efficiency

Action owners and stakeholders involved in the governance of the programme provided feedback regarding the efficiency of the process for selecting actions funded by ISA². The **selection process of ISA² actions** is deemed to have been **relatively efficient and fit for purpose**. Relying on an online platform have helped streamline the process. Respondents also emphasised that one of the positive aspects was that EU countries could submit proposals, alongside European Commission services. Nevertheless, only a limited number of proposals were received from the EU countries.

Furthermore, respondents from the same categories provided information regarding the amount of **time they spent on preparing and submitting a proposal** for an action to be considered by the ISA² programme. This time varied from two to three person-days up to 25 person-days to complete the proposal. The differences in the reported time required reflect the types of actions put forward such as new actions or previous actions for which one can rely on previously accumulated experience.

Coherence

The consultation activities focused on both the **internal coherence** of the programme, i.e. the synergies or overlaps existing between the ISA² actions, and its **external coherence**, namely the synergies or overlaps between ISA² and other EU initiatives, policies, or programmes.

Internal coherence

In terms of **internal coherence**, there are synergies between the actions to some extent and limited overlaps, as confirmed by stakeholders involved in the targeted consultation. However, respondents to the targeted consultation also emphasised that the fragmentation of the programme in multiple different actions makes it difficult to fully tap into all synergies.

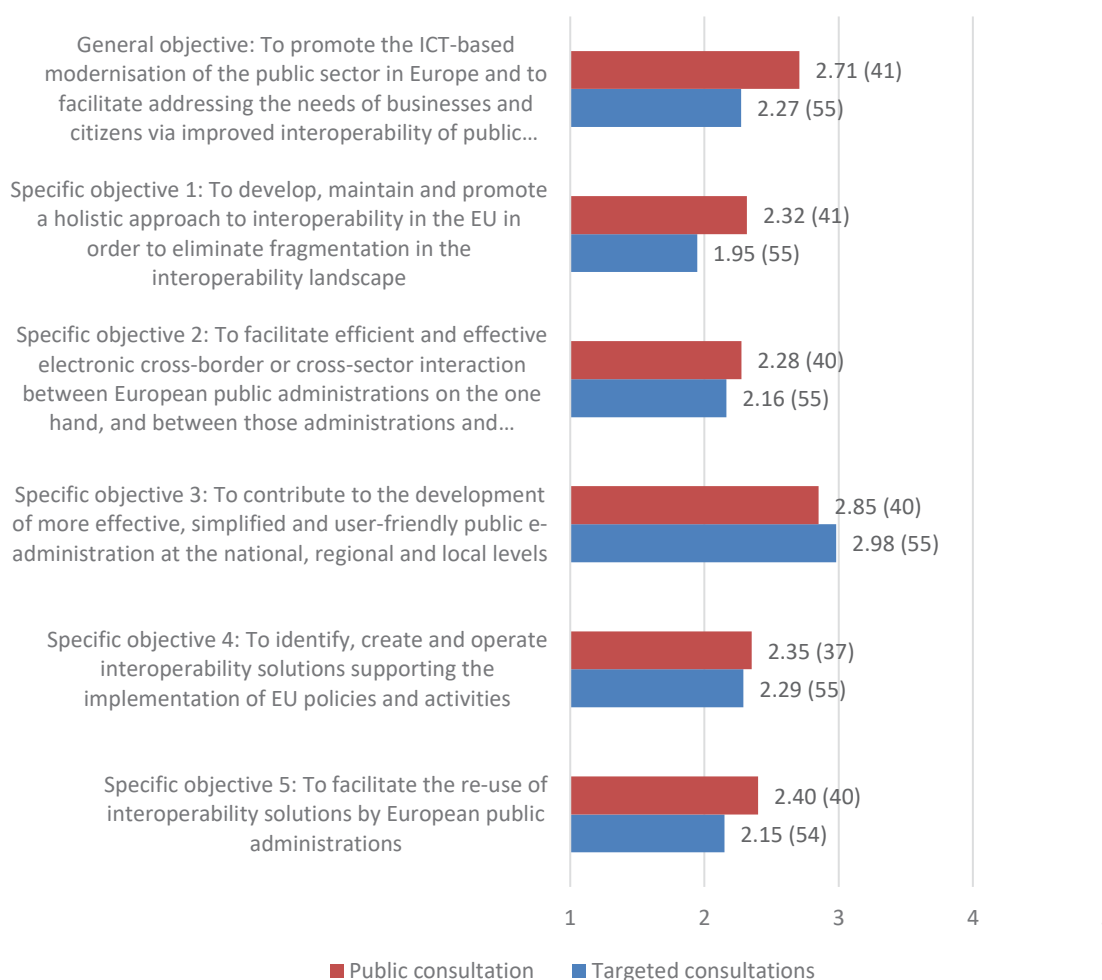
External coherence

In terms of **external coherence**, consulted stakeholders noted that ISA² is particularly synergetic with CEF. This result was consistent across the targeted and public consultations. Participants to the targeted consultation also emphasised strong synergies between ISA² and both the [European Digital Strategy](#) and the [European Data Strategy](#).

EU added value

Many respondents confirmed that national or sub-national initiatives alone would have brought only limited contributions towards most of the objectives of ISA², suggesting the **EU added value of the programme** (see Figure 32). Overall, stakeholders participating in the targeted consultation were less convinced of the ability of national or sub-national interventions to achieve ISA² objectives in the absence of the programme.

Figure 32 Extent to which national or sub-national interventions would be able to achieve the ISA² objectives in the absence of the programme (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.
 Note: Averages do not account for respondents answering “don’t know/no opinion” (DK/NO).
 Source: [CEPS final study](#).

Respondents agreed that ISA² can probably achieve its objectives at costs that are lower than the costs of national or sub-national interventions. It is also important to mention that consulted stakeholders considered that ISA² has contributed to some extent to enhancing cross-border interoperability. While noting the achievements of the programme, stakeholders confirmed that other EU instruments have complemented the

programme (e.g., [the Open Data Directive](#)⁵) and that achieving cross-border interoperability depends on the adoption of solutions by the relevant public administrations.

Utility

Stakeholders involved in the targeted consultation pointed out that ISA² solutions have contributed to some extent to addressing the main needs and problems originally identified by the programme. They were slightly less positive when it comes to the additional needs and problems experienced by stakeholders.

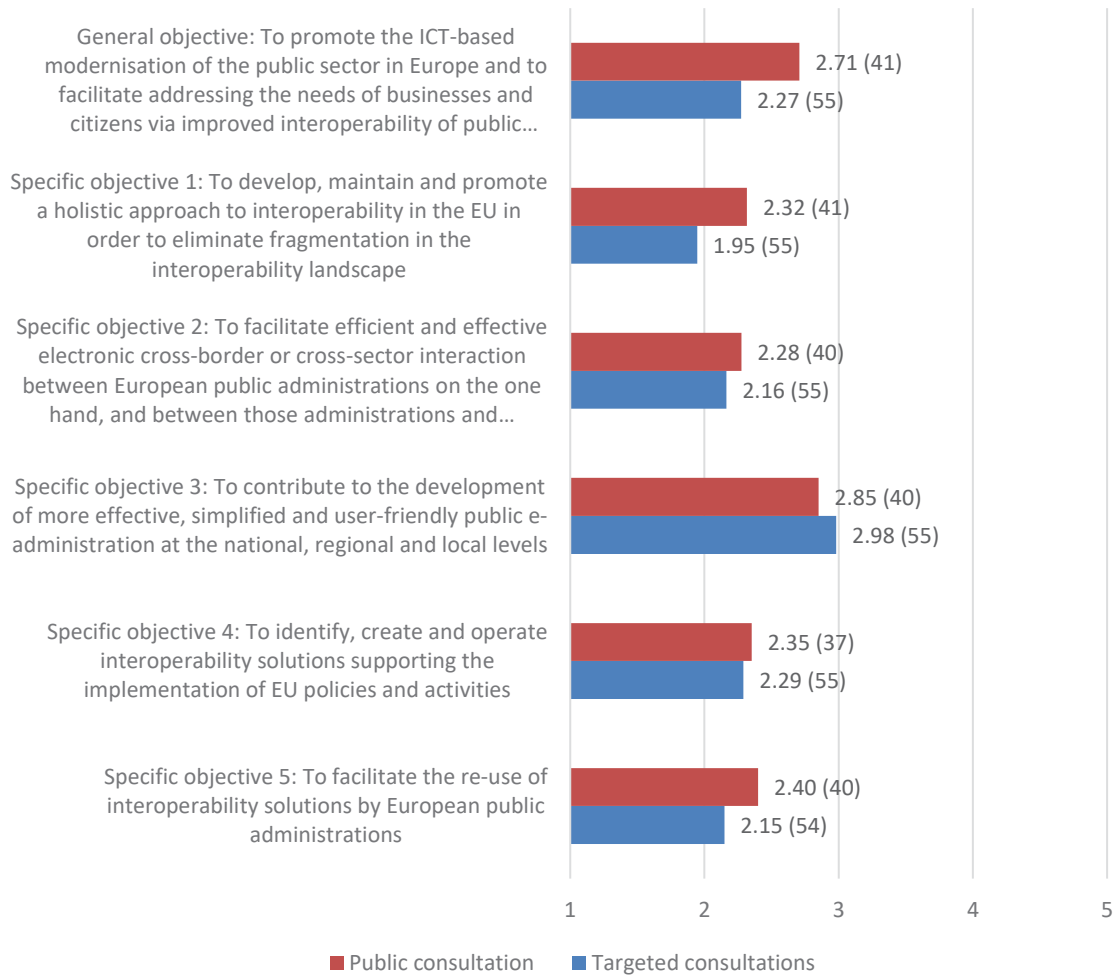
With the caveat that the number of responses from solution users was low (only 5 answers), the feedback received from respondents to the targeted consultation in terms of user satisfaction tends to be positive. Nevertheless, the **utility of the programme** could be further enhanced by working more closely with the EU countries, increasing the promotion of solutions and ensuring that the communication of results is accessible to non-expert audiences.

Sustainability

In terms of **sustainability**, Figure 33 shows that consulted stakeholders in the targeted consultation generally had a positive view of the sustainability of ISA² solutions, indicating that the solutions developed are expected to continue delivering their results even after the programme ends; however, some solutions may also require maintenance costs.

⁵ Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information.

Figure 33 Likelihood that results achieved so far would last if funding for actions covered by the programme would not be available in the future (breakdown by type of stakeholders; average score and number of respondents)



Score: (-2) definitely would not; (-1) probably would not; (1) probably would; (2) definitely would.
 Note: 1) Averages do not account for respondents answering “don’t know/no opinion” (DK/NO). 2) Total number of respondents through targeted consultation: 58.
 Source: [CEPS final study](#).

Annex 3: Intervention Logic

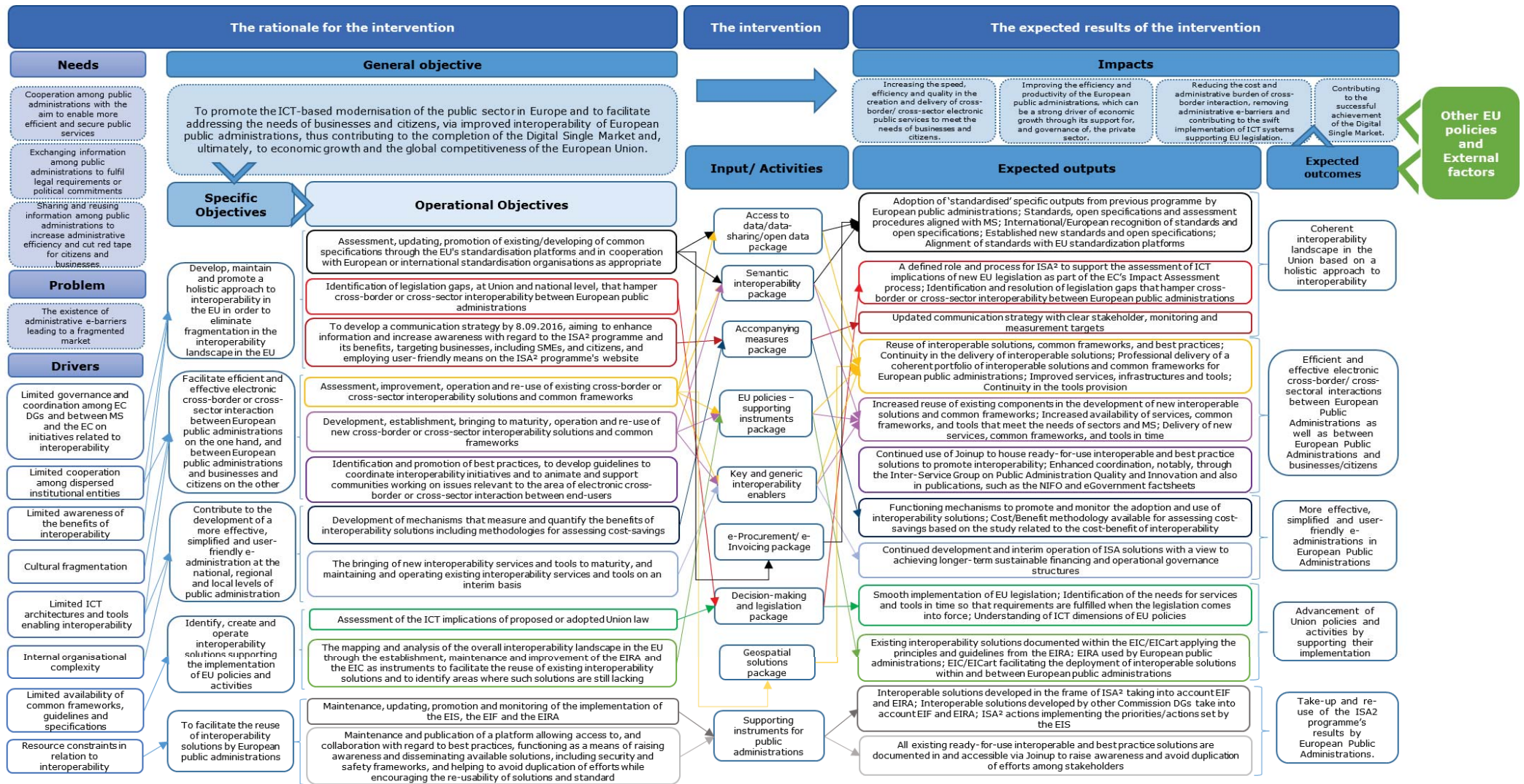
This annex presents the **intervention logic of ISA²**, detailing the rationale, the inputs, and the expected results of the programme at the time of its enactment. The annex is entirely based on the [interim evaluation of the ISA² programme performed by CEPS](#) and published in 2019, following its approval by the European Commission⁶. The decision to rely on the same intervention logic on which the interim evaluation was based is essential for two main reasons.

- This approach ensures full comparability between the findings of the final evaluation and interim evaluation of ISA²;
- This is the best approach from a methodological standpoint, as the intervention logic aims to clarify the logic followed by EU decision-makers back in 2015, when establishing the ISA² programme, and this ex ante perspective does not allow to modify the intervention logic used for the interim evaluation of ISA².

The intervention logic of ISA² includes a detailed description of the **needs, problems and drivers** that the programme intended to address, the **objectives** set out for the programme (following a three-level hierarchy: global objective, specific objectives and operational objectives), the **activities** of the programme, the **expected outputs, outcomes and impacts** of the programme and the logical links between these components.

⁶ CEPS (2019), Evaluation study supporting the interim evaluation of the programme on interoperability solutions for European public administrations, businesses and citizens (ISA²). DOI: 10.2799/13397

Figure 34: Intervention logic of the ISA² programme



1. THE RATIONALE FOR THE INTERVENTION: ‘WHY DID THE EU ESTABLISH THE ISA² PROGRAMME?’

The intervention logic starts by understanding **the rationale of the ISA² programme**. At this stage, the reasons for its establishment were identified by (i) assessing the needs and problems that it aims to address; and (ii) outlining EU decision-makers’ main objectives.

Needs and problems⁷

The Digital Single Market (DSM) Strategy⁸ recognised interoperability as a prerequisite for ‘*efficient connections across borders, between communities and between public services and authorities*’. As highlighted by the Digital Agenda for Europe⁹, interoperability plays a key role in maximising the social and economic potential of ICT. Against this background, three specific **needs** can be identified in the field of interoperability¹⁰:

- the need for cooperation among public administrations to enable more efficient and secure public services;
- the need for exchanging information among public administrations to fulfil legal requirements or political commitments; and
- the need for sharing and reusing information among public administrations to increase administrative efficiency and cut red tape for businesses and the public.

When it comes to **problems**, the ISA² proposal¹¹ outlined one main issue, namely the existence of administrative e-barriers leading to a fragmented market.

This particular problem is affected by the following **eight drivers** (as pointed out in a series of documents including: the ISA² proposal, the final evaluation of the ISA

⁷ Needs refer to prerequisites for the efficient delivery of European public services, more specifically, in what concerns the interoperability dimension. Problems consist of specific bottlenecks that hinder the realisation of the needs. The drivers are the underlying causes that lead to the identified problem.

⁸ European Commission (2015), 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’, COM(2015) 192 final

⁹ European Commission (2010), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ‘A Digital Agenda for Europe’, COM(2010)245 final.

¹⁰ European Commission (2010), 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’ and ‘Annex II – EIF (European Interoperability Framework)’, COM(2010) 744 final.

¹¹ See Section 1.2 of the ISA² Proposal; Proposal for a DECISION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a programme on interoperability solutions for European public administrations, businesses and citizens (ISA²) Interoperability as a means for modernising the public sector, COM(2014) 367 final.

programme¹², the Commission Staff Working Document accompanying the DSM Strategy¹³):

- limited governance and coordination among Commission DGs and between EU countries and the Commission on programmes and initiatives related to interoperability;
- limited cooperation among dispersed institutional entities;
- resource constraints in relation to interoperability;
- internal organisational complexity;
- limited ICT architectures and tools enabling interoperability;
- limited availability of common frameworks, guidelines, and specifications;
- limited awareness of the benefits of interoperability; and
- cultural fragmentation¹⁴.

Objectives

The ISA² objectives are presented in a **hierarchical order**, where the achievement of lower level objectives is normally a pre-condition for attaining the higher-level ones.

In this respect, the following three levels of objectives have been identified:

- **general objectives**, concerning the overall rationale of an intervention and its longer-term and more diffuse effects, i.e. pertaining to the questions: ‘why has the ISA² programme been set up?’ and ‘what ultimate goal was it expected to contribute to?’;
- **specific objectives**, providing a basis for assessing an intervention in relation to the short-term or medium-term results that occur at the level of direct beneficiaries/recipients of the intervention; and

¹² Kurt Salmon, KPMG (2015), Final evaluation of the ISA programme, Final report v2.06, 1 December 2015.

¹³ European Commission (2015), Commission Staff Working Document ‘A Digital Single Market Strategy for Europe – Analysis and Evidence’ Accompanying the document 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’, SWD(2015) 100 final.

¹⁴ National administrative systems are often characterised by different administrative cultures, which include the beliefs and values on the role of the State and its civil servants. As pointed out by a recent Study published by the Commission, although European public administrations share the values associated with democracy and the rule of law, national administrative cultures show clear differences (Thijs N., Hammerschmid G., Palaric E. (2017), *A comparative overview of public administration characteristics and performance in EU28*, European Commission).

- **operational objectives**, providing a basis for assessing an intervention in relation to its direct outputs, i.e. ‘what is directly produced/supplied during the ISA² programme’s implementation?’.

In concrete terms, the ISA² programme’s objectives are the following:

General objective:

- To promote the ICT-based modernisation of the public sector in Europe and to facilitate addressing the needs of businesses and citizens via improved interoperability of European public administrations, thus contributing to the completion of the Digital Single Market and, ultimately, to economic growth and the global competitiveness of the European Union.¹⁵

Specific objectives:

- **Specific objective #1:** To develop, maintain and promote a holistic approach to interoperability in the Union in order to eliminate fragmentation in the interoperability landscape in the Union (Article 1(a) of the ISA² Decision).
- **Specific objective #2:** To facilitate efficient and effective electronic cross-border or cross-sector interaction between European public administrations on the one hand, and between European public administrations and businesses and citizens on the other (Article 1(b) of the ISA² Decision).
- **Specific objective #3:** To contribute to the development of a more effective, simplified and user-friendly e-administration at the national, regional and local levels of public administration (Article 1(b) of the ISA² Decision).
- **Specific objective #4:** To identify, create and operate interoperability solutions supporting the implementation of Union policies and activities (Article 1(c) of the ISA² Decision).
- **Specific objective #5:** To facilitate the reuse of interoperability solutions by European public administrations (Article 1(d) of the ISA² Decision).

¹⁵ See recitals 34, 36 and 45 of the ISA² Decision and Section 1.1 of the ISA² Proposal.

Operational objectives:

The **operational objectives** of the ISA² programme are listed in the first column of Table 8. The additional columns are relevant for the programme's expected results (see below for further details).

Table 8 Overview of operational objectives and expected outputs of the ISA² programme

Operational objectives	Expected outputs	Performance indicators
<p>Operational objective (1): To support and promote the assessment, improvement, operation and re-use of existing cross-border or cross-sector interoperability solutions and common frameworks (Article 3 (a) of the ISA² Decision)</p>	<ul style="list-style-type: none"> • Reuse of interoperable solutions and common frameworks • Reuse of best practices • Continuity in the delivery of interoperable solutions • Professional delivery of a coherent portfolio of interoperable solutions and common frameworks for European public administrations • Improved services and infrastructures • Improved tools • Continuity in the tools provision 	<ul style="list-style-type: none"> • Number of common services and generic tools used by European public administrations • Adoption of common frameworks by European public administrations • Users uptake • User satisfaction • Number of new sectors covered by existing solutions (cross-sector / cross-border dimension)
<p>Operational objective (2): To support and promote the development, establishment, bringing to maturity, operation and re-use of new cross-border or cross-sector interoperability solutions and common frameworks (Article 3 (b) of the ISA² Decision)</p>	<ul style="list-style-type: none"> • Increased reuse of existing components in the development of new interoperable solutions and common frameworks • Increased availability of services and common frameworks that meet the needs of sectors and EU countries • Delivery of new services and common frameworks in time • Increased availability of tools that meet the needs of sectors and EU countries • Delivery of new tools in time 	<ul style="list-style-type: none"> • Number of new common services and generic tools by European public administrations • Adoption of new common frameworks by European public administrations

Operational objectives	Expected outputs	Performance indicators
Operational objective (3): To support and promote the assessment of the ICT implications of proposed or adopted Union law (Article 3 (c) of the ISA ² Decision)	<ul style="list-style-type: none"> • Smooth implementation of EU legislation • Identification of the needs for services and tools in time so that requirements are fulfilled when the legislation comes into force • Understanding of ICT dimensions of EU policies 	<ul style="list-style-type: none"> • Number of pieces of legislation reviewed • Number of assessments of ICT implications of new EU legislation conducted
Operational objective (4): To support and promote the identification of legislation gaps, at Union and national level, that hamper cross-border or cross-sector interoperability between European public administrations (Article 3 (d) of the ISA ² Decision)	<ul style="list-style-type: none"> • A defined role and process for the ISA² programme to support the DGs and services undertaking assessments of ICT implications of new EU legislation as part of the Commission's Impact Assessment process (Better Regulation Guidelines)¹⁶ • Identification and resolution of legislation gaps that hamper cross-border or cross-sector interoperability between European public administrations 	<ul style="list-style-type: none"> • Number of instances where ISA² is involved (e.g. participation of ISA² in evaluations, impact assessments, and REFIT of EU legislation) • Number of pieces of gaps identified
Operational objective (5): To support and promote the development of mechanisms that measure and quantify the benefits of interoperability solutions including methodologies for assessing cost-savings (Article 3 (e) of the ISA ² Decision)	<ul style="list-style-type: none"> • Functioning mechanisms to promote the use and monitor the adoption of interoperability solutions as well as their numbers of users • Cost/Benefit model/methodology available for assessing cost-savings based on the study related to the cost-benefit of interoperability. 	<ul style="list-style-type: none"> • Usage of the Cost/Benefit model to produce figures to show the value of interoperability.
Operational objective (6): To support and promote the mapping and analysis of the overall interoperability landscape in the Union through the establishment, maintenance and improvement of the EIRA and the EIC as instruments to facilitate the re-use of existing interoperability solutions and to identify	<ul style="list-style-type: none"> • Existing interoperability solutions documented within the European Interoperability Cartography (EIC/EICart) applying the principles and guidelines from the European Interoperability Reference Architecture (EIRA) • EIRA used by European public administrations 	<ul style="list-style-type: none"> • Usage of EIRA by European public administrations • Usage of EIC/EICart by European public administrations • Number of references in implementations of interoperable solutions • Number of interoperable solutions documented in the

¹⁶ European Commission (2017), Better Regulation Guidelines, SWD(2017) 350, Brussels, 7 July 2017.

Operational objectives	Expected outputs	Performance indicators
the areas where such solutions are still lacking (Article 3 (f) of the ISA ² Decision)	<ul style="list-style-type: none"> EIC/EICart facilitating the deployment of interoperable solutions within and between European public administrations 	EIC/EICart
Operational objective (7): To support and promote the maintenance, updating, promotion and monitoring of the implementation of the EIS, the EIF and the EIRA (Article 3 (g) of the ISA ² Decision)	<ul style="list-style-type: none"> Interoperable solutions developed in the frame of ISA² that take into account EIF and EIRA Interoperable solutions developed by other Commission DGs that take into account EIF and EIRA ISA² actions implementing the priorities/actions set by the EIS 	<ul style="list-style-type: none"> Usage of EIRA by European public administrations Number of EIS priorities implemented by European public administrations Level of implementation of the EIF at national and Commission level
Operational objective (8): To support and promote the assessment, updating and promotion of existing common specifications and standards and the development, establishment and promotion of new common specifications and open specifications and standards through the Union's standardisation platforms and in cooperation with European or international standardisation organisations as appropriate (Article 3 (h) of the ISA ² Decision)	<ul style="list-style-type: none"> Adoption of 'standardised' specific outputs from previous programme (e.g. Core Vocabularies, ADMS) by European public administrations. Standards, open specifications and assessment procedures aligned with EU countries International/European recognition of standards and open specifications Established new standards and open specifications Alignment of standards with EU standardisation platforms 	<ul style="list-style-type: none"> Number of new or revised standards used by European public administrations Number of new or revised common specifications and open specifications used by European public administrations Number of assessments (e.g. through multi-stakeholder platform or CAMMS)
Operational objective (9): To support and promote the maintenance and publication of a platform allowing access to, and collaboration with regard to, best practices, functioning as a means of raising awareness and disseminating available solutions, including security and safety frameworks, and helping to	<ul style="list-style-type: none"> All existing ready-for-use interoperable and best practice solutions are documented in and accessible via Joinup¹⁷ to raise awareness and avoid duplication of efforts among stakeholders 	<ul style="list-style-type: none"> Number of ready-for-use interoperable and best practice solutions housed in Joinup

¹⁷ For further details see: <https://joinup.ec.europa.eu/>

Operational objectives	Expected outputs	Performance indicators
avoid duplication of efforts while encouraging the re-usability of solutions and standards (Article 3 (i) of the ISA ² Decision)		
Operational objective (10): To support and promote the bringing of new interoperability services and tools to maturity, and maintaining and operating existing interoperability services and tools on an interim basis (Article 3 (j) of the ISA ² Decision)	<ul style="list-style-type: none"> Continued development and interim operation of ISA solutions, e.g. sTESTA, with a view to achieving longer-term sustainable financing and operational governance structures 	<ul style="list-style-type: none"> Number of new interoperability services and tools developed, maintained and operated by ISA² Number of new interoperability services brought to maturity
Operational objective (11): To support and promote the identification and promotion of best practices, to develop guidelines to coordinate interoperability initiatives and to animate and support communities working on issues relevant to the area of electronic cross-border or cross-sector interaction between end-users (Article 3 (k) of the ISA ² Decision)	<ul style="list-style-type: none"> Continued use of Joinup to house ready-for-use interoperable and best practice solutions to promote interoperability Enhanced coordination, notably, through the Inter-Service Group on Public Administration Quality and Innovation and also in publications, such as the NIFO and eGovernment factsheets 	<ul style="list-style-type: none"> Number of ready-for-use interoperable and best practice solutions housed in Joinup Number of joint-initiatives (studies etc.) in interoperability by EU-wide groups, such as the Commission's Inter-Service Group on Public Administration Quality and Innovation. Number of joint-publications
Operational objective (12): To develop a communication strategy [...], aiming to enhance information and increase awareness with regard to the ISA ² programme and its benefits, targeting businesses, including SMEs, and citizens, and employing user-friendly means on the ISA ² programme's website (Article 3 of the ISA ² Decision)	<ul style="list-style-type: none"> An updated Communication Strategy with clear stakeholder, monitoring and measurement targets. 	<ul style="list-style-type: none"> Monitoring and measurement of the Communication Strategy (events, satisfaction surveys, publications). Numbers of stakeholders engaged in different events, actions, initiatives etc.

Source: [CEPS final study](#).

2. THE INTERVENTION: 'WHAT ACTIONS ARE SUPPORTED BY THE ISA² PROGRAMME?'

After identifying the needs, problems and objectives underlying the ISA² programme, the intervention logic approach requires the assessment of the main features (activities/inputs) of the programme itself. Within the intervention logic, activities and

inputs represent the means to address the needs and problems, and to meet the identified objectives. In this context, these means largely correspond to the **actions of the ISA² programme**, as defined in the [ISA² Rolling Work Programme](#). The ISA² actions are grouped into the following nine packages.

- **Key and generic interoperability enablers** are actions that develop interoperability solutions to support public administrations in providing services, ranging from the secure exchange of files to improving cross-border access to government data and information. Examples include [TESTA](#) and [Open e-TrustEx](#).
- **The semantic interoperability package** consists of initiatives to establish and increase semantic interoperability among public administrations through information standards and specifications. Examples include [Core Vocabularies](#) and [DCAT Application Profile](#) for data portals in Europe.
- Under **the access to data / data sharing / open data package**, the ISA² programme funds actions that help facilitate the reuse of national data repositories, of data across borders and sectors and widen access to data created by the public sector. Examples include ‘[Providing big data opportunities for public administrations](#)’ and ‘[FISMA: Financial Data Standardisation](#)’.
- **The geospatial solutions package** consists of legal/policy, organisational, semantic and technical interoperability solutions that aims to facilitate efficient and effective electronic cross-border and cross-sector interaction between European public administrations, and between them and citizens and companies, in the field of location information and services. This package led to the [Re3gistry](#) solution.
- **The eProcurement/eInvoicing package** helps update and improve existing EU tools for e-procurement. It aims to develop a common public procurement knowledge base to facilitate the creation, exchange, dissemination and reuse of procurement data. Examples include [Open e-Prior](#), [ESPD](#), [eCertis](#) and the [eProcurement Ontology](#).
- **The decision-making and legislation package** covers actions that support the decision-making process, in particular by improving interoperability between EU institutions and between them and the EU countries. These actions address several processes – ranging from collecting feedback from various stakeholders to drafting new legislation and monitoring that this legislation is implemented. The package led to the [LEOS](#) solution.
- **The EU policies — supporting instruments package** covers actions that support the implementation of EU policies for which interoperability aspects need to be considered. The package has led to the following solution: Online Collection Software to support [European Citizens' Initiatives](#).

- **The supporting instruments for public administrations package** maps the EU's interoperability landscape and provides solutions to support greater interoperability, ranging from sharing best practices to supporting the reuse of solutions. Examples include the [Interoperability Academy](#), [EUSurvey](#), [Joinup – European Collaborative Platform and Catalogue](#) and the [National Interoperability Framework Observatory \(NIFO\)](#).
- **The accompanying measures package** consists of activities to raise awareness of interoperability and monitoring and evaluating the programme's implementation. Examples include the annual [SEMIC Conference](#), the [ISA² Mid-Term Conference](#), the [DigitALL conference](#) and the [ISA² dashboard](#).

3. THE EXPECTED RESULTS OF THE INTERVENTION: 'WHAT ARE THE EXPECTED EFFECTS OF THE ACTIONS SUPPORTED BY THE ISA² PROGRAMME?'

When it began, the ISA² programme was expected to have certain effects (i.e. to cause changes) on certain categories of stakeholders. These **effects** fall under **three categories** (outputs, outcomes and impacts) depending on when they occur and the groups they address. Note that external factors and other EU policies may influence the performance of the ISA² programme.

Outputs (expected)

The outputs of the ISA² programme are its **most immediate effects**, i.e. the deliverables/products of the funded actions. As the intervention logic looks at a certain intervention by simulating an *ex ante* perspective, one must identify the outputs that were expected to stem from the programme when it was initially adopted. Note that expected outputs usually reflect the operational objectives identified in previous analytical steps. In this respect, the expected outputs and related indicators are listed in the ex-ante evaluation of ISA². Table 8 above summarises the expected outcomes and a series of key performance indicators for each operational objective of the ISA² programme.

Outcomes (expected)

The outcomes are the **short-term and medium-term changes for the groups the programme directly addresses**. As outcomes are usually connected to the specific objectives; they can be summarised as follows:

- a coherent interoperability landscape in the Union based on a holistic approach to interoperability;
- efficient and effective electronic cross-border or cross-sectoral interactions between European Public Administrations as well as between European public administrations and businesses/citizens;
- more effective, simplified and user-friendly e-administrations in European public administrations;

- advancement of Union policies and activities by supporting their implementation; and
- take-up and re-use of the ISA² programme's results by European public administrations.

Impacts (expected)

As mentioned above, the intervention logic also includes the **impacts**, i.e. the changes caused by an EU intervention **over a longer period** and also **affecting the society as a whole** rather than only the direct addressees of the intervention itself. These changes are related to the general objectives of a certain intervention. By analysing the ISA² decision and the ISA² proposal, the following impacts are expected:

- increasing the speed, efficiency and quality in the creation and delivery of cross-border and cross-sector electronic public services to meet the needs of businesses and citizens;
- improving the efficiency and productivity of the European public administrations, which can be a strong driver of economic growth through its support for, and governance of, the private sector;
- reducing the cost and administrative burden of cross-border interaction, removing administrative e-barriers and contributing to the swift implementation of ICT systems supporting EU legislation; and
- contributing to the successful achievement of the DSM.

Annex 4: Evaluation Framework

This annex presents the evaluation framework on which the entire evaluation is based.

Evaluation questions	Success/judgment criteria	Indicators	Data sources	Data collection / analysis methods
Evaluation criterion #1: Relevance				
1. To what extent are the objectives of the ISA ² programme still pertinent in relation to the evolving needs and problems at both national and EU levels?	<ul style="list-style-type: none"> Degree of alignment between stakeholders' perception of needs and problems at national and sub-national levels and the objectives of the programme. Degree of alignment between stakeholders' perception of needs and problems at EU level and the objectives of the programme. Degree of alignment between needs and problems originally addressed by the programme and stakeholders' perception of needs and problems. 	<ul style="list-style-type: none"> Share of stakeholders confirming the alignment between needs and problems addressed by the programme and current needs and problems. Share of stakeholders confirming the alignment between the objectives of the programme and current needs and problems at national and sub-national levels. Share of stakeholders confirming the alignment between the objectives of the programme and current needs and problems at EU level. Qualitative assessment of the alignment between the objectives of the programme and current needs and problems. Qualitative assessment of the alignment between needs and problems addressed by the programme and current needs and problems. 	<ul style="list-style-type: none"> Primary information on needs and problems from the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Solution users – European Commission. Solution users – EU countries. Stakeholders responsible for linked EU policies/initiatives. Standardisation organisations. Experts. Indirect beneficiaries and wider public. Secondary information on needs and problems from operational documents, other official documents and relevant literature, such as: <ul style="list-style-type: none"> ISA² decision and accompanying documents. ISA² rolling work programme. eGovernment/digital government factsheets. Study on the role of eGovernment and 	<ul style="list-style-type: none"> Desk research. Interviews with the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Solution users – European Commission. Solution users – EU countries. Stakeholders responsible for linked EU policies/initiatives. Online surveys targeted to the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Solution users – European Commission. Solution users – EU countries. Stakeholders responsible for linked policies/initiatives. Standardisation organisations. Public consultation (optional). Quantitative assessment of

Evaluation questions	Success/judgment criteria	Indicators	Data sources	Data collection / analysis methods
			interoperability in the European Semester. <ul style="list-style-type: none"> ○ State of Play of Interoperability in Europe. ○ Data on the digital economy from Eurostat. ○ Mid-term review of the DSM Strategy. ○ Interim evaluation of ISA². 	responses to interviews and surveys (Likert scale). <ul style="list-style-type: none"> ● Qualitative assessment of responses to interviews and surveys and data and information collected via desk research. ● Expert assessment.
Evaluation criterion #2: Effectiveness				
2. To what extent has the ISA ² programme achieved its objectives – with special focus on the re-use of interoperability solutions across the Union and paying particular attention to the needs expressed by the European public administrations? 3. Are there aspects (e.g. objectives, actions) that are more or less effective than others, and if so, what lessons can be drawn from this?	<ul style="list-style-type: none"> ● Degree of alignment between actual and expected results and objectives of the programme. ● Impact of external factors on the performance of the programme. ● Measurement of the indicators summarising the outputs of the programme. ● Degree of alignment with principles spelled out in Article 4 of the ISA² Decision. ● Awareness of the programme. 	<ul style="list-style-type: none"> ● Share of stakeholders confirming the alignment between actual and expected results of the programme. ● Share of stakeholders confirming the alignment between the objectives and actual results of the programme. ● Share of stakeholders who are aware of the programme. ● Share of stakeholders identifying external factors contributing to/jeopardising the performance of the programme. ● Share of stakeholders who are aware of specific ISA² packages/ actions/ solutions. ● Qualitative assessment of the alignment between objectives, expected and actual results of the programme. ● Quantitative assessment of performance indicators of 	<ul style="list-style-type: none"> ● Primary information actual results and contribution to the programme’s objectives from the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. ○ Standardisation organisations. ○ Experts. ○ Indirect beneficiaries and wider public. ● Secondary information from operational documents and other official documents, such as: <ul style="list-style-type: none"> ○ ISA² rolling work programme ○ ISA² annual monitoring and evaluation reports. ○ ISA² quarterly monitoring 	<ul style="list-style-type: none"> ● Desk research. ● Interviews with the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. ● Online surveys targeted to the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. ○ Standardisation organisations. ● Success stories/lessons learnt. ● Public consultation (optional). ● Quantitative assessment of responses to interviews and

Evaluation questions	Success/judgment criteria	Indicators	Data sources	Data collection / analysis methods
		outputs. <ul style="list-style-type: none"> Qualitative assessment of the alignment with principles spelled out in Article 4 of the ISA² Decision. 	reports. <ul style="list-style-type: none"> ISA² dashboard. Documentary evidence on funded actions (e.g. deliverables, final reports). Interim evaluation of ISA². 	surveys (Likert scale). <ul style="list-style-type: none"> Qualitative assessment of responses to interviews and surveys and data and information collected via desk research. Multicriteria analysis. Expert assessment.
Evaluation criterion #3: Efficiency				
4. To what extent has the programme been cost-effective? 4.1 How is the programme performing relative to the planned work and budget? 5. Which aspects of the programme are the most efficient or inefficient, especially in terms of resources mobilised?	<ul style="list-style-type: none"> Cost-effectiveness analysis to assess the ratio between allocated funds and actual results of the programme. Earned value management analysis. Efficiency of the selection process of the actions to be included in the Rolling Work Programme. 	<ul style="list-style-type: none"> Comparison between the costs of ISA² packages and the results measured via performance indicators. Earned Value, Actual Costs, Planned Value, and Schedule Performance Index of ISA² packages.¹⁸ Share of stakeholders confirming that the selection process of the actions is fit-for-purpose. Assessment of regulatory costs linked to the selection process of the actions included in the rolling work programme. 	<ul style="list-style-type: none"> Primary information on costs from the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Secondary information from operational documents and other official documents, such as: <ul style="list-style-type: none"> ISA² rolling work programme. ISA² annual monitoring and evaluation reports. ISA² quarterly monitoring reports. ISA² dashboard. Documentary evidence on funded actions (e.g. deliverables, final reports). Interim Evaluation of ISA². 	<ul style="list-style-type: none"> Desk research. Interviews with the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Online surveys/written questionnaires targeted to the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Quantitative assessment of responses to surveys (Likert Scale). Qualitative assessment of responses to interviews and surveys and data and information collected via desk research. Cost-effectiveness analysis. Standard cost model. Earned value management. Success stories/lessons learnt.

¹⁸ The efficiency of the funded actions is already monitored by using the Earned Value Management (EVM) approach.

Evaluation questions	Success/judgment criteria	Indicators	Data sources	Data collection / analysis methods
Evaluation criterion #4: Coherence				
<p>6. To what extent do the ISA² actions form part of a ‘holistic’ approach within the framework of the programme? (<u>internal coherence</u>)</p> <p>7. To what extent is the ISA² programme coherent with other EU interventions which have similar objectives and with global initiatives in the same field? (<u>external coherence</u>)</p>	<ul style="list-style-type: none"> • Degree of coherence among actions funded by the ISA² programme (internal coherence). • Degree of coherence between the programme and other EU supported programmes (external coherence). <ul style="list-style-type: none"> ◦ Focus on CEF, SRSP, Horizon 2020 • Degree of coherence between the programme and other EU policies (external coherence). <ul style="list-style-type: none"> ◦ Focus on DSM, Digital Strategy, ICT standardisation, Single digital gateway, eGovernment Action Plan, Tallinn Declaration on eGovernment, Data strategy. • Degree of coherence between the programme and global initiatives in the field (external coherence). <ul style="list-style-type: none"> ◦ Focus on OECD Digital Government 	<ul style="list-style-type: none"> • Share of stakeholders identifying synergies/overlaps between funded actions. • Share of stakeholders identifying synergies/overlaps between the programme and other relevant EU programmes/policies. • Qualitative assessment of synergies/overlaps and links between funded actions. • Qualitative assessment of synergies/overlaps between objectives of the programme and other relevant EU programmes/policies. • Qualitative assessment of synergies/overlaps between funded actions and those of other relevant EU programmes. • Qualitative assessment of synergies/overlaps between the programme and global initiatives in the same field. • Instances of reuse of results delivered by funded actions by other actions within the programme. • Instances of reuse of results delivered by funded actions by other EU programmes. 	<ul style="list-style-type: none"> • Primary information on internal coherence from the following categories of stakeholders: <ul style="list-style-type: none"> ◦ Programme governance. ◦ Action owners. ◦ Solution users – European Commission. ◦ Solution users – EU countries. • Primary information on external coherence from the following categories of stakeholders: <ul style="list-style-type: none"> ◦ Programme governance. ◦ Action owners. ◦ Solution users – European Commission. ◦ Solution users – EU countries. ◦ Stakeholders responsible for linked EU policies/initiatives. ◦ Standardisation organisations. ◦ Experts. ◦ Indirect beneficiaries and wider public (optional). • Secondary information from operational documents and other official documents, such as: <ul style="list-style-type: none"> ◦ ISA² Decision and accompanying documents. ◦ ISA² rolling work programme. ◦ ISA² annual monitoring and 	<ul style="list-style-type: none"> • Desk research. • Interviews with the following categories of stakeholders: <ul style="list-style-type: none"> ◦ Programme governance. ◦ Action owners. ◦ Solution users – European Commission. ◦ Solution users – EU countries. ◦ Stakeholders responsible for linked EU policies/initiatives. • Online surveys targeted to the following categories of stakeholders: <ul style="list-style-type: none"> ◦ Programme governance. ◦ Action owners. ◦ Solution users – European Commission. ◦ Solution users – EU countries. ◦ Stakeholders responsible for linked policies/initiatives. ◦ Standardisation organisations. • Public consultation. • Quantitative assessment of responses to interviews and surveys (Likert scale). • Qualitative assessment of responses to interviews and surveys and data and information collected via desk research.

Evaluation questions	Success/judgment criteria	Indicators	Data sources	Data collection / analysis methods
	<p>and the UNPAN.</p> <ul style="list-style-type: none"> • Level of reuse of results of a funded action by another action within the ISA² programme (internal coherence). • Level of reuse of results delivered by ISA² actions by other EU programmes (external coherence). 		<p>evaluation reports.</p> <ul style="list-style-type: none"> ○ ISA² quarterly monitoring reports. ○ Documentary evidence on funded actions (e.g. official deliverables, final reports). ○ Legal texts establishing other relevant programmes accompanying documents. ○ Legal texts devising other relevant EU policies and accompanying documents. ○ Documents describing global initiatives in the same field. ○ Interim Evaluation of ISA². ○ Other interim/final evaluations of EU programmes and policies. 	<ul style="list-style-type: none"> • Success stories/lessons learnt. • Expert assessment.
Evaluation criterion #5: EU added value				
<p>8. What is the additional value resulting from the ISA² programme, compared to what could reasonably have been expected from EU countries acting at national, regional and/or local levels?</p>	<ul style="list-style-type: none"> • Achievement of objectives that could not be otherwise attained with national or sub-national interventions. • Achievement of objectives at a cost lower than what could be attained via national or sub-national interventions. • Achievement in terms of cross-border 	<ul style="list-style-type: none"> • Share of stakeholders confirming the need for an EU intervention to achieve the objectives of the programme. • Share of stakeholders confirming that an EU intervention is able to achieve the objectives of the programme at cost lower than costs of national or sub-national interventions. • Share of stakeholders' providing positive feedback on achievements in terms of cross-border interoperability. • Qualitative assessment of the 	<ul style="list-style-type: none"> • Primary information on cross-border interoperability and EU added value from the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. ○ Standardisation organisations. ○ Experts. ○ Indirect beneficiaries and wider public (optional). • Secondary information from 	<ul style="list-style-type: none"> • Desk research. • Interviews with the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. • Online surveys targeted to the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission.

Evaluation questions	Success/judgment criteria	Indicators	Data sources	Data collection / analysis methods
	interoperability. <ul style="list-style-type: none"> Contribution to the advancement of common EU policies. 	contribution to the advancement of common EU policies. <ul style="list-style-type: none"> Quantitative assessment of indicators summarising cross-border outputs of the programme. 	operational documents and other official documents, such as: <ul style="list-style-type: none"> ISA² decision and accompanying documents. ISA² rolling work programme. ISA² annual monitoring and evaluation reports. ISA² quarterly monitoring reports. Documentary evidence on funded actions (e.g. official deliverables, final reports). Interim Evaluation of ISA². 	<ul style="list-style-type: none"> Solution users – EU countries. Standardisation organisations. Public consultation. Quantitative assessment of responses to interviews and surveys (Likert scale). Qualitative assessment of responses to interviews and surveys and of data and information collected via desk research. Success stories/lessons learnt. Expert assessment.
Evaluation criterion #6: Utility¹⁹				
9. How do the ISA ² programme's actions and results, achieved and anticipated, compare with the needs they are supposed to address?	<ul style="list-style-type: none"> Degree of alignment between stakeholders' perception of needs and problems at national and sub-national levels and the results of the programme. Degree of alignment between stakeholders' perception of needs and problems at EU level and the results of the programme. 	<ul style="list-style-type: none"> Share of stakeholders confirming the alignment between the results of the programme and current needs and problems at national and sub-national levels. Share of stakeholders confirming the alignment between the results of the programme and current needs and problems at EU level. Qualitative assessment of the alignment between the results 	<ul style="list-style-type: none"> Primary information on user satisfaction and utility from the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Solution users – European Commission. Solution users – EU countries. Stakeholders responsible for linked EU policies/initiatives. 	<ul style="list-style-type: none"> Desk research. Interviews with the following categories of stakeholders: <ul style="list-style-type: none"> Programme governance. Action owners. Solution users – European Commission. Solution users – EU countries. Stakeholders responsible for linked EU policies/initiatives. Online surveys targeted to the

¹⁹ The utility criterion to some extent is similar to the relevance criterion insofar as they both look at stakeholders' needs. However, while the relevance criterion looks at the alignment between the objectives of the programme and the current needs and problems experienced by stakeholders, the utility criterion focuses on how the actual results of the programme have (or do not have) contributed to meeting stakeholders' needs. Hence, the utility criterion is a proxy for measuring users' satisfaction.

Evaluation questions	Success/judgment criteria	Indicators	Data sources	Data collection / analysis methods
	<ul style="list-style-type: none"> User satisfaction, with a breakdown by stakeholder group. 	<p>of the programme and current needs and problems.</p> <ul style="list-style-type: none"> Quantitative assessment of users' satisfaction (Likert Scale). Quantitative assessment of the take-up by EU, national and sub-national administrations of ISA² outputs. 	<ul style="list-style-type: none"> Standardisation organisations. Experts. Indirect beneficiaries and wider public (optional). Secondary information on utility from operational documents, other official documents and relevant literature, such as: <ul style="list-style-type: none"> ISA² rolling work programme. ISA² annual monitoring and evaluation reports. ISA² quarterly monitoring reports. Documentary evidence on funded actions (e.g. official deliverables, final reports). Interim evaluation of ISA². 	<p>following categories of stakeholders:</p> <ul style="list-style-type: none"> Programme governance. Action owners. Solution users – European Commission. Solution users – EU countries. Stakeholders responsible for linked policies/initiatives. Standardisation organisations. Public consultation (optional). Quantitative assessment of responses to interviews and surveys (Likert scale). Qualitative assessment of responses to interviews and surveys and of data and information collected via desk research. Success stories/lessons learnt. Expert assessment.

Evaluation criterion #7: Sustainability

<p>10. To what extent is the financial, technical and operational sustainability of the developed solutions – maintained and operated through the ISA² programme – ensured?</p>	<ul style="list-style-type: none"> • Extent to which the results achieved by the ISA² programme are expected to last if funding for actions covered by the programme would not be available in the future. • Extent to which ‘cost recovery’ solutions could be introduced. 	<ul style="list-style-type: none"> • Share of stakeholders expecting that results achieved so far would last if funding for actions covered by the programme would not be available in the future. • Share of actions requiring operation and maintenance costs to deliver their results. • Share of actions requiring technical and operational support to deliver their results. • Share of stakeholders who would pay to keep on using specific ISA² solutions. 	<ul style="list-style-type: none"> • Primary information on sustainability from the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. ○ Standardisation organisations. ○ Experts. • Secondary information on sustainability from operational documents, other official documents and relevant literature, such as: <ul style="list-style-type: none"> ○ ISA² rolling work programme. ○ ISA² annual monitoring and evaluation reports. ○ ISA² quarterly monitoring reports. ○ Documentary evidence on funded actions (e.g. official deliverables, final reports). ○ Interim evaluation of ISA². 	<ul style="list-style-type: none"> • Desk research. • Interviews with the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. • Online surveys targeted to the following categories of stakeholders: <ul style="list-style-type: none"> ○ Programme governance. ○ Action owners. ○ Solution users – European Commission. ○ Solution users – EU countries. ○ Standardisation organisations. • Quantitative assessment of responses to interviews and surveys (Likert scale). • Qualitative assessment of responses to interviews and surveys and of data and information collected via desk research. • Quantitative assessment of operation and maintenance costs. • Expert assessment.
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Source: [CEPS final study](#).

Annex 5: Sample of actions

The aim of the final evaluation of the ISA² programme is to provide an overall assessment of the performance of ISA². In this context, a sample of actions has been selected to better guide the data collection activities.²⁰ More specifically, the evaluation is conducted on a sample of 21 actions selected out of the total of 54 actions included in the 2020 Rolling Work Programme. To ensure comparability with the interim evaluation, the same sample of action was selected as for the interim evaluation.⁸⁵ One additional action was included in the sample in order to account for new developments in the programme, namely the new action that started after the interim evaluation of the programme was conducted (the action ‘2019.01 Interoperability Academy’). Three main criteria have been used to select the sample:

1. **Action packages:** the selected actions should be largely representative of the nine ISA² packages of actions, as they are defined in the rolling work programme.
2. **New actions and actions continued from ISA:** within each action package, the selected actions should be representative of two clusters, namely those actions that have been continued from ISA and those actions that have been started under ISA².
3. **New actions since the interim evaluation of ISA²:** to keep track of most recent developments, the Evaluation team included in the sample the new action that started after the interim evaluation of the programme was conducted (namely action ‘2019.01 Interoperability Academy’).

To build the sample, several steps were followed. First, the 54 actions funded by ISA² were grouped according to the packages to which they belong. Second, within each package, the evaluation team identified those actions that were continued from ISA and those that were introduced under ISA². Third, a target sample size of 21 actions (i.e. more than one-third of the total) was set in order to ensure the feasibility of the evaluation while allowing for a comprehensive sample of typical actions (see Table 9). Then the evaluation team identified the **number of actions to be selected** based on: i) the share of actions from each package relative to the total number of actions; and ii) the share of old and new actions compared to the total number of actions per package. The relative shares were then rounded off. The final sample is presented in Table 10, which also provides an overview of the solutions stemming from selected actions. Beyond the criteria outlined above, the sampled actions have been randomly selected to avoid any selection bias.

Importantly, the sampled actions helped assessing how the ISA² programme has contributed to the implementation of the Interoperability Action Plan (annexed to the 2017 EIF Communication). For further details please see Annex 6.k.

²⁰ Stakeholders related to all 54 actions were invited to answer the online surveys. However, desk research (review of documentary evidence) and interviews focused only on sampled actions.

Table 9 Number of sampled actions by package and programme

Package	Number of actions	Number of ISA actions	Number of ISA ² actions	Package actions / Total actions proportion	Number of sampled actions (total)	Number of sampled actions (ISA)	Number of sampled actions (ISA ²)
1. Key and generic interoperability enablers	7	5	2	13%	2	2	0
2. Semantic interoperability	4	1	3	7%	2	1	1
3. Access to data/data sharing/open data	7	2	5	13%	3	1	2
4. Geospatial solutions	1	1	0	2%	1	1	0
5. eProcurement/ eInvoicing - Supporting instruments	1	1	1	2%	1	1	0
6. Decision making and legislation - Supporting instruments	10	5	5	19%	3	1	2
7. EU Policies - Supporting instruments	5	3	2	9%	1	1	0
8. Supporting instruments for public administrations	17	11	6	31%	7	5	2
9. Accompanying measures	2	0	2	4%	1	0	1
TOTAL	54	29	25	100%	21	13	8

Note: The column 'Number of ISA actions' shows the number of actions continued under ISA² from the programme's previous editions. The column 'Number of ISA² actions' shows the number of new actions under ISA², which are not a direct continuation of any actions of the previous editions of the programme.

Source: [CEPS final study](#).

Table 10 Sampled actions and relevant solutions

Package	Action number	Action Name	ISA/ ISA ²	Solutions			
1. Key and generic interoperability enablers	2016.19	Trusted Exchange Platform (e-TrustEx)	ISA	Common tool / service: Open e-TrustEx			
1. Key and generic interoperability enablers	2016.29	Catalogue of Services	ISA	Common framework: Core Public Service Vocabulary Application Profile (CPSV-AP)			
2. Semantic interoperability	2016.07	SEMIC: Promoting Semantic	ISA	Common framework (data models, data	Common specification / standard: ADMS	Common specification:	Common tool / service: VocBench3

Package	Action number	Action Name	ISA/ ISA ²	Solutions			
		Interoperability Amongst the European Union EU countries		standards): Core vocabularies		DCAT Application Profile for data portals in Europe (DCAT-AP), GeoDCAT-AP, StatDCAT-AP	
2. Semantic interoperability	2016.16	Public Multilingual Knowledge Management Infrastructure for the DSM	ISA ²	Common framework: PMKI Core data model for multilingual taxonomies/terminologies	Common specification / standard: Semantic links - core dataset with additional semantic links between different language resources (in particular having EuroVoc as pivot)		
3. Access to data/data sharing/open data	2016.03	Big Data for Public Administrations	ISA	Study: Big data analytics for policy making	Common tool / service: DORIS - stakeholders' feedback analysis tool	Study: Big Data Test Infrastructure	
3. Access to data/data sharing/open data	2016.06	Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	ISA ²	Common framework: ESS: Statistical Production Reference Architecture v1.0			
3. Access to data/data sharing/open data	2016.18	Development of an Open Data Service, Support and Training Package in	ISA ²	Common tool / service: Catalogue of data visualisation tools (part of EU Open Data portal)			

Package	Action number	Action Name	ISA/ ISA ²	Solutions			
		the Area of Linked Open Data, Data Visualisation and Persistent Identification					
4. Geospatial solutions	2016.10	European Location Interoperability Solutions for e-Government (ELISE)	ISA	Common tool / service: Re3gistry	Common framework: EULF Blueprint	Common tool / services: Common services, pilots and applications	Common tool / service: INSPIRE Reference validators and interoperability testing (test framework)
5. eProcurement/ eInvoicing - Supporting instruments	2016.05	European Public Procurement Interoperability Initiative	ISA	Common tool / service: Open e-Prior	Common tool / service: eCertis	Common tool / service: European Single Procurement Document (ESPD) service as well as a data model on the ESPD	Common tool / service: eProcurement Ontology
6. Decision making and legislation - Supporting instruments	2016.23	Legal interoperability (former ICT Implications of EU Legislation)	ISA	Common tool: Tool #27 of the Better Regulation Toolbox: The digital economy and society & ICT issues	Common framework: ICT Impact Assessment Guidelines	Common tool: Decision supporting tool on interoperability	
6. Decision making and legislation - Supporting instruments	2017.03	REFIT Platform	ISA ²	Common tool / service: REFIT Platform IT Tool			
6. Decision making and legislation - Supporting instruments	2017.04	Inter-Institutional Register of Delegated Acts (RegDel)	ISA ²	Common tool / service: Register of Delegated Acts (RegDel)			

Package	Action number	Action Name	ISA/ISA ²	Solutions			
7. EU Policies - Supporting instruments	2016.14	European Citizens' Initiatives and European Parliament Elections	ISA	Common tool / service: Online Collection Software to support European Citizens' Initiatives (OCS for ECIs)	Common tool / service: European Parliament Crypto Tool		
8. Supporting instruments for public administrations	2016.20	Joinup – European Collaborative Platform and Catalogue	ISA	Common tool / service: Joinup			
8. Supporting instruments for public administrations	2016.21	National Interoperability Framework Observatory	ISA	Common framework: NIFO factsheets	Common framework: State of play of interoperability in Europe		
8. Supporting instruments for public administrations	2016.32	European Interoperability Architecture (EIA)	ISA	Common framework: European Interoperability Reference Architecture (EIRA)	Common tool / service: CarTool		
8. Supporting instruments for public administrations	2016.35	EUSurvey	ISA	Common tool / service: EUSurvey	Common tool / service: DORIS		
8. Supporting instruments for public administrations	2016.37	Interoperability Maturity Assessment of a Public Service (IMAPS)	ISA	Common tool / service: Interoperability Maturity Assessment of a Public Service (IMAPS)			
8. Supporting instruments for public administrations	2017.01	Standard-Based Archival Data Management, Exchange and Publication	ISA ²	Study: Study on Standard-Based Archival Data Management, Exchange and Publication	Common tool: Assessment tool offering support for the selection of IT solutions for archives management.		

Package	Action number	Action Name	ISA/ ISA ²	Solutions		
8. Supporting instruments for public administrations	2019.01	Interoperability Academy	ISA ²	Common tool / service: Interoperability Academy Winter School	Common tool / service: Interoperability Academy Catalogue of Educational Training Resources	
9. Accompanying measures	2016.30	Raising Interoperability Awareness Communication Activities	ISA ²	Events organised by ISA ²	Events in which ISA ² participated	

Source: [CEPS final study](#).

Annex 6: Supporting evidence from desk research

This annex presents evidence collected from desk research of performance indicators, the rolling work programme, the information available online in the webpages dedicated to the individual ISA² actions and solutions, relevant literature and additional evidence received from the action owners of the 21 sampled actions. In the following section, evidence is presented by evaluation criterion and question.

Relevance

EQ1: To what extent are the objectives of the ISA² programme still pertinent in relation to the evolving needs and problems at both national and EU levels?

Annex 6.a. Academic and grey literature outlining the needs and problems in the field of interoperability

This section presents an overview of the academic and grey literature supporting the assessment of the needs and problems tackled by ISA², thus contributing to the evaluation of the relevance criterion.

Table 11 Literature review: needs and problems in the field of interoperability

ISA ² identified needs and problems	Studies, reports and articles that substantiate the existence of specific needs and problems
The need for public administrations to cooperate to enable more efficient and secure public services	<ul style="list-style-type: none"> • Kalvet et al. (2018), <i>Cross-border e-Government Services in Europe: Expected Benefits, Barriers and Drivers of the Once-Only Principle</i>. In Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance (ICEGOV '18); • Tinholt et al. (2013), <i>Study on Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers</i>. Publications Office of the European Union; • De Abreu (2017), <i>Digital Single Market under EU political and constitutional calling: European electronic agenda's impact on interoperability solutions</i>. EU Law Journal. Vol. 3, No. 1, January 2017; • Krimmer et al. (2018), <i>Contributing to a Digital Single Market for Europe: Barriers and Drivers of an EU-wide Once-Only Principle</i>. Proceedings of the 19th Annual International Conference on Digital Government Research;

ISA ² identified needs and problems	Studies, reports and articles that substantiate the existence of specific needs and problems
	<ul style="list-style-type: none"> • Cave et al. (2017), <i>EU-wide digital Once-Only Principle for citizens and businesses: Policy options and their impacts</i>. Publications Office of the European Union; • Masciotta (2019), <i>A strategy on the interoperability issue within the P.A. from the Italian constitutional perspective</i>. ITALIAN J. PUB. L. 689 (2019); • Kourabali and Katehakis (2019), <i>The new European interoperability framework as a facilitator of digital transformation for citizen empowerment</i>. Journal of Biomedical Informatics 94; • JRC(2020), <i>Assessing the impacts of digital government transformation in the EU</i>. Publications Office of the European Union.
<p>The need for public administrations to exchange information to fulfil legal requirements or political commitments</p>	<ul style="list-style-type: none"> • Kalvet et al. (2018), <i>Cross-border e-Government Services in Europe: Expected Benefits, Barriers and Drivers of the Once-Only Principle</i>. In Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance (ICEGOV '18); • Sallamo et al. (2020), <i>Recommendations for organising and governing integrated public services</i>. Publications Office of the European Union; • Krimmer et al. (2018), <i>Contributing to a Digital Single Market for Europe: Barriers and Drivers of an EU-wide Once-Only Principle</i>. Proceedings of the 19th Annual International Conference on Digital Government Research; • JRC(2020), <i>Assessing the impacts of digital government transformation in the EU</i>. Publications Office of the European Union.
<p>The need for public administrations to share and re-use information to improve administrative efficiency and cut red tape for citizens and businesses</p>	<ul style="list-style-type: none"> • Kalvet et al. (2018), <i>Cross-border e-Government Services in Europe: Expected Benefits, Barriers and Drivers of the Once-Only Principle</i>. In Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance (ICEGOV '18); • Sallamo et al. (2020), <i>Recommendations for organising and governing integrated public services</i>; Publications Office of the European Union, 2021. Publications Office of the European Union; • Krimmer et al. (2018), <i>Contributing to a Digital Single Market for Europe: Barriers and Drivers of an EU-wide Once-Only Principle</i>. Proceedings of the 19th Annual International Conference on Digital Government Research; • Gallo et al. (2014) <i>Study on eGovernment and the Reduction of Administrative Burden</i>. Publications Office of the

ISA ² identified needs and problems	Studies, reports and articles that substantiate the existence of specific needs and problems
	<p>European Union;</p> <ul style="list-style-type: none"> • Cave et al. (2017), <i>EU-wide digital Once-Only Principle for citizens and businesses: Policy options and their impacts</i>. Publications Office of the European Union.
<p>Administrative e-barriers are leading to the fragmentation of the internal market</p>	<ul style="list-style-type: none"> • Cave et al. (2017), <i>EU-wide digital Once-Only Principle for citizens and businesses: Policy options and their impacts</i>. Publications Office of the European Union; • Gallo et al. (2014) <i>Study on eGovernment and the Reduction of Administrative Burden</i>. Publications Office of the European Union; • Sallamo et al. (2020), <i>Recommendations for organising and governing integrated public services</i>; • Krimmer et al. (2018), <i>Contributing to a Digital Single Market for Europe: Barriers and Drivers of an EU-wide Once-Only Principle</i>.
<p>Needs for digitalisation and cooperation deriving from or exacerbated by the COVID-19 pandemic</p>	<ul style="list-style-type: none"> • Charay et al. (2021), <i>Report on Public Administrations' Digital Response to COVID-19 in the EU</i>, Publications Office of the European Union, 2021; • Renda and Castro (2020), <i>Towards Stronger EU Governance of Health Threats after the COVID-19 Pandemic</i>, European Journal of Risk Regulation, 11 (2020), pp. 273–282. Cambridge University Press; • Ciucci and Gouardères (2020), <i>National COVID-19 contact tracing apps</i>. Briefing Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament Briefing; • Politis et al. (2021), <i>On an innovative architecture for digital immunity passports and vaccination certificates</i>. IEEE Network; • Mithani et al. (2021), <i>A scoping review of global vaccine certificate solutions for COVID-19</i>. Preprint, Research Square; • Gstrein et al. (2021), <i>A Terrible Great Idea? COVID-19 'Vaccination Passports' in the Spotlight</i>. Working Paper No. 153 The Centre on Migration, Policy & Society University of Oxford (2021).
<p>The need for digital literacy and skills to ensure that the tools developed can also be used effectively and thus improve take-up</p>	<ul style="list-style-type: none"> • Tinholt et al. (2013), <i>Study on Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers</i>. Publications Office of the European Union; • Taipale (2012), <i>The use of e-government services and the Internet: The role of socio-demographic, economic and geographical predictors</i>. Telecommunications Policy 37 (2013) 413;

ISA ² identified needs and problems	Studies, reports and articles that substantiate the existence of specific needs and problems
	<ul style="list-style-type: none"> • Misuraca et al. (2020), <i>Exploring Digital Government Transformation in the EU</i>. Publications Office of the European Union; • Gallo et al. (2014) <i>Study on eGovernment and the Reduction of Administrative Burden</i>. Publications Office of the European Union; • Krimmer et al. (2018), <i>Contributing to a Digital Single Market for Europe: Barriers and Drivers of an EU-wide Once-Only Principle</i>. Proceedings of the 19th Annual International Conference on Digital Government Research; • JRC(2020), <i>Assessing the impacts of digital government transformation in the EU</i>. Publications Office of the European Union; • Chinn et al. (2020), <i>The future is now: Closing the skills gap in Europe's public sector</i>, McKinsey & Company.
The need for extended diffusion of the digital identity	<ul style="list-style-type: none"> • Tinholt et al. (2013) <i>Study on Analysis of the Needs for Cross-Border Services and Assessment of the Organisational, Legal, Technical and Semantic Barriers</i>. Publications Office of the European Union; • Krimmer et al. (2018), <i>Contributing to a Digital Single Market for Europe: Barriers and Drivers of an EU-wide Once-Only Principle</i>. Proceedings of the 19th Annual International Conference on Digital Government Research; • Cave et al. (2017), <i>EU-wide digital Once-Only Principle for citizens and businesses: Policy options and their impacts</i>. Publications Office of the European Union.
The need to exchange best practices between EU countries.	<ul style="list-style-type: none"> • Halmos (2018), <i>Cross-border digital public services, Cross Border Review 2018</i> Central European Service For Cross-Border Initiatives; • Sallamo et al. (2020), <i>Recommendations for organising and governing integrated public services</i>. Publications Office of the European Union.
The need to ensure a feedback loop with citizens in order to improve the functioning of digital tools and solutions	<ul style="list-style-type: none"> • Misuraca et al. (2020), <i>Exploring Digital Government Transformation In The EU</i>. Publications Office of the European Union; • Sallamo et al. (2020), <i>Recommendations for organising and governing integrated public services</i>. Publications Office of the European Union.
The need for consistent governance of the different initiatives in the field	<ul style="list-style-type: none"> • Sallamo et al. (2020), <i>Recommendations for organising and governing integrated public services</i>. Publications Office of the European Union;

ISA ² identified needs and problems of interoperability at the EU level.	Studies, reports and articles that substantiate the existence of specific needs and problems
	<ul style="list-style-type: none"> • Lakka et al. (2012), <i>What drives eGovernment growth? An econometric analysis on the impacting Factors</i>. Int. J. Electronic Governance Vol. 6, No. 1, 2013; • Krimmer et al. (2018), <i>Contributing to a Digital Single Market for Europe: Barriers and Drivers of an EU-wide Once-Only Principle</i>. Proceedings of the 19th Annual International Conference on Digital Government Research.

Source: [CEPS final study](#).

Effectiveness

EQ2: To what extent has the ISA² programme achieved its objectives – with special focus on the re-use of interoperability solutions across the Union and paying particular attention to the needs expressed by the European public administrations?

EQ3: Are there aspects (e.g. objectives, actions) that are more or less effective than others, and if so, what lessons can be drawn from this?

Annex 6.b. Take-up of solutions of the sampled ISA² actions

This section presents an overview of how the solutions of the sampled ISA² actions have been taken up in the EU institutions (Table 12) and by public administrations in the EU countries (Table 13), based on the information available on the ISA² actions and solutions webpages and additional information provided in the evaluation process by ISA² action owners. This section contributes primarily to the assessment of the effectiveness and EU-added value of the programme.

Table 12 EU institutions using solutions provided by sampled ISA² actions

	European Commission	Council of the EU	European Parliament	Publications Office of the EU	European Council	European Central Bank	TOTAL
ADMS				x			1
Core Vocabularies	x			x			2
DCAT-AP	x			x			2

	European Commission	Council of the EU	European Parliament	Publications Office of the EU	European Council	European Central Bank	TOTAL
eCertis	x					x	2
EIRA and CarTool	x	x		x			3
e-TrustEx	x	x	x	x			4 ²¹
EUSurvey	x		x	x	x		4
GeoDCAT-AP	x						1
Open e-Prior	x			x			2
Re3gistry	x						1
RegDel	x	x	x	x			4
VocBench3	x			x			2
TOTAL	11	3	3	9	1	1	28

Source: [CEPS final study](#), which built on the data available on [ISA² solutions webpage](#) as of January 2021

Table 13 EU EU countries using solutions provided by sampled ISA² actions

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SL	SK	FI	SE	TOT.	
ADMS					x				x			x																	3
Core Vocabularies	x					x			x			x							x										5
CPSV-AP ²²	x				x	x	x	x	x			x							x			x			x	x			11
DCAT-AP	x				x		x		x			x							x								x		7
eCertis	x	x	x	x	x		x	x	x	x	x	x	x		X		x		x	x	x	x		x	x	x	x		22
EIRA	x		x	x		x			x			x				x			x							x	x		10
e-PRIOR	x																												1

²¹ The overview was updated based on additional feedback received from the action owners.

²² In certain cases, such as data models including the CPSV-AP, the use of a specific ISA² solution refers to the fact that the Member States use solutions that are aligned with the ones developed as part of the ISA² programme.

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SL	SK	FI	SE	TOT.	
ESPD ²³	x	x	x	x	x	x	x	x	x	x	x	x		x	x		x	x	x	x	X	x	x	x	x	x	x	x	25
Open e-TrustEx ²⁴	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	27
European Parliament Crypto Tool	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	27
EUSurvey									x																			1	
GeoDCAT-AP					x																							1	
IMAPS	x		x	x		x		x	x	x	x	x	x				x	x	x	x					x		x	x	17
Joinup	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x	x	x	x	25
NIFO	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	25
OCS for ECIs																x												1	
Re3gistry									x	x		x								x					x	x		6	

Source: [CEPS final study](#), which built on the data available on [ISA² solutions webpage](#) as of January 2021

Table 14 Status of sampled actions and their cross-border feature

Package	Action number	Action Name	Operational solutions	Out of which cross-border solution	Solutions under development
1. Key and generic interoperability enablers	2016.19	Trusted Exchange Platform (e-TrustEx)	1	1	-
1. Key and generic interoperability enablers	2016.29	Catalogue of Services	1	1	-
2. Semantic interoperability	2016.07	SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	4	2	-

²³ The overview was updated based on additional feedback received from the action owners.

²⁴ The overview was updated based on additional feedback received from the action owners. The e-TrustEx solution is used by all Member States in the context of the DECIDE project.

Package		Action number	Action Name	Operational solutions	<i>Out of which cross-border solution</i>	Solutions under development
2. interoperability	Semantic	2016.16	Public Multilingual Knowledge Management Infrastructure for the Digital Single Market	-	-	4
3. Access to data/data sharing/open data		2016.03	Big Data for Public Administrations	3	3	1
3. Access to data/data sharing/open data		2016.06	Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	2	2	6
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	1	1	1
4. Geospatial solutions		2016.10	European Location Interoperability Solutions for e-Government (ELISE)	4	4	1
5. e-Procurement/ e-invoicing - Supporting instruments		2016.05	European Public Procurement Interoperability Initiative	3	3	5
6. Decision making and legislation - Supporting instruments		2016.23	Legal interoperability (former ICT Implications of EU Legislation)	2	-	-
6. Decision making and legislation - Supporting instruments		2017.03	REFIT Platform	-	-	1
6. Decision making and legislation - Supporting instruments		2017.04	Inter-Institutional Register of	1	-	-

Package	Action number	Action Name	Operational solutions	<i>Out of which cross-border solution</i>	Solutions under development
legislation - Supporting instruments		Delegated Acts (RegDel)			
7. EU Policies - Supporting instruments	2016.14	European Citizens' Initiatives and European Parliament Elections	2	2	-
8. Supporting instruments for public administrations	2016.20	Joinup – European Collaborative Platform and Catalogue	1	1	-
8. Supporting instruments for public administrations	2016.21	National Interoperability Framework Observatory	3	3	-
8. Supporting instruments for public administrations	2016.32	European Interoperability Architecture (EIA)	2	2	1
8. Supporting instruments for public administrations	2016.35	EUSurvey	2	1	-
8. Supporting instruments for public administrations	2016.37	Interoperability Maturity Assessment of a Public Service (IMAPS)	1	1	-
8. Supporting instruments for public administrations	2017.01	Standard-Based Archival Data Management, Exchange and Publication	2	2	1
9. Accompanying measures	2016.30	Raising Interoperability Awareness – Communication Activities	The full overview of events organised is listed in Annex 6.e.		
TOTALS			35	29	21

Source: European Commission's own elaboration

Annex 6.c. Performance indicators

The below table presents relevant performance indicators for the solutions of the sampled ISA² actions based on the data of the ISA² dashboard and the webpages dedicated to ISA² actions and solution. The performance indicators contribute primarily to the assessment of the effectiveness of the programme and its EU added value. The table presents one or two performance indicators per solution, as relevant depending on the solution type. The value of each performance indicator is listed in a dedicated column (“Value performance indicator 1”; “Value performance indicator 2”), followed by the description of the performance indicator (“Performance indicator 1”; “Performance indicator 1”). The performance indicators were collected based on the entire duration of the programme. The data presented below was collected in January 2021.

Table 15 Overview of performance indicators for sampled ISA² actions²⁵

Package	ISA / ISA ²	Action number	Solution	Value performance indicator 1	Performance indicator 1	Value performance indicator 2	Performance indicator 2
1. Key and generic interoperability enablers	ISA	2016.19	e-TrustEx	200	Number of public administrations in the EU countries using this solution	16,700,000 ²⁶	Number of documents exchanged between connected EU institutions, as well as public and private entities in the EU countries
1. Key and generic interoperability enablers	ISA	2016.29	CPSV-AP	12	Number of public administrations in EU countries using this solution (including in cases of cross-border catalogues)	701	Number of downloads on Joinup (up until January 2021) of the latest version of CPSV-AP (version 2.2.1 released in 2019)
2. Semantic interoperability	ISA	2016.07	ADMS	9	Number of public administrations (the EU countries and the EU	2,934	Number of interoperability solutions on Joinup described

²⁵ The ISA² solutions are part of the EIF toolbox, supporting and contributing to the achievement of the objectives of the EIF. The EIF Toolbox is available on Joinup: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/solution/eif-toolbox/eif-toolbox>

²⁶ The information was updated based on additional feedback received from the action owners.

Package	ISA / ISA ²	Action number	Solution	Value performance indicator 1	Performance indicator 1	Value performance indicator 2	Performance indicator 2
					institutions) and businesses using the solution		using ADMS (ADMS is used for organising the descriptive metadata of all solutions on Joinup; in January 2021, 2,934 solutions were available on Joinup and thus described using the ADMS solution)
2. Semantic interoperability	ISA	2016.07	Core vocabularies	11	Instances of use of the solution by public administrations (in the EU countries and the EU institutions)		
2. Semantic interoperability	ISA	2016.07	DCAT-AP	29	Instances of use of the solution by public administrations (in the EU countries and the EU institutions) and their data portals, associations, universities.		
2. Semantic interoperability	ISA	2016.07	VocBench3	14	Number of public administrations (in the EU countries and the EU institutions), universities, institutes, international organisations using the previous versions of VocBench.		
2. Semantic interoperability	ISA ²	2016.16	PMKI Core data model for multilingual taxonomies / terminologies	2 journal articles; 7 international conference proceedings	Instances of inclusion in academic journals and international conferences		
2. Semantic interoperability	ISA ²	2016.16	Semantic links	4	Collaborations with European public administrations to establish semantic interoperability between		

Package	ISA / ISA ²	Action number	Solution	Value performance indicator 1	Performance indicator 1	Value performance indicator 2	Performance indicator 2
					national language resources and EuroVoc (3 EU countries and the EU institutions)		
3. Access to data/data sharing/open data	ISA ²	2016.06	ESS Service	20	Number of registered contributors (EU countries)	28	Number of National Statistical Institutes' CIOs and Heads of Methodology who adopted the ESS reference architecture
3. Access to data/data sharing/open data	ISA ²	2016.18	Data Visualisation Tools Catalogue	31	Number of users of solution by public administrations (EU countries and the EU institutions) and projects	214	Number of downloads on Joinup platform
4. Geospatial solutions	ISA	2016.10	Re3gistry	13	Public administrations (EU countries, EC) using this solution		
4. Geospatial solutions	ISA	2016.10	EULF Blueprint	29	Number of public administrations using the solution (EU countries and the EU institutions)		
4. Geospatial solutions	ISA	2016.10	Studies on location information (ELISE)	8	Number of studies published on location information, including best practices		
5. eProcurement/ eInvoicing - Supporting instruments	ISA	2016.05	Open e-Prior	70	Number of public administrations using the solution (EU institutions)	306	Number of suppliers connected via the web portal
5. eProcurement/ eInvoicing - Supporting	ISA	2016.05	eCertis	44 ²⁷	Public administrations (EU countries, EU institutions), contracting authorities,	25	Connections from EU countries' solutions to

²⁷ In addition, 3000 unique visitors were recorded in June 2021, based on additional information received from the action owners.

Package	ISA / ISA ²	Action number	Solution	Value performance indicator 1	Performance indicator 1	Value performance indicator 2	Performance indicator 2
instruments					companies – using this solution		eCertis ¹⁰⁵
5. eProcurement/ eInvoicing - Supporting instruments	ISA	2016.05	ESPD	35,752	Number of solution downloads	75	Number of ESPD solutions, either using the data model or the open source version of the ESPD service developed under ISA ²
6. Decision making and legislation - Supporting instruments	ISA	2016.23	Digital screening mentioned in Tool #27 of the Better Regulation Toolbox: The digital economy and society & ICT issues	955	Number of Commission proposals screened for ICT impacts between 2014 and 2020		
6. Decision making and legislation - Supporting instruments	ISA	2016.23	ICT impact assessment guidelines	11	Instances of known use of the guidelines (since 2014)		
6. Decision making and legislation - Supporting instruments	ISA ²	2017.03	REFIT Platform IT Tool	No instance of re-use/internal tool	Instance of re-use/internal tool		
6. Decision making and legislation - Supporting instruments	ISA ²	2017.04	RegDel	144,587	Number of page views since the launch up until 1 February 2019	2,202	Number of active subscriptions

Package	ISA / ISA ²	Action number	Solution	Value performance indicator 1	Performance indicator 1	Value performance indicator 2	Performance indicator 2
7. EU Policies - Supporting instruments	ISA	2016.14	Online Collection Software to support European Citizens' Initiative	45	Number of ECIs launched using the Online Collection Software		
7. EU Policies - Supporting instruments	ISA	2016.14	European Parliament Crypto Tool	27	Number of EU countries using the solution		
8. Supporting instruments for public administrations	ISA	2016.20	Joinup	16,092	Number of professionals working in the field of e-Government registered on Joinup (as of 14 January 2021)	2,934	Solutions created within the 147 Collections (thematic collaborative spaces) on Joinup.
8. Supporting instruments for public administrations	ISA	2016.21	NIFO factsheets	253	Number of members on Joinup webpage	36	Number of countries covered in Digital Public Administration Factsheets
8. Supporting instruments for public administrations	ISA	2016.32	EIRA and CarTool	10	Number of public administrations in EU countries and EU deploying the solution	3,610	Number of downloads of EIRA on Joinup up to January 2021
8. Supporting instruments for public administrations	ISA	2016.35	EUSurvey	29,200	Number of surveys created (sum for 2016, 2017, 2018, Q2 in 2019 and Q3 in 2020), based on the ISA ² solution webpage, on 2018/2019 Rolling Work Programme and ISA ² action dashboard		
8. Supporting instruments for public	ISA	2016.37	IMAPS	141	Total number of IMPAS assessments (2018 - 2020) based on the 2018 and 2020 editions of		

Package	ISA / ISA ²	Action number	Solution	Value performance indicator 1	Performance indicator 1	Value performance indicator 2	Performance indicator 2
administrations					the Report on IMAPS Results ²⁸		
8. Supporting instruments for public administrations	ISA ²	2017.01	Study on Standard-based Archival Data Management, Exchange, and Publication	124	Unique visitors/downloads since the publication (2018)		
8. Supporting instruments for public administrations	ISA ²	2017.01	Assessment tool offering support for the selection of IT solutions for archives management	65	Unique visitors/downloads since the publication (2018)		
8. Supporting instruments for public administrations	ISA ²	2019.01	Interoperability Academy Catalogue of Educational Training Resources	35	Number of resources included in catalogue		
9. Accompanying measures	ISA ²	2016.30	Raising Interoperability Awareness – Communication Activities	50	Events organised by ISA ²	82	Events in which ISA ² participated

Source: [CEPS final study](#).

²⁸ Report on IMAPS results, 2018 edition, Directorate-General for Informatics, European Commission, https://joinup.ec.europa.eu/sites/default/files/solution/documentation/2018-05/ISA2%20Action%202016.37%20Report%20on%20IMAPS%20results.%202018%20Edition_0.pdf; Report on IMAPS results, 2020 edition, Directorate-General for Informatics, European Commission, https://ec.europa.eu/isa2/sites/isa/files/report_on_imaps_results.pdf

Annex 6.d. Overview of studies, reports and papers developed as part of the sampled ISA² actions

This section provides a summary of the studies, reports and papers published as part of the implementation of ISA² actions, forming a particular type of output category of the programme. The information presented was collected from the ISA² actions and solutions webpages and Joinup. This section contributes to the assessment of the effectiveness criterion.

Table 16 Overview of studies, reports and papers developed as part of the sampled ISA² actions

Package	Action number	Action name	Studies, reports, papers
1. Key and generic interoperability enablers	2016.29	Catalogue of Services	<ul style="list-style-type: none"> • "Architecture for public service chatbots" (2019); • "European taxonomy for public services" (2019); • "Guidelines on how to build catalogues of public services at one-stop-shop portals and improve user experience" (2018)
2. Semantic interoperability	2016.07	SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	<ul style="list-style-type: none"> • "Use cases and benefits of ISA² specifications" (2019); • "GDPR Data Portability and Core Vocabularies" (2018); • "Towards an open government data ecosystem in Europe using common standards" (2017)
2. Semantic interoperability	2016.16	Public Multilingual Knowledge Management Infrastructure for the DSM	<ul style="list-style-type: none"> • P. Schmitz, F. Sanmartin, E. Francesconi, N. Hajlaoui, B. Batouche, Automatic Alignment of Multilingual Resources in the Linguistic Linked Open Data Cloud, in Journal of Open Access to Law; • M. Fiorelli, A. Stellato, T. Lorenzetti, A. Turbati, P. Schmitz, E. Francesconi, N. Hajlaoui, B. Batouche. Towards OntoLex-Lemon editing in VocBench 3, in AIDAinformazioni, Rivista di scienze dell'informazione, ISBN 978-88-548-8992-7, ISSN 1121-0095.; • A. Stellato, A. Turbati, M. Fiorelli, T. Lorenzetti, P. Schmitz, E. Francesconi, N. Hajlaoui, B. Batouche, Towards the Assessment of Gold-Standard Alignments between Legal Thesauri, in JURIX 2018 - The 31st international conference on Legal Knowledge and Information Systems. December 12–14, 2018 in Groningen, Netherlands; • P. Schmitz, E. Francesconi, N. Hajlaoui, B. Batouche, A. Stellato, Semantic Interoperability of Multilingual Language Resources by Automatic Mapping', in Proceedings of the 7th International Conference on Electronic Government and

Package	Action number	Action name	Studies, reports, papers
			<p>the Information Systems Perspective (EGOVIS 2018), Regensburg, Germany 3-6 September 2018;</p> <ul style="list-style-type: none"> • Schmitz P., Francesconi E., Hajlaoui N., Batouche B., PMKI: a European Commission action for the interoperability, maintainability and sustainability of Language Resources in Proceedings of the 11th edition of the Language Resources and Evaluation Conference, 7-12 May 2018, Miyazaki (Japan); • Stellato A., Fiorelli M., Turbati A., Lorenzetti T., Schmitz P., Francesconi E., Hajlaoui N., Batouche B., Dataset Alignment and Lexicalization to Support Multilingual Analysis of Legal Documents in AI Approaches to the Complexity of Legal Systems - Models and Ethical Challenges for Legal Systems, Legal Language and Legal Ontologies, Argumentation and Software Agents, within JURIX 2017 Conference, University of Luxembourg, 13-15 December 2017; • Schmitz P., Francesconi E., Hajlaoui N., Batouche B., Towards a Public Multilingual Knowledge Management Infrastructure for the European Digital Single Market, in Proceedings of the LDK 2017 Workshops: 1st Workshop on the OntoLex Model (OntoLex-2017), Shared Task on Translation Inference Across Dictionaries & Challenges for Wordnets, co-located with 1st Conference on Language, Data and Knowledge (LDK 2017), pp. 33-42, CEUR Workshop Proceedings Vol-1899, ISSN 1613-0073, Galway, Ireland, 8 June 2017; • M. Fiorelli, A. Stellato, T. Lorenzetti, A. Turbati, P. Schmitz, E. Francesconi, N. Hajlaoui, B. Batouche, "Editing OntoLex-Lemon in VocBench 3", in Proceedings of the 12th International Conference on Language Resources and Evaluation (LREC 2020), Marseille, France, 11-16 May 2020; • M. Fiorelli, A. Stellato, T. Lorenzetti, P. Schmitz, E. Francesconi, N. Hajlaoui and B. Batouche, "Metadata-driven Semantic Coordination", in 13th International Conference on Metadata and Semantics Research, Rome, Italy, 28-31 October 2019.
	2016.07	VocBench3	<ul style="list-style-type: none"> • Armando Stellato, Manuel Fiorelli, Andrea Turbati, Tiziano Lorenzetti, Willem Gemert, Denis Dechandon, Christine Laaboudi-Spoiden, Anikó Gerencsér, Anne Waniart, Eugeniu Costetchi and Johannes Keizer VocBench 3: A collaborative Semantic Web editor for ontologies, thesauri and lexicons, Semantic Web, doi:10.3233/SW-200370, 1-27, 05, 2020

Package	Action number	Action name	Studies, reports, papers
3. Access to data/data sharing/open data	2016.03	Big Data for Public Administrations	<ul style="list-style-type: none"> • "Big Data Analytics for Policy Making Report" (2016)
4. Geospatial solutions	2016.10	European Location Interoperability Solutions for e-Government (ELISE)	<ul style="list-style-type: none"> • "Assessment of economic opportunities and barriers related to geospatial data in the context of the Digital Single Market" (2018); • "Digital Government Benchmark - Study on Digital Government Transformation" Final Report (2018); "Study on Digital Government Transformation" Final Report (2018) • "Digital Government Benchmark - API study" Final Report (2018); • "Blockchain for Digital Government" Final Report (2019); • "Exploring Digital Government Transformation: understanding public sector innovation in a data-driven society" (2020); • "INSPIRE-MMTIS, overlap in standards related to the Delegated Regulation (EU) 2017/1926" (2019); • "The role of Spatial Data Infrastructures in the Digital Government Transformation of Public Administrations" (2019); • "Study of the terms of use applied in the INSPIRE resources and their usability barriers" (2019); • "Artificial Intelligence in the public sector. Use, impact and governance of AI in the public sector of the EU" (2020); • "Data Ecosystems for Geospatial Data: Establishment of Sustainable Data Ecosystems" (2020); • "WGIC Geospatial Information and Privacy - Policy Perspectives and Imperatives for the Geospatial Industry" (2020); • "Location intelligence benchmarking study" (2020). • "Establishing a new baseline for monitoring the status of EU Spatial Data Infrastructure" (2020)²⁹
6. Decision making	2016.23	Legal interoperability (former ICT	<ul style="list-style-type: none"> • "Case study analysis of regulatory reporting practices across the European

²⁹ The overview was amended to include additional input received from ISA² action owners.

Package	Action number	Action name	Studies, reports, papers
and legislation - Supporting instruments		Implications of EU Legislation)	Commission" (2019); • "ICT Impact Assessment Guidelines: Practical tools and guidelines for assessing ICT implications" (2018).
8. Supporting instruments for public administrations	2016.21	NIFO	• "The role of eGovernment and Interoperability in the European Semester process" (2018, 2019 and 2020); • "eGovernment factsheets anniversary report" (2019); • "Report on the state-of-play of digital public administration and interoperability" (2020); • "Report on public administrations' digital response to COVID-19 in Europe" (2021). • In addition, the action also published regularly factsheets and infographics: Digital public administration and interoperability factsheets and infographics (2018, 2019 and 2020) covering 35 European countries.
8. Supporting instruments for public administrations	2016.37	IMAPS	• "Report on IMAPS results" (2018, 2020)
8. Supporting instruments for public administrations	2017.01	Standard-Based Archival Data Management, Exchange and Publication	• "Study on Standard-Based Archival Data Management, Exchange and Publication" (2018)

Source: [CEPS final study](#).

Annex 6.e. Communication activities

This section presents an overview of the communication activities linked to the programme. It outlines both events in which ISA² representatives played an active role (Table 17) as well as events funded by ISA² (Table 18). The overview of communication activities contributes primarily to the effectiveness criterion, but also to EU added value.

Table 17 Events in which ISA² representatives played an active role

Year	Events	Location	Total participants
2016	Ljubljana ICT Procurement workshop	Ljubljana, Slovenia	N/A
2016	Nordic Digital Day	Tallinn, Estonia	N/A
2016	Open Source Summit Paris	Paris, France	180
2016	Digital Stakeholders Forum	Brussels, Belgium	150
2016	Digitec16	Brussels, Belgium	500
2016	Manage IT 2016	Antwerp, Belgium	N/A
2017	Open Belgium	Antwerp, Belgium	150
2017	SG IT Day	Brussels, Belgium	200
2017	Digital Day Rome	Rome, Italy	600
2017	ECI Day 2017	Brussels, Belgium	150
2017	ICT Spring Luxembourg 2017	Luxembourg, Luxembourg	5,000
2017	Conference Krems	Krems, Austria	N/A
2017	Digital Assembly 2017	Valletta, Malta	5,000
2017	Semantics Conference 2017	Amsterdam, The Netherlands	200
2017	ICA Conference 2017		N/A
2017	Inspire Conference 2017	Strasbourg, France	3,000
2017	Data for Policy	London, UK	200
2017	DK Architecture Conference	Copenhagen, Denmark	N/A
2017	Jornada sobre Interoperabilidad y Archivo Electronico	Madrid, Spain	180
2017	Digitalisierungsessen 17	Odense, Denmark	350
2017	Egov Conference Tallinn, 2017	Tallinn, Estonia	200
2017	3rd Annual Public Sector Transformation Conference	Brussels, Belgium	N/A
2017	3rd ELRC Conference	Brussels, Belgium	N/A
2017	ICT Proposers Day 2017	Budapest, Hungary	150
2017	Metaforum 2017	Brussels, Belgium	N/A
2017	Informatika v Javni Upravi	Brdo, Slovenia	175

Year	Events	Location	Total participants
2017	Paris Open Source Summit 2017	Paris, France	150
2017	Connecting Europe Facility (CEF) Conference	Brussels, Belgium	150
2017	eDemocracy Conference	Athens, Greece	100
2018	Connected Smart Cities Conference	Brussels, Belgium	500
2018	Flosscon	Brussels, Belgium	200
2018	GDPR Conference	Berlin, Germany	150
2018	Digital Czech Republic	Prague, Czech Republic	250
2018	Interop Summit 2018	Brussels, Belgium	150
2018	Open Belgium	Louvain La Neuve, Belgium	250
2018	RDA Berlin	Berlin, Germany	200
2018	IESA 2018	Berlin, Germany	250
2018	CNIS2018	Madrid, Spain	300
2018	Digital Day	Rome, Italy	300
2018	CEEE Gov Days 2018	Budapest, Hungary	150
2018	German Federal Level Conference	Berlin, Germany	120
2018	Good Governance Conference 2018	Brussels, Belgium	650
2018	Civil Society Days 2018	Brussels, Belgium	200
2018	Language Technology Industry Summit	Brussels, Belgium	200
2018	Egov Conference Tallinn, 2018	Tallinn, Estonia	300
2018	Conference Supervisory reporting for the Digital Age	Brussels, Belgium	150
2018	Digital Assembly 2018	Helsinki, Finland	125
2018	ICA Conference 2018	Sofia, Bulgaria	5,000
2018	ICT implications presentation in Vienna	Vienna, Austria	120
2018	Inspire Conference 2018	Antwerp, Belgium	900
2018	TOOP Conference	Vienna, Austria	150
2018	eGov High Level Conference 2018	Vienna, Austria	N/A
2018	Infofest Montenegro	Podgorica, Montenegro	150

Year	Events	Location	Total participants
2018	European Week of Regions and Cities 2018	Brussels, Belgium	6,000
2018	GovTech Summit 2018	Paris, France	3,000
2018	Digitec18	Brussels, Belgium	900
2018	ICT Vienna	Vienna, Austria	5,000
2018	Paris Open Source Summit 2018	Paris, France	200
2018	Symposium on Digital Transformation of the public sector 2018	Belgium	200
2018	Webinar on Government Transformation: "How co-creation will shape the future of value creation in the public sector"	Belgium	200
2018	1st CEF eTranslation Conference	Brussels, Belgium	N/A
2018	European Open Source & Free Software Law Event (EOLE 2018)	Paris, France	
2018	Paris Open Source Summit 2018, with a session on the Open Source Observatory	Paris, France	
2018	Symposium on "Digital transformation: Is it an evolution or a revolution?"	Leuven, Belgium	
2018	Webinar: Shaping the Future of Value Creation in the Public Sector	Online event	
2019	Connected Smart Cities Conference 2019, with a presentation on ISA ²	Brussels, Belgium	
2019	Startup Europe Summit 2019	Cluj-Napoca, Romania	
2019	Western Balkans Digital Summit	Belgrade, Serbia	
2019	e-Society 2019 conference	Utrecht, Netherlands	
2019	e-Governance Conference 2019: Same Goals, Different Roadmaps	Tallinn, Estonia	
2019	URBIS Smart City Fair	Brno, Czech Republic	
2019	Digital Assembly 2019	Bucharest, Romania	
2019	EU Datathon 2019 supported by ISA ²	Brussels, Belgium	
2019	EGOV-CeDEM-ePart 2019	San Benedetto del Tronto, Italy	
2019	Digital Excellence Forum @ ICT Proposers' Day 2019	Helsinki, Finland	
2019	European Week of Regions and Cities 2019	Brussels, Belgium	
2019	Web Summit 2019	Lisbon, Portugal	
2019	GovTech Summit	Paris, France	
2020	Inspire 2020 - the Virtual Conference	Online event	

Year	Events	Location	Total participants
2020	Webinar: Powering public sector change through Digital Innovation Hubs	Online event	
2020	ICEGOV 2020	Athens, Greece	
2020	ReMeP 2020 - Research Meets Practice. Legal Informatics Conference	Vienna, Austria	
2020	OECD - OPSI event "Policymaking after shock"		
2020	EU Regions Week: How can regions boost digital services?	Online event	

Source: [CEPS final study](#).

Table 18 Events funded by ISA² between 2016 and 2020

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
2016	From ISA to ISA2	Brussels, Belgium	300	-
2016	SEMIC2016*	Rome, Italy	206	-
2016	Workshop at Paris Open Source Summit 2016	Paris, France		
2016	Energy and Location Workshop: Methodologies for energy performance assessment based on location data	Ispira, IT		
2016	Semantic Interoperability Conference 2016 (SEMIC)	Rome, IT		
2016	INSPIRE Conference 2016 Parallel Session: INSPIREd Energy	Barcelona, ES		
2016	INSPIRE Conference 2016 Parallel Session: INSPIRE and the European Interoperability Framework: chaired by ELISE action leader	Barcelona, ES		
2016	INSPIRE Conference 2016 Workshop: European Location Interoperability Solutions for e-Government: from EULF and ARE3NA to ELISE	Barcelona, ES		
2016	INSPIRE Conference 2016 Parallel Session: The INSPIRE Toolbox: Re3gistry - A tool to manage and share reference codes	Barcelona, ES		
2016	INSPIRE Conference 2016 Parallel Session: The INSPIRE Toolbox: INSPIRE validation, conformance and interoperability testing	Barcelona, ES		
2016	From ISA to ISA ² — new challenges and opportunities	Brussels, BE		
2016	INSPIRE Conference 2016 Parallel Session: Costs and benefits of implementing INSPIRE: EULF lessons learned and follow up	Barcelona, ES		
2016	INSPIRE Conference 2016 Parallel Session: Next Generation SDI:	Barcelona, ES		

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
	Exploring Access Control in INSPIRE and e-Government			
2016	TESTA-ng Working Group Meeting	Brussels		
2017	Workshop on the EIF	Thessaloniki	N/A	-
2017	Sharing & Reuse Conference and Awards 2017	Lisbon, Portugal	220	810
2017	Workshop on Sharing and reuse Framework	Lisbon, Portugal		
2017	SEMIC2017	Valletta, Malta	224	609
2017	Webinar on the ISA ² Interoperability Test Bed	online event		
2017	Access to Base Registries Webinar	online event		
2017	TESTA-ng Working Group Meeting	Brussels		
2017	Open Conversation on Information Governance	online event		
2017	DCAT-AP "Change Management & Release Policy" Webinar	online event		
2017	EU Datathon 2017	Brussels (Belgium)	95	95
2017	Change and Release Management Policy for DCAT-AP - final webinar	online event		
2017	INSPIRE Conference 2017 Parallel Session: INSPIRE thinking out of the box: EU Location Framework Blueprint - Paving the road to digital government	Kehl, DE / Strasbourg, FR		
2017	INSPIRE Conference 2017 Speed Presentations: Introducing User Feedback in SDI to improve data quality and user experience	Kehl, DE / Strasbourg, FR		
2017	INSPIRE Conference 2017 Parallel Session: INSPIRE and linked data: Spatial Data on the Web - Tools and guidance for data providers	Kehl, DE / Strasbourg, FR		
2017	Webinar: what's new on Joinup	online		
2017	Change and Release Management Policy for DCAT-AP - final webinar	online		
2017	DCAT-AP "Change Management & Release Policy" Webinar	online		
2017	Open Conversation on Information Governance	online		
2017	Access to Base Registries webinar	online		
2017	Webinar on Interoperability Test Bed	online		
2017	SEMIC	Valletta, Malta		

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
2017	Sharing & Reuse Conference 2017	Lisbon, PT		
2017	INSPIRE Conference 2017 Parallel Session: INSPIRE and linked data: INSPIRE in RDF - increasing semantic interoperability for European geospatial data?	Kehl, DE / Strasbourg, FR		
2017	INSPIRE Conference 2017 Parallel Session: MIWP 2016-2020 Overview: INSPIRE Reference Validator	Kehl, DE / Strasbourg, FR		
2017	INSPIRE Conference 2017 Parallel Session: Thematic Focus - Energy: Web apps for INSPIRE - The ELISE Energy pilot example	Kehl, DE / Strasbourg, FR		
2017	INSPIRE Conference 2017 Parallel Session: Continued support to implementation: Re3gistry v2 - Manage and share reference codes in a simple way	Kehl, DE / Strasbourg, FR		
2017	INSPIRE Conference 2017 Workshop: INSPIREd Energy	Kehl, DE / Strasbourg, FR	20	
2017	INSPIRE Conference 2017 Workshop: New Directions in Digital Government using INSPIRE	Kehl, DE / Strasbourg, FR	60	
2017	1st meeting of ISA ² WG GS	Ispra, IT	37	37
2017	Webinar: What's new on Joinup?	online event		
2017	Sharing & Reuse at workshop at Paris Open Source Summit 2017			
2018	Webinar: Implementing ISA ² Core Vocabularies in JSON-LD			
2018	Open PM2 Conference (partially funded by ISA2)	Brussels, Belgium	538	1800 (connections to web streaming)
2018	Kick-off webinar: Core Public Event Vocabulary	online event		
2018	ELISE Webinar: Assessment of economic opportunities and barriers related to geospatial data	online event		
2018	Follow-up webinar on Core Public Event Vocabulary	online event		
2018	Webinar on Access to Base Registries	online event		
2018	Workshop: Addressing the Barriers to IPv6 Adoption			
2018	SEMIC 2018	Sofia, Bulgaria	220	701
2018	Access to Base Registries webinar on European Registry of Registries	online event		
2018	Digital Government Beyond 2020: workshop with civil society and	Brussels, Belgium		

Year	ISA2 workshop/ conference start-ups	Location	Total remote onsite	Total remote participants
2018	EU Datathon 2018	Brussels, Belgium		
2018	Digital Government Beyond 2020 Workshop	Brussels, Belgium		
2018	Digital Government Beyond 2020 workshop with City and Regional representatives	Brussels, Belgium		
2018	Digital Government Beyond 2020 workshop with private sector representatives	Brussels, Belgium		
2018	ISA ² Mid-Term Conference: Linking Public Administrations, Businesses and Citizens	Brussels, Belgium	325	-
2018	ISA ² Interim Evaluation: Kick-off Workshop	Brussels, Belgium		
2018	Workshop organised as part of the European Week of Regions and Cities 2018	Brussels, Belgium	98	-
2018	Workshop organised as part of the Inspire Conference	Antwerp, Belgium	95	-
2018	ISA ² Mid-Term Conference: Linking Public Administrations, Businesses and Citizens	Brussels, Belgium		
2018	ISA ² Interim Evaluation: Kick-off Workshop	Brussels, Belgium		
2018	4th Follow-up Expert Meeting, 27th March 2019, on the provision of EU-Wide Multimodal Travel Information Services	Brussels, BE		
2018	ISA2 interim evaluation - kick off	Brussels, BE		
2018	ISA2 midterm conference	Brussels, BE		
2018	Digital Government beyond 2020	Brussels, BE		
2018	Access to Base Registries webinar	online		
2018	SEMIC	Sofia, BG		
2018	to IPv6 adoption	Brussels, BE		
2018	Webinar on Access to Base Registries	online		
2018	TESTA-ng Working Group Meeting	Brussels		
2018	Follow up webinar on Core Public Event Vocabulary	online		
2018	Open PM2 conference	Brussels, BE		
2018	Kick-off webinar: Core Public Event Vocabulary	online		
2018	4th meeting of ISA ² WG GS	Brussels, BE	20	20

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
2018	Delivering EU-wide multimodal travel information, planning and ticketing services: dream or reality?	Brussels, BE		
2018	INSPIRE Conference 2018 Parallel Session: Fitness for purpose: Adding Location Interoperability to Better Regulation's Assessment of ICT Implications of New Legislation	Antwerp, BE		
2018	INSPIRE Conference 2018 Workshop: Digital transformation and the future of SDIs	Antwerp, BE		
2018	INSPIRE Conference 2018 Workshop: General Data Protection Regulation (GDPR) - Trusting the use of your personal location data	Antwerp, BE		
2018	INSPIRE Conference 2018 Parallel Session: The use of INSPIRE to support Intelligent Transport Systems	Antwerp, BE		
2018	INSPIRE Conference 2018 Parallel Session: Energy & Location	Antwerp, BE		
2018	INSPIRE Conference 2018 Workshop: INSPIRE on tools (Geoportal, Re3gistry v2.0, Validator)	Antwerp, BE		
2018	INSPIRE Conference 2018 Parallel Session: Helping to make INSPIRE work: Good practices for licences – overcoming usage barriers for INSPIRE data	Antwerp, BE		
2018	3rd meeting of ISA ² WG GS	Online		19
2018	Pan-European Authoritative Gazetteer Developments (closed event)	Online		17
2018	Workshop on GDPR and Location Data	Online		35
2018	Location Data Licensing (closed event)	Online		25
2018	Digital platforms in government environments (Closed event)	Online		
2018	2nd meeting of ISA ² WG GS	Brussels, BE	23	23
2018	ELISE Webinar: Spatial Data on the Web : GeoNetwork's User feedback form - How to make geospatial data more accessible for e-government applications	Online		35
2018	ELISE Webinar: Spatial Data on the Web : How to make geospatial data more accessible for e-government applications	Online		35
2018	DIGITEC 2018 - LEOS: Making legislative drafting more efficient	Brussels, Belgium		
2018	ELISE Webinar: Assessment of economic opportunities and barriers related to geospatial data in the context of the Digital Single Market	Online		35

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
2018	ELISE Energy Pilot Seminar - "Possible synergies between energy smart meters, SensorThings API and INSPIRE"	Ispra, IT		
2018	EU Datathon 2018	Brussels (Belgium)	115	115
2019	OSOR Workshop at Paris Open Source Summit	Paris, France		
2019	Catalogue of Services Webinar	Online event		
2019	7th meeting of ISA ² WG GS	Brussels, BE/VC	19	23
2019	ELISE EU Gazetteer Evaluation Project (closed event)	Online		12
2019	ELISE User panel EU Gazetteer Evaluation Project (closed event)	Online		11
2019	ELISE Webinar - The role of Spatial Data Infrastructures for Digital Government Transformation	Online		46
2019	ELISE Webinar - Geospatial Technology and Public Participation	Online		33
2019	Exploring Digital Government Transformation in the EU (closed event)	Online		21
2019	ELISE Webinar - Persistent Identifiers (PIDs) as the glue for linking information infrastructures	Online		
2019	ELISE User panel - EU Gazetteer Evaluation – Cultural Heritage Testbed (Closed event)	Online		
2019	6th meeting of ISA ² WG GS	Ispra, IT/VC	22	31
2019	Sharing and Reuse conference 2019	Bucharest, RO		
2019	ELISE Webinar - Governance models, ecosystems and benefits of APIs for public sector organisations	Online		27
2019	ELISE UP on EU Gazetteer Evaluation Project - Introductory Webinar	Online		9
2019	Workshop on Semantic Interoperability for the multilingual web	Luxembourg, LU		
2019	5th meeting of ISA ² WG GS	Online	25	25
2019	Joinup webinar	Online		
2019	ELISE Webinar: The role of Geospatial for Digital Government Transformation	Online		
2019	ELISE User Panel LIFO wave one (Closed event)	Online		
2019	EIF workshop	Brussels, BE		

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
2019	OSOR workshop	Brussels, BE		
2019	Interim evaluation workshop			
2019	Catalogue of Services webinar	Online		
2019	Webinar on AI and Public Administrations	Online		
2019	Access to Base Registries webinar	Online		
2019	The Digital Transformation of Government (Closed event)	Online		15
2019	Workshop: The Future of the Open Source Observatory (OSOR)	Brussels, Belgium		
2019	EIF Workshop on Organisational Interoperability and Public Service Governance	Brussels, Belgium		
2019	Webinar: Access to Base Registries[ARM(1)]	Online event		
2019	Catalogue of Services Webinar	Online event		
2019	Webinar: The Future of the Open Source Observatory	Online event		
2019	Interim Evaluation of the ISA ² Programme: Final Workshop	Brussels, Belgium		
2019	Webinar: Mastering Joinup to your advantage	Online event		
2019	Workshop on Semantic interoperability for the multilingual web	Luxembourg City, Luxembourg		
2019	Sharing & Reuse Conference and Awards 2019	Bucharest, Romania		
2019	Webinar on CCCEV evolution: past, present and future	Online event		
2019	Webinar: GeoDCAT-AP - adoption and implementation experiences of the geospatial extension to DCAT-AP	Online event		
2019	Webinar on DCAT-AP major release	Online event		
2019	Webinar on the Core Public Event Vocabulary - International development and future plans	Online event		
2019	2nd EIF workshop on Organisational Interoperability and Integrated Public Service Governance	Brussels, Belgium		
2019	Access to Base Registries Webinar	Online event		
2019	SEMIC 2019: Linking data spaces for citizens	Helsinki, Finland		
2019	Catalogue of Services Webinar	Online event		
2019	JIAMCATT 2019 - LEOS - Editing legal text with LEOS	Online		
2019	LEOS Community webinar	Online event		45

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
2019	Interoperability Academy Winter School	Leuven, Belgium		
2019	Data visualisation training programme: courses and webinars	Luxembourg (Luxembourg), Brussels (Belgium)	959	355
2019	EU dataViz conference 2019	Luxembourg (Luxembourg)	550	YouTube views on video conference: 547
2019	LEX summer school - LEOS: LEOS – Drafting tool development workshop	Ravenna, Italy		
2019	EU Datathon 2019 supported by ISA ²	Brussels (Belgium)	160	160
2020	Catalogue of Services Webinar	Online event		
2020	Workshop: Open Source Software sustainability at FOSDEM20	Brussels, Belgium		
2020	Webinar: Introduction to the new OSOR and its Knowledge Centre	Online event		
2020	Catalogue of Services Webinar - Single Digital Gateway Metadata Model	Online event		
2020	Working group meeting: Access to Base Registries	Online event		
2020	LEOS community webinar	Online event		56
2020	Webinar: Access to Base Registries	Online event		
2020	Solid hands-on workshop	Online event		45
2020	SEMIC 2020	Online event		
2020	"Better Legislation for smoother implementation" - Community Kick-off Virtual Breakfast (Legal interoperability action)	Online	-	35
2020	"Better Legislation for smoother implementation" virtual breakfast - "Digital-ready policymaking in Denmark" (Legal interoperability action)	Online	-	61
2020	"Better Legislation for smoother implementation" virtual breakfast "Policy making after shock is digital-ready – Are you ready?" in the framework of the OECD - OPSI event "Policymaking after shock" (legal interoperability action)	Online	-	67
2020	"Better Legislation for smoother implementation" virtual breakfast on regulatory reporting (legal interoperability action)	Online	-	40
2020	IPS.API4IPS: Public administration & private sector APIs co-design	Online	N/A	57

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
	- I			
2020	IPS.API4IPS: Public administration & private sector APIs co-design			
2020	- II	Online	N/A	58
2020	EU Datathon 2020 supported by ISA ²	Online	350	350
2020	dataViz webinars	Online	2910	2.910 plus views via YouTube (5 650 until today)
2020	SEMIC 2021 - LEOS: virtual stand	Online		
2020	LEX summer school - LEOS: LEOS 3.0 and future challenges	Online		
2020	AI Watch 1st Peer Learning Workshop on the use and impact of AI in public services	Brussels, BE	50	50
2020	ELISE Webinar: Using synonyms to improve discovery of geospatial data	Online		89
2020	ELISE Workshop on Cross-border Data Flows (closed event)	Online		26
2020	ELISE Workshop: SensorThings API brings Dynamic Data to INSPIRE	Online		88
2020	ELISE Workshop: Data Ecosystems for Geospatial Data	Online		86
2020	ELISE Webinar: Location enabled public services	Online		50
2020	ELISE Webinar: Guidance on Location data privacy	Online		56
2020	ELISE Participatory Lab at European Week of Regions and Cities	Online		62
2020	AI Watch 2nd Peer Learning Workshop on the use and impact of AI in public services	Online		48
2020	ELISE Webinar: Monitoring and understanding emerging geospatial technologies	Online		63
2020	ELISE Webinar: Location Intelligence Technology trends and case studies in digital government	Online		64
2020	ELISE Webinar: Location Intelligence for Cities and Regions: preparing the ground for smart places of the future	Online		92
2020	ELISE Webinar: Exploring Digital Government Transformation in the EU - DIGIGOV	Online		221
2020	ELISE Webinar: Geospatial Data and Artificial Intelligence – a deep dive into GeoAI	Online		149

Year	ISA2 workshop/ conference	Location	Total remote onsite	Total remote participants
2020	ELISE Webinar: Digital Twins - Are they ready to embrace the benefits of Location Information?	Online		96
2020	LIFO Wave 2 – Location Interoperability Framework Observatory			
2020	ISA ² Working Group Webinar - May 27th, 2020(closed event)	Online		
2020	ELISE Session at INSPIRE 2020: INSPIRE/api	Online		152
2020	ELISE Session at INSPIRE 2020: EO4GEO/ELISE Vocabularies Workshop	Online		83
2020	ELISE Session at INSPIRE 2020: Data ecosystems for geospatial data	Online		110
2020	ELISE Session at INSPIRE 2020: INSPIRE Reference Validator: Status & next steps	Online		303
2020	ELISE Session at INSPIRE 2020: Statistics and geospatial information – on a common path towards sustainability and digitalisation	Online		165
2020	ELISE Session at INSPIRE 2020: Energy & Location	Online		112
2020	ELISE Session at INSPIRE 2020: Smart cities & Green Deal	Online		215
2020	ELISE Session at INSPIRE 2020: Co-innovation with public-private sector data ecosystems	Online		148
2020	ELISE Webinar: Location Intelligence and Partnerships to support the Sustainable Development Goals	Online		79
2020	ELISE Webinar: The role of Organisational Interoperability in the context of Geospatial and Digital Government Transformation	Online		92
2020	ELISE Webinar - Using serious games in the geospatial domain to stimulate digital transformation of government	Online		16
2020	TESTA-ng Working Group Meeting	Brussels		85
2020	TESTA-ng Working Group Meeting	Brussels		28

Source: ISA2 website

Annex 6.f. Alignment with principles spelled out in Article 4(b) of the ISA² Decision

This section outlines the contribution of the sampled ISA² actions to the 13 principles listed in the ISA² decision under Art. 4(b). Importantly, the assessment of how the programme contributed to the principles is an obligation included in the ISA² Decision, in Article 13 (5).³⁰

Table 19 Contribution of sampled ISA² actions to the principles listed in Art. 4(b) of the ISA² decision

Art. 4(b) Principles	Relevant evidence
Subsidiarity and proportionality	ISA ² aims to contribute to a holistic interoperability landscape by creating solutions at EU level. The adoption of solutions by European public administrations is voluntary.
User-centricity	As part of the proposal process of actions to be included in the rolling work programme, all the proposed actions must take into account user-centricity and describe the ways in which user input is integrated into the action and the development of solutions. For example, user-centricity was considered in the design and implementation of the new features of “NIFO” action by getting a feedback from relevant stakeholders. ³¹
Inclusion and accessibility	ISA ² relies on a number of channels to disseminate the information about the actions and the solutions developed: i) ISA ² website, including information dedicated to each action and solution, official documents, infographics, videos, presentations, training material, and publications; ii) Joinup as a platform for sharing the solutions developed under ISA ² ; iii) events organised by ISA ² in various EU countries and the distribution of promotional material; and iv) events with ISA ² participation in various EU countries and the distribution of promotional material. In addition, solutions take into account potential barriers to accessibility and inclusion, detailing such barriers where relevant and providing solutions. An example is the “EU CAPTCHA” ³² action, which aims to address the issues of accessibility of CAPTCHA tests by exploring alternative solutions to improve the user experience.
Delivery of public services in such a way as to prevent digital divide	As part of the process of proposing actions to be included in the rolling work programme, all the proposed actions must specify their expected contribution to the EU’s higher political priorities, such as the Digital Single Market. Where applicable, the rolling work programme details how specific actions contribute to the third pillar of the Digital Single Market

³⁰ Decision (EU) 2015/2240 of the European Parliament and of the Council of 25 November 2015 establishing a programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens (ISA² programme) as a means for modernising the public sector.

³¹ Additional information on the user-centricity in the “NIFO” action can be found on the [Rolling Work Programme](#);

³² “CAPTCHA” stands for “Completely Automated Public Turing Test to tell Computers and Humans Apart” and it represents a test that is expected to be difficult for machines to complete correctly, but possible for humans to complete correctly.

Art. 4(b) Principles	Relevant evidence
	Strategy, which also includes support for an inclusive digital society.
Security, respect for privacy and data protection	Where appropriate, the descriptions of actions included in the rolling work programme must specify the measures taken to ensure security, respect for privacy and data protection.
Multilingualism	Examples of ISA ² actions that produce tools and frameworks that contribute to multilingualism are: ‘SEMIC’; ‘PMKI’; ‘Development of an open data service, support and training package in the area of linked open data, data visualisation and persistent identification’, and ‘EUSurvey’.
Administrative simplification and modernisation	Administrative simplification and modernisation are taken into consideration in the rolling work programme of ISA ² under the section ‘main impact list’. The detailed list of expected impacts for each action indicates the extent to which the proposed actions contribute to this aspect.
Transparency	Various channels ensure the transparency of ISA ² actions. These include: i) the rolling work programme that provides an overview of each action’s objectives, planned and developed solutions, expected impacts, and budget; ii) the ISA ² dashboard that provides quarterly updates on the efficiency and effectiveness of actions, in terms of costs, earned value management, effectiveness indicators and targets; iii) a specific ISA ² webpage with information on the level of take-up of solutions; and iv) the Joinup platform where developed solutions can be accessed.
Preservation of information	The ‘Library’ section of the ISA ² website preserves information about ISA ² in various formats including: presentations, videos, publications, infographics, posters, leaflets, training course materials, press releases, articles, ISA ² work programmes, speeches, and official documents.
Openness	The publication of ISA ² solutions on Joinup ensures that solutions are openly available for (potential) users.
Re-usability and avoidance of duplication	As part of the proposal process for actions to be included in the rolling work programme, the descriptions of proposed actions specify (i) the extent to which the action proposed reuses other readily available solutions and (ii) the reusability of the action outputs.
Technological neutrality, solutions which, insofar as possible, are future-proof, and adaptability	The rolling work programme’s section on ‘Contribution to the interoperability landscape’ describes, among others, the contributions made by actions to the European Interoperability Framework, aspects of which include technological neutrality, future-proof solutions and adaptability. As such, this principle is already taken into account in the proposal phase.
Effectiveness and efficiency	The ISA ² dashboard provides quarterly data on the efficiency and effectiveness of actions. The historic data can be accessed together with the most recent data available.

Source: [CEPS final study](#).

Efficiency

EQ4: To what extent has been the programme been cost-effective?

Annex 6.g. Supporting evidence for the assessment of the efficiency of the programme

This section provides an overview of the underlying data used to compute the average costs for preparing a new or a renewed proposal for an ISA² action, supporting the analysis presented in Chapter 5.3 Efficiency. The assessment is based on data collected during the interim evaluation as well as the final evaluation of the programme.

Source	Person-days	Type of proposal	Labour cost (hourly rate in EUR)	Cost (in EUR)
Final consultations evaluation	25	New proposal	27.6	5520
Final consultations evaluation	20	New proposal	39.9	6384
Final consultations evaluation	2.5	Renewed proposal	39.9	798
Final consultations evaluation	4	Renewed proposal	39.9	1276.8
Final consultations evaluation	5	Renewed proposal	45.6	1824
Final consultations evaluation	10	New proposal	39.9	3192
Final consultations evaluation	3	Renewed proposal	39.9	957.6
Final consultations evaluation	20	New proposal	45.6	7296
Final consultations evaluation	5	Renewed proposal	39.9	1596
Interim consultations evaluation	10	New proposal	39.9	3192
Interim consultations evaluation	2	Renewed proposal	39.9	638.4
Interim consultations evaluation	10	New proposal	39.9	3192
Interim consultations evaluation	2	Renewed proposal	39.9	638.4
Interim consultations evaluation	2.5	Renewed proposal	45.6	912
Interim consultations evaluation	5	Renewed proposal	39.9	1596
Interim consultations evaluation	1	Renewed proposal	39.9	319.2
Interim consultations evaluation	30	New proposal	45.6	10944
Interim consultations evaluation	24	New proposal	39.9	7660.8
Interim consultations evaluation	1	Renewed proposal	39.9	319.2
Interim consultations evaluation	5	Renewed proposal	39.9	1596
Interim consultations evaluation	5	Renewed proposal	39.9	1596
Interim consultations evaluation	4	Renewed proposal	39.9	1276.8
Interim consultations evaluation	3	Renewed proposal	39.9	957.6
Interim consultations evaluation	20	New proposal	39.9	6384
Interim consultations evaluation	3	Renewed proposal	39.9	957.6
Interim consultations evaluation	10	New proposal	27.6	2208

Source		Person-days	Type of proposal	Labour cost (hourly rate in EUR)	Cost (in EUR)
Interim consultations	evaluation	20	New proposal	39.9	6384
Interim consultations	evaluation	6	Renewed proposal	46.1	2212.8
Interim consultations	evaluation	5	Renewed proposal	39.9	1596
Interim consultations	evaluation	2	Renewed proposal	20.7	331.2

Note: The analysis distinguishes between the renewal / updating of a proposal for an existing action (with an estimated average time spent of up to 6 days) and the preparation of a new proposal for a new action, for which the time spent increases significantly, from 10 person-days to 30 person-days.

features the reported number of person-days spent to prepare a new or a renewed proposal, the hourly labour costs for the service sector at the Member State level based on Eurostat data, and the total estimated cost per answer collected, where the cost is the result of the person-days multiplied by the hourly rate, multiplied by 8 (assuming an average working day of 8 hours).

Table 20 Cost of preparing a new or renewed ISA² proposal

Source		Person-days	Type of proposal	Labour cost (hourly rate in EUR)	Cost (in EUR)
Final consultations	evaluation	25	New proposal	27.6	5520
Final consultations	evaluation	20	New proposal	39.9	6384
Final consultations	evaluation	2.5	Renewed proposal	39.9	798
Final consultations	evaluation	4	Renewed proposal	39.9	1276.8
Final consultations	evaluation	5	Renewed proposal	45.6	1824
Final consultations	evaluation	10	New proposal	39.9	3192
Final consultations	evaluation	3	Renewed proposal	39.9	957.6
Final consultations	evaluation	20	New proposal	45.6	7296
Final consultations	evaluation	5	Renewed proposal	39.9	1596
Interim consultations	evaluation	10	New proposal	39.9	3192
Interim consultations	evaluation	2	Renewed proposal	39.9	638.4
Interim consultations	evaluation	10	New proposal	39.9	3192
Interim consultations	evaluation	2	Renewed proposal	39.9	638.4
Interim consultations	evaluation	2.5	Renewed proposal	45.6	912
Interim consultations	evaluation	5	Renewed proposal	39.9	1596
Interim consultations	evaluation	1	Renewed proposal	39.9	319.2
Interim consultations	evaluation	30	New proposal	45.6	10944
Interim consultations	evaluation	24	New proposal	39.9	7660.8
Interim consultations	evaluation	1	Renewed proposal	39.9	319.2
Interim consultations	evaluation	5	Renewed proposal	39.9	1596
Interim consultations	evaluation	5	Renewed proposal	39.9	1596
Interim consultations	evaluation	4	Renewed proposal	39.9	1276.8
Interim consultations	evaluation	3	Renewed proposal	39.9	957.6

Source	Person-days	Type of proposal	Labour cost (hourly rate in EUR)	Cost (in EUR)
consultations				
Interim consultations	evaluation 20	New proposal	39.9	6384
Interim consultations	evaluation 3	Renewed proposal	39.9	957.6
Interim consultations	evaluation 10	New proposal	27.6	2208
Interim consultations	evaluation 20	New proposal	39.9	6384
Interim consultations	evaluation 6	Renewed proposal	46.1	2212.8
Interim consultations	evaluation 5	Renewed proposal	39.9	1596
Interim consultations	evaluation 2	Renewed proposal	20.7	331.2

Note: The analysis distinguishes between the renewal / updating of a proposal for an existing action (with an estimated average time spent of up to 6 days) and the preparation of a new proposal for a new action, for which the time spent increases significantly, from 10 person-days to 30 person-days.

Source: [CEPS final study](#). (The data on hourly labour cost were retrieved from Eurostat: [Eurostat, Labour cost levels by NACE Rev. 2 activity](#) (based on the available data for 2019))

Coherence

EQ6: To what extent do the ISA² actions form part of a ‘holistic’ approach within the framework of the programme? (Internal coherence)

Table 21 Number of links between sampled actions

Actions	Number of other ISA ² solutions that are used by the action	Number of other ISA ² actions that use the solutions of the action
1. Key and generic interoperability enablers		
Trusted Exchange Platform (e-TrustEx)	4	5
Catalogue of Services	2	3
2. Semantic Interoperability		
Public Multilingual Knowledge Management Infrastructure for the Digital Single Market (PMKI)	1	0
SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	5	17
3. Access to data/data sharing/open data		
Big Data for Public Administrations	5	0
Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	3	0
Development of an Open Data Service, Support and Training Package in the Area of Linked Open Data, Data Visualisation and Persistent Identification	1	0
4. Geospatial Solutions		
European Location Interoperability Solutions for e-Government (ELISE)	6	0
5. eProcurement/eInvoicing-Supporting instruments		
European Public Procurement Interoperability Initiative	6*	4
6. Decision making and legislation-Supporting instruments		
ICT Implications of EU Legislation	6	0
REFIT Platform	0	2
Inter-Institutional Register of Delegated Acts	1	1
7. EU Policies-Supporting instruments		
European Citizens' Initiatives and European Parliament Elections	0	0
8. Supporting instruments for public administrations		
Joinup - European Collaborative Platform and Catalogue	4	14
National Interoperability Framework Observatory	7	0
European Interoperability Architecture (EIA)	7	9

Actions	Number of other ISA ² solutions that are used by the action	Number of other ISA ² actions that use the solutions of the action
EUSurvey	0	0
Interoperability Maturity Model	9	2
Standard-Based Archival Data Management, Exchange and Publication	0	1
9. Accompanying measures		
Raising Interoperability Awareness - Communication Activities	1	0

**Note: For the 'European Public Procurement Interoperability Initiative' action further information was provided by the DG GROW regarding the number of other ISA² solutions that are used by the action.*

Source: [CEPS final study](#).

EQ7: To what extent is the ISA² programme coherent with other EU interventions which have similar objectives and with global initiatives in the same field? (external coherence)

Table 22 Number of links between the sample actions and other EU programmes / policies / initiatives

Actions	Number of other EU programmes / policies / initiatives that the action relies on	Number of other EU programmes / policies / initiatives that use the solution(s) provided by the action
1. Key and generic interoperability enablers		
Trusted Exchange Platform (e-TrustEx)	5	7*
Catalogue of Services	4	2
2. Semantic Interoperability		
Public Multilingual Knowledge Management Infrastructure for the Digital Single Market (PMKI)	1	1
SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	6	2
3. Access to data/data sharing/open data		
Big Data for Public Administrations	0	2
Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	12	2
Development of an Open Data Service, Support and Training Package in the Area of Linked Open Data, Data Visualisation and Persistent Identification	3	1
4. Geospatial Solutions		
European Location Interoperability Solutions for e-Government (ELISE)	3	3**

Actions	Number of other EU programmes / policies / initiatives that the action relies on	Number of other EU programmes / policies / initiatives that use the solution(s) provided by the action
5. eProcurement/e-invoicing-Supporting instruments		
European Public Procurement Interoperability Initiative	7	0
6. Decision making and legislation-Supporting instruments		
ICT Implications of EU Legislation	3	2
REFIT Platform	0	1
Inter-Institutional Register of Delegated Acts	0	2
7. EU Policies-Supporting instruments		
European Citizens' Initiatives and European Parliament Elections	2	0
8. Supporting instruments for public administrations		
Joinup - European Collaborative Platform and Catalogue	1	1
National Interoperability Framework Observatory	0	1
European Interoperability Architecture (EIA)	3	1
EUSurvey	1	0
Interoperability Maturity Model	0	1
Standard-Based Archival Data Management, Exchange and Publication	0	4
9. Accompanying measures		
Raising Interoperability Awareness - Communication Activities	1	1

**Note: Additional information was retrieved from the 2019 rolling work programme.*

***Note: Additional information was provided by the actions owners of the 'ELISE' action.*

Source: [CEPS final study](#).

Annex 6.h. Contribution of sampled ISA² actions to the Digital Single Market

This section outlines the contribution of the sampled ISA² to the three pillars of the Digital Single Market (DSM) Strategy³³. The programme's actions have contributed to specific areas of the DSM Strategy from the perspective of interoperability as a key enabler of digitalisation. The assessment contributes to the evaluation of the external coherence and the EU added value criterion.

³³ 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.

Table 23 ISA² contribution to the DSM Strategy*Contribution to Pillar I³⁴ of the DSM Strategy*

Action number	Action name	Contribution to Pillar I: Better access for consumers and businesses to online goods and services across Europe
2016.07	SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	Semantic interoperability is a prerequisite for enacting most levels of systems' interoperability, including the once-only principle and ensuring open data.
2016.16	Public Multilingual Knowledge Management Infrastructure for the DSM	The creation of a Public Multilingual Knowledge Infrastructure will support EU public administrations in creating services that can be accessible and shareable regardless of the language actually used, allowing SMEs to sell goods and service cross-border in a DSM.
2016.29	Catalogue of Services	Obliges EU countries to create Points of Single Contact with combined information for business setup and other citizen formalities.
2016.37	IMAPS	IMAPS helps public administrations to assess interoperability of public service and further improve the levels of interoperability.

Contribution to Pillar II³⁵ of the DSM Strategy

Action number	Action name	Contribution to Pillar II: Creating the right conditions for digital networks and services to flourish
2016.05	European Public Procurement Interoperability Initiative	The activities supported by this proposal will help to further create or improve standards regarding public procurement and encourage EU countries to shift towards full eProcurement
2016.06	Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	A reusable solution for the dissemination of statistics for use by any administration to reduce the cost of dissemination and improve the delivery of data to public consumers
2016.20	Joinup-European Collaborative Platform and Catalogue	Joinup creates a central platform for observatory functionalities, collaborative features, and interoperability solutions
2017.01	Standard-Based Archival Data Management, Exchange and Publication	The activities supported by this action aims to ensure proper managing, exchanging and opening to the public of archived-digitally generated public documents. Thereby, facilitates cross-border and cross-sector interactions related to the archival data

Contribution to Pillar III³⁶ of the DSM Strategy

³⁴ Access: better access for consumers and businesses to digital goods and services across Europe.

³⁵ Environment: creating the right conditions and a level playing field for digital networks and innovative services to flourish.

³⁶ Economy & Society: maximising the growth potential of the digital economy.

Action number	Action name	Contribution to Pillar III: Maximising the growth potential of our European Digital Economy
2016.03	Big Data for Public Administrations	This action addresses the need to provide the right framework conditions for a single market for big data and cloud computing as a means for helping to accelerate the transition towards a data-driven economy.
2016.05	European Public Procurement Interoperability Initiative	This action contributes to the development of the single electronic public procurement market in the EU by providing and supporting interoperability standards and interoperability initiatives in the field of electronic public procurement.
2016.10	European Location Interoperability Solutions for e-Government (ELISE)	This action contributes to the interoperability landscape by ensuring that the 'location' dimension has an impact, adds value and is appropriately addressed within solutions across borders and sectors.
2016.14	European Citizens' Initiatives and European Parliament elections	This action enhances existing solutions for European Citizen Initiatives by facilitating the verification of the statements of support and by developing new solutions for improvement of European Citizen Initiatives and European Parliamentary elections.
2016.15	FISMA: Financial Data Standardization	Looks to work on ICT standardisation to reduce administrative costs of legacy and data systems in the financial sector.
2016.16	Public Multilingual Knowledge Management Infrastructure for the Digital Single Market	The creation of a Public Multilingual Knowledge Infrastructure will support EU public administrations in creating services that can be accessible and shareable independently from the language actually used, as well as the SMEs to sell goods and service cross-border in a digital single market.
2016.18	Development of an Open Data Service, Support, and Training Package in the Area of Linked Open Data, Data Visualisation and Persistent Identification	Open government data is a core asset for the knowledge-based economy, since its reuse is a basis for innovative information products and services as it is a key enabler for transparency, evidence-based decision-making and a broader participation in the political discourse. This package will enable administrations to enhance their data visualisation capacity, to further open up their data as well as to increase data quality and interoperability in view of better data reusability.
2016.19	e-TrustEX	Acts as a broker in the exchange of data and documents to foster greater interaction across heterogeneous systems.
2016.21	National Interoperability Framework Observatory	The EIF and the EIF Implementation Strategy foster interoperability and contribute to the DSM. By contributing to the implementation of the EIF, this action is relevant for the DSM.
2016.23	Legal Interoperability	The action has a horizontal value as it can be used for the law-making/evaluation of every EU policy. Special contribution is indirectly made to the DSM, as the more the action is assessing EU legislations the more digital and interoperable they become.
2016.30	Raising Interoperability Awareness-Communication Activities	Communicating the ISA ² programme and its results reinforces the programmes contributions to the DSM, the eGovernment action plan, the EIS and the new EIF,

Action number	Action name	Contribution to Pillar III: Maximising the growth potential of our European Digital Economy
		but also the Open Data Initiative of the European Union and INSPIRE, among other.
2016.32	European Interoperability Architecture (EIA)	The EIA looks to maintain the EIRA, an interoperability reference that is key to the once-only principle.
2016.35	EUSurvey	By offering an easy means of collecting opinions and information between heterogeneous parties, the EUSurvey considerably facilitates the organisation and consolidation of any types of 'feedback-based' decision.
2017.01	Standard-Based Archival Data Management, Exchange and Publication	By clarifying and supporting technical standards for archival management, it will ensure better access to digital goods and services and by providing access to Commission archives in Open Data format it will generate value, allowing the reuse of this information producing new products and services.
2019.01	Interoperability Academy	Interoperability Academy creates the right conditions for better digital public services by developing digital skills of public servants, providing learning opportunities and increasing user awareness on interoperability.

Source: [CEPS final study](#).

Annex 6.i. Alignment with the Tallinn Declaration on eGovernment

Box 7 Alignment between ISA² and the Tallinn Declaration on eGovernment

The Tallinn Declaration is a statement of intents in which the **32 signatory countries** made a commitment to **move towards a digital government** following **five principles**:

1. Digital-by-default, inclusiveness and accessibility
2. Once-only
3. Trustworthiness and security
4. Openness and transparency
5. Interoperability by default

These principles inform the policy action lines, together with the additional line 'Horizontal enabling policy steps'. Out of these five principles, principles #2, #4 and #5 are specifically reflected in the ISA² programme. In particular:

- **Principle #2**, 'once-only', is reflected in actions such as 'SEMIC', 'European Interoperability Architecture', and 'European public procurement interoperability initiative' that support the implementation of the principle.
- **Principle #4**, openness and transparency, is reflected in the attention paid to Linked Open Data in actions like 'SEMIC', 'PMKI', 'ELISE', 'Standard-Based Archival Data Management, Exchange and Publication' of ISA², even though in the Declaration the scope is wider and is specifically addressed to the openness of public institutions;
- **Principle #5**, interoperability by default, is directly linked to the objectives of ISA²

programme.

Furthermore, the policy action line ‘Horizontal enabling policy steps’ involves some aspects that are characteristic of the ISA² programme, such as the digital transformation of public administrations and integration of digital considerations in policy initiatives. Among the many **proposals of the Declaration**, a few are directly coherent with ISA² objectives:

- to implement the European Interoperability Framework and the Interoperability Action Plan (policy line 5);
- to consider strengthening the requirements for use of open source solutions and standards when (re)building of ICT systems and solutions takes place with EU funding (policy line 5);
- to fully integrate digital considerations into existing and future policy and regulatory initiatives (policy line 6);
- to prepare proposals on the future (post 2020) and sustainability of existing EU-level cross-border digital service infrastructures and building blocks (policy line 6); and
- to convene and support the work of groups of interested countries and other parties to exchange practices and develop reference guidelines and standards for taking emerging ICT into use in the public administration (policy line 6).

From this standpoint, there is **no contradiction between the Tallinn Declaration and the ISA² programme**. Although their scope and aims differ, **they proceed in the same direction and share common intents**. There may be synergies in the above-mentioned points, but they can also turn into overlaps and duplications, or even worse, misalignments, if there is no strong coordination.

While the ISA² programme is multi-national, the Declaration also affects each country individually. Therefore, initiatives and projects may be promoted separately by individual countries to fulfil the commitments agreed upon by the EU countries. The Declaration also includes specific calls to EU institutions to enhance interoperability within the EU framework. Overall, this document stresses the need for more effort, both at EU institutions-level and at Member State-level, to ensure citizen-centric eGovernment and interoperability.

Finally, as the annex of the Tallinn Declaration highlights the importance of principles like the ‘Protection of personal data and privacy’ and ‘Incentives for digital service use’, better coherence would be ensured if the ISA² programme began to include some of these principles in its actions.

EU added value

EQ8: What is the additional value resulting from the ISA² programme, compared to what could reasonably have been expected from EU countries acting at national, regional and/or local levels?

Annex 6.j. Contribution of the sampled ISA² actions to cross-border interoperability

This section contributes to the assessment of the EU added value criterion. It describes the contribution of the 21 sampled actions to enhancing cross-border interoperability, based on the interim evaluation of the programme and information available in the rolling work programme.

Table 24 Contribution of sampled actions to cross-border interoperability

Package	Action number	Action name	Contribution to cross-border interoperability
1. Key and generic interoperability enablers	2016.19	Trusted Exchange Platform (e-TrustEx)	The e-TrustEx platform is currently used as a key element of pan-European messaging infrastructures for projects such as: e-PRIOR (DIGIT), DECIDE (SG), EDMA (COMP), the European e-Justice Portal (JUST), OPOCE (OP), EU-CEG (DG SANTE). Around 200 public institutions across the 28 EU countries are in scope of these projects (such as national parliaments and permanent representations).
1. Key and generic interoperability enablers	2016.29	Catalogue of Services	The CPSV-AP is already being used by public administrations in Belgium, Italy, Finland, and Estonia to create a cross-border federated catalogue of public services.
2. Semantic interoperability	2016.07	SEMIC: Promoting Semantic Interoperability Amongst the European Union EU countries	The proposal will facilitate the cross-border interoperability thanks to its inherent support for multilingualism. Further cross-border interoperability improvements can be expected through the alignment of the generic EuroVoc thesaurus that covers the EU policy domains with specialised EU and national controlled vocabularies through VocBench. VocBench is already used by public administrations in Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Portugal, the United Kingdom and Scotland and interest has been expressed from public administrations in Belgium, the Czech Republic, Slovenia and in Spain.
2. Semantic interoperability	2016.16	Public Multilingual Knowledge Management Infrastructure for the Digital Single Market	The objective of this action is to support enterprises and particularly the language technology industry with the implementation of the necessary multilingual tools and features in order to improve cross-border accessibility of e-Commerce solutions. The outputs in the form of semantic links developed so far contribute to the

Package	Action number	Action name	Contribution to cross-border interoperability
			cross-border service interoperability from a semantic perspective.
3. Access to data/data sharing/open data	2016.03	Big Data for Public Administrations	In 2017, a long list of requirements has been collected from different EU countries to understand their needs in the area of (Big) data analytics for policymaking, especially with regard to analytics use cases and infrastructure needs. The needs have been collected through a consultation of the ISA network, through the creation of a working group. EU countries on board so far are: the Czech Republic, Estonia, Hungary, Malta, Norway, Slovenia, Spain, and Portugal. The working group has shown significant interest in the action and its outputs. Additionally, the action has been presented to the ESS Big Data Task Force: the representatives have highlighted their interest in the action and shown availability to (re-)use its outcomes.
3. Access to data/data sharing/open data	2016.06	Sharing Statistical Production and Dissemination Services and Solutions in the European Statistical System	The development of statistical services includes a broad international community. In the ESS, 14 EU countries are actively involved in a Task Force and a consortium of six EU countries (FR, PT, UK, LT, DE, SI) has been set up to provide input and take part in the development of the guidelines for sharing of statistical services and to implement the re-use of developed solutions and services with the European Commission. In the architecture domain, the ESS reference architecture in its current state has been adopted by the 28 NSIs CIOs and Heads of Methodology. Its upgrading towards greater interoperability through more standards and deeper architectural guidance is done in collaboration with an ESS EA Board involving five EU countries.
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	EU countries can consult and re-use the project outputs (knowledge base, trainings, the description of the tools and projects included in the catalogue of data visualisation tools).
4. Geospatial solutions	2016.10	European Location Interoperability Solutions for e-Government (ELISE)	Road safety data-exchange solutions piloted and implemented in Norway and Sweden are being rolled-out to five other EU countries using CEF funds, with more rollouts planned. INSPIRE Registry services have 450k accesses per quarter.*

Package	Action number	Action name	Contribution to cross-border interoperability
5. eProcurement / eInvoicing - Supporting instruments	2016.05	European Public Procurement Interoperability Initiative	ePrior is used by several EU bodies and some components are used by the Belgian administration. In particular, in the EU Bodies context, economic operators using the ePrior system are from various EU countries. For eCertis: Roughly 25 services in the EU are retrieving data from eCertis, using the CEF eProc DSI. Other services will follow. For ESPD services: Private and public entities from roughly 17 EU countries have participated in the CEF eProc DSI Others are using Structural Funds to implement an ESPD service. They all have implemented ESPD services using the ESPD data model or the open source code developed under the ISA ² project. Currently roughly 74 entities are providing an ESPD services in 25 EU countries (Norway as well).
6. Decision making and legislation - Supporting instruments	2017.03	REFIT Platform	The REFIT Platform consists of two Commission expert groups: a Government group in which all EU countries are represented, and a Stakeholder group with representatives of businesses, social partners, civil society organisations in various EU countries, the Economic and Social Committee and the European Committee of the Regions.
7. EU Policies - Supporting instruments	2016.14	European Citizens' Initiatives and European Parliament Elections	ECI-OCS serves the citizens and public administrations in all EU countries as it facilitates the verification of the statements of support for legislation. The European Parliament Crypto tool is useful to the public administrations of all the EU countries
8. Supporting instruments for public administrations	2016.20	Joinup – European Collaborative Platform and Catalogue	The end-users of Joinup are from different EU EU countries and countries outside the EU (USA, Canada and New Zealand). In addition, several national repositories (NL, ES, EL, SL, BE) are stored on Joinup, making their national solutions available for re-use.
8. Supporting instruments for public administrations	2016.21	National Interoperability Framework Observatory	The outputs of NIFO have already been re-used by various EU countries. The eGovernment factsheets are considered as a reference. The state of play reports on interoperability in Europe and the NIFO factsheets served as a source of input in the revision of the EIF and the IAP.
8. Supporting instruments for public administrations	2016.32	European Interoperability Architecture (EIA)	EIRA has been deployed in EE, NL, DK, ES, CZ, PL, BE, SE, NO, IT, and FI.
8. Supporting instruments for public administrations	2016.35	EUSurvey	EUSurvey is available in 23 EU languages, facilitating cross-border interoperability. In 2017, more than 7,800 surveys have been created with the tool, resulting in more than 2.7 million contributions.
8. Supporting	2017.01	Standard-Based	The action addresses the semantic interoperability

Package	Action number	Action name	Contribution to cross-border interoperability
instruments for public administrations		Archival Data Management, Exchange and Publication	issue of how to describe electronic archives by means of the identification of existing standards for digital archives, facilitating the cross-border interoperability of electronic archives.
9. Accompanying measures	2016.30	Raising Interoperability Awareness – Communication Activities	This action has, by definition, a cross-border approach. It provides learning resources for public administrations at all levels (EU, national, sub-national), aims to enhance collaboration with international, national, or regional initiatives, and promotes the importance of interoperability across the EU.

Source: CEPS (2019), *Interim evaluation; additional information based on the rolling work programme.*

Annex 6.k. Contribution of sampled ISA² actions to the European Interoperability Framework and the Interoperability Action Plan

This section links the sampled ISA² actions to the [EIF](#) and the [IAP](#) by describing relevant contributions to implementing the EIF and the IAP. The assessment contributes to the evaluation of the EU added value criterion.

While the EIF provides principles, models and associated recommendations to help improve the delivery of interoperable digital public services, the IAP outlined specific actions to be undertaken between 2017 and 2020. Based on the analysis of sampled actions, Table 25 provides an overview of the contribution of ISA² actions to the implementation of the EIF and the IAP.

As the ISA² programme was one of the main implementing instruments of the IAP, it is worth exploring to what extent the ISA² actions contributed to implementing the actions listing in the IAP within the timeframe mentioned.

There are **direct links** between several sampled ISA² actions and the IAP actions:

- **“Legal Interoperability”**: 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. This ISA² action implements:
 - **Action 3 of the IAP**, by raising awareness on the importance of considering interoperability early on in the legislative process and by developing a methodology for legal interoperability screening;
 - **Actions 19 and 20 of the IAP**, by having put forward guidelines for ICT impact assessment as part of the Better Regulation Toolbox (Tool #27) and guidelines for digital-ready policy proposals.

- **“NIFO”**: The NIFO action has contributed to **Actions 4 and 5 of the IAP** by monitoring the state of play of interoperability, developing the EIF Monitoring Mechanism and the EIF Toolbox to support the implementation of the EIF.³⁷
- **“Raising Interoperability Awareness - Communication Activities”**: The communication activities implement **Action 8 of the IAP**, ensuring the dissemination of information about interoperability, ISA² and the EIF.
- **“Joinup”**: 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. The activities conducted 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**.
- **“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. The Catalogue of Services responds in particular to **Action 13 of the IAP**.
- **“EIA”**: The "EIA" action implements **Action 22 of the IAP**, by ensuring the further development of the EIRA and the Cartography Tool and providing new versions of the architecture.

In addition to examples from the sampled actions, two additional ISA² actions stand out as having a clear link to the IAP. These actions are:

- The **“Access to Base Registries”** in relation to Action 12 of the IAP (“Define and implement common specifications on the terms and conditions for accessing and managing base registries”);
- The **“Sharing and Re-use”** action in relation to Action 21 of the IAP (“Maintain and promote the ‘sharing and re-use framework for IT solutions’ (including open source) developed in the context of the ISA² programme”).

Beyond the clear links, ISA² actions also had **overarching contributions** to the IAP actions:

- **“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. 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**).
- **“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

³⁷ The EIF Monitoring Mechanism, the EIF Toolbox and the reports and factsheet on the digital public administrations and interoperability can be consulted in the NIFO collection on Joinup: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/knowledge-centre>.

learning material in this sense. The Interoperability Academy contributes primarily to **Actions 5, 8, 11 of the IAP**.

Table 25 ISA² contribution to the EIF and the IAP

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)	<p>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.</p> <ul style="list-style-type: none"> • 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	<p>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.</p> <ul style="list-style-type: none"> • 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 EU countries	<p>The Action supports the implementation of the EIF and the EIS by promoting semantic interoperability, through the definition and use of common specifications.</p> <ul style="list-style-type: none"> • Contribution to the EIF: The action contributes primarily to Recommendation 16 of the revised EIF. In addition, the action covers the 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	<p>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.</p>

Package	Action number	Action name	Contribution to the EIF and the IAP
			<ul style="list-style-type: none"> • 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	<p>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 EU countries 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.</p> <ul style="list-style-type: none"> • Contribution to the EIF: This action contributes to several EIF principles including “openness”, “transparency”, “reusability” and “technological neutrality”. • 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	<p>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.</p> <ul style="list-style-type: none"> • 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	2016.18	Development of an Open Data Service, Support and	The action supports open data initiatives by facilitating data re-use and sharing and offering tools to visualise data effectively.

Package	Action number	Action name	Contribution to the EIF and the IAP
sharing/open data		Training Package in the Area of Linked Open Data, Data Visualisation and Persistent Identification	<ul style="list-style-type: none"> • 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).
4. Geospatial solutions	2016.10	European Location Interoperability Solutions for e-Government (ELISE)	<p>ELISE has aimed to deepen the understanding of location interoperability enablers and barriers related to the transition towards digital government.</p> <ul style="list-style-type: none"> • 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	<p>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.</p> <ul style="list-style-type: none"> • 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. <p>Contribution to the IAP: The “European Public Procurement Interoperability Initiative” contributes in particular to actions 1, 7 and 18.</p>
6. Decision making and legislation - Supporting instruments	2016.23	Legal interoperability (former ICT Implications of EU Legislation)	<p>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.</p> <ul style="list-style-type: none"> • 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.
6. Decision	2017.04	Inter-Institutional Register of	This action focused on developing an IT tool setting up the Inter-Institutional Register of

Package	Action number	Action name	Contribution to the EIF and the IAP
making and legislation - Supporting instruments		Delegated Acts (RegDel)	<p>Delegated Acts, increasing transparency around delegated acts and thus responding to the 2016 commitment of the Commission in this sense.</p> <ul style="list-style-type: none"> 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	<p>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.</p> <ul style="list-style-type: none"> 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	<p>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 EU countries. NIFO has also developed an EIF Toolbox to support EU countries in the implementation of the EIF.</p> <ul style="list-style-type: none"> 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 EU countries. The action responds to the commitment from the 2017 EIF Communication that called for the development of a framework for monitoring the implementation of 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)	<p>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.</p> <ul style="list-style-type: none"> 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.

Package	Action number	Action name	Contribution to the EIF and the IAP
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. <ul style="list-style-type: none"> • 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 administrations	2017.01	Standard-Based Archival Data Management, Exchange and Publication	The action contributes to supporting data standards in the field of archival information management, studying among others how Open Data formats can be used in this area. <ul style="list-style-type: none"> • 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 ISA ² . The action facilitates access to information and learning material in this sense. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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: [CEPS final study](#).

Sustainability

EQ10: To what extent is the financial, technical and operational sustainability of the developed solutions – maintained and operated through the ISA² programme –ensured?

Annex 6.I. Sustainability of the solutions of sampled ISA² actions

The sustainability of ISA² solutions depends on the extent to which the solutions would require further maintenance and updating in order to continue to deliver results. This section thus outlines the expected level of maintenance or need for updates for the solutions of the sampled actions, based on the general principle that software solutions would require more maintenance and updating while solutions in the forms of guidelines and specifications would require a relatively lower level of maintenance and update, while acknowledging that in keeping up with technological developments updates may become nevertheless necessary. The assessment is based on desk research and independent expert assessments, contributing to assessing the sustainability criterion.

Table 26 Overview of the sustainability of the solutions of sampled ISA² actions

Package	ISA / ISA ²	Action	Solution	Lower maintenance / less frequent update	Lower maintenance / less frequent update
1. Key and generic interoperability enablers	ISA	2016.19	e-TrustEx		X
1. Key and generic interoperability enablers	ISA	2016.29	CPSV-AP	X Note: In general such models need fewer updates, but 2018 was the latest update; it could need a further update.	
2. Semantic interoperability	ISA	2016.07	ADMS	X Note: As ADMS was launched in 2013, the need for an update may be considered.	
2. Semantic interoperability	ISA	2016.07	Core vocabularies	X Note: While constant maintenance	

Package	ISA / ISA ²	Action	Solution	Lower maintenance / less frequent update	Lower maintenance / less frequent update
				may not be necessary, relevant updates need to be considered to ensure new developments are accounted for.	
2. Semantic interoperability	ISA	2016.07	DCAT-AP	X Note: While constant maintenance may not be necessary, relevant updates need to be considered to ensure new developments are accounted for.	
2. Semantic interoperability	ISA	2016.07	VocBench3		X
2. Semantic interoperability	ISA ²	2016.16	PMKI Core data model for multilingual taxonomies/terminologies	X Note: While constant maintenance may not be necessary, relevant updates need to be considered to ensure new developments are accounted for.	
2. Semantic interoperability	ISA ²	2016.16	Semantic Links	X Note: While constant maintenance may not be necessary, relevant updates need to be considered to ensure new developments are accounted for.	
3. Access to data/data sharing/open data	ISA ²	2016.06	ESS Service		X Note: Statistical services have to be updated more often to changes in the economy and society
3. Access to data/data sharing/open data	ISA ²	2016.18	Data Visualisation Tools Catalogue	X Note: On the one hand, visualisation tools should be established as	

Package	ISA / ISA ²	Action	Solution	Lower maintenance / less frequent update	Lower maintenance / less frequent update
				standards to increase their use, but they also need to be adapted to new technological developments and new data sources as relevant.	
4. Geospatial solutions	ISA	2016.10	Re3gistry		X
4. Geospatial solutions	ISA	2016.10	EULF Blueprint	X Note: The fourth version was released in September 2020. Updates as necessary need to be considered.	
4. Geospatial solutions	ISA	2016.10	Studies on Location information (ELISE)	X	
5. eProcurement/ eInvoicing Supporting instruments	ISA	2016.05	Open e-Prior		X
5. eProcurement/ eInvoicing Supporting instruments	ISA	2016.05	eCertis		X
5. eProcurement/ eInvoicing Supporting instruments	ISA	2016.05	ESPD		X
6. Decision making and legislation - Supporting instruments	ISA	2016.23	Digital screening mentioned in Tool #27 of the Better Regulation (BR) Toolbox: The digital economy and society & ICT issues	X Note: Generally, Tool #27 serves to guide the policymaking process, thus it remains as a reference in the field. A major overhaul of the tool has been ongoing since 2020 – in line	

Package	ISA / ISA ²	Action	Solution	Lower maintenance / less frequent update	Lower maintenance / less frequent update
				with the Commission's intention to update its BR toolbox by summer 2021.	
6. Decision making and legislation - Supporting instruments	ISA	2016.23	ICT Impact Assessment Guidelines (updated)	X Note: Generally, the guidelines serve to guide the policymaking process, thus they remain as a reference in the field. As ICT impacts are changing, and digital is more and more present in policymaking, an update of the tool may be due in the coming years.	
6. Decision making and legislation - Supporting instruments	ISA	2016.23	Decision supporting tool on interoperability	X Note: Generally, the tool contains high-level considerations for the attention of decision-makers, which are rather future-proof.	
6. Decision making and legislation - Supporting instruments	ISA ²	2017.03	REFIT Platform IT Tool		X Note: The REFIT Platform needs to be updated to keep up with the evolving needs of the Commission. A new platform – Fit for Future – is currently under development, based on the REFIT Platform.
6. Decision making and legislation - Supporting instruments	ISA ²	2017.04	RegDel		X
7. EU Policies - Supporting instruments	ISA	2016.14	Online Collection Software to support European Citizens' Initiative		X Note: The OCS was updated in 2019, but importantly, this is an instance of a very dynamic software.

Package	ISA / ISA ²	Action	Solution	Lower maintenance / less frequent update	Lower maintenance / less frequent update
7. EU Policies - Supporting instruments	ISA	2016.14	European Parliament Crypto Tool		X
8. Supporting instruments for public administrations	ISA	2016.20	Joinup		X
8. Supporting instruments for public administrations	ISA	2016.21	NIFO Digital public administration factsheets		X Note: Updates are necessary due to the continual monitoring aspects of the action.
8. Supporting instruments for public administrations	ISA	2016.32	EIRA and CarTool	X Note: While constant maintenance may not be necessary, relevant updates need to be considered to ensure new developments are accounted for.	
8. Supporting instruments for public administrations	ISA	2016.35	EUSurvey		X
8. Supporting instruments for public administrations	ISA	2016.37	IMAPS	X	
8. Supporting instruments for public administrations	ISA ²	2017.01	Study on Standard-based Archival Data Management, Exchange, and Publication	X	
8. Supporting	ISA ²	2017.01	Assessment tool offering	X	

Package	ISA / ISA ²	Action	Solution	Lower maintenance / less frequent update	Lower maintenance / less frequent update
instruments for public administrations			support for the selection of IT solutions for archives management		
8. Supporting instruments for public administrations	ISA ²	2019.01	Interoperability Academy Winter School		X Note: This assessment is based on the extent to which the Winter School would be repeated every year.
8. Supporting instruments for public administrations	ISA ²	2019.01	Interoperability Academy Catalogue of Educational Training Resources	X Note: A lower level of maintenance may be sufficient, to the extent to which this solution relies on other tools and instruments and facilitate their dissemination.	

Source: [CEPS final study](#).