HEADING 1: Single Market, Innovation and Digital

Digital Europe Programme

Lead DG:CNECT
Associated DGs:DIGIT

1. Overview

1.1. Challenges

Europe faces many challenges in the digital arena.

To begin with, there is the increasingly fierce global competition to control the digital technologies, which will shape the world of tomorrow. Today, businesses, the public sector and researchers often have to look outside the Union to access the computing, data or artificial intelligence resources they need. At the same time, hundreds of thousands of jobs in crucial digital areas go unfilled, hampering investment and innovation. Unless Europe can step up its efforts to develop key digital infrastructures, industries and skills, it risks losing out this race, which could threaten Europe's strategic autonomy and competitiveness.

Relatedly, cyberattacks become increasingly more frequent, complex, and disruptive. Europe's vital infrastructure and data are at risk unless it improves its cybersecurity.

Finally, the take-up of digital technologies by businesses - in particular SMEs - and public administrations remains very uneven, requiring determined action at the Union's level to ensure that no region or sector is left behind by the digital transformation.
Given the network effects in the digital area (e.g., the need to promote interoperability at the EU level and/or reaching critical mass to build state-of-the-art capacities) the EU is uniquely placed to act decisively on these challenges The Digital Europe programme and together with co-investments with Member States and the private sector will achieve a real impact and generate a virtuous circle.

1.2. Mission (general objectives)

The Digital Europe Programme will ensure that Europe drives the digital transformation of the economy and society and brings its benefits to all citizens and businesses. It will focus on:

- Building essential capacities and advanced skills in key digital technology areas, contributing to Europe's technological sovereignty;
- Accelerating their deployment and best use in areas of public interest and the private sector.

1.3. Specific objectives

[The text inserted here below might still be changed in when the Legal-linguistic checks are finished.]

Specific Objective 1- High Performance Computing (HPC)

The financial contribution from the Union under this Specific Objective shall pursue the following operational objectives:

(a) deploy, coordinate at Union level and operate an integrated demand-oriented and application-driven world-class exascale supercomputing and data infrastructure that shall be easily accessible to public and private users, in particular SMEs, irrespective of the Member State in which they are located, and easily accessible for research purposes, in accordance with Regulation (EU) 2018/1488;

(b) deploy ready to use operational technology resulting from research and innovation in order to build an integrated Union HPC ecosystem, covering various aspects in the scientific and industrial value chain segments, including hardware, software, applications, services, interconnections and digital skills, with a high level of security and data protection;

(c) deploy and operate post-exascale infrastructure, including integration with quantum computing technologies and research infrastructures for computing science and encourage the development within the Union of the hardware and software necessary for such deployment.

Specific Objective 2 - Artificial Intelligence

The financial contribution from the Union under this Specific Objective shall pursue the following operational objectives:

(a) build up and strengthen core AI capacities and knowledge in the Union, including building up and strengthening quality data resources and corresponding exchange mechanisms, and libraries of algorithms, while guaranteeing a human-centric and inclusive approach that respects Union values.

(b) make the capacities referred to in point (a) accessible to businesses, especially SMEs and start-ups, as well as civil society, not-for-profit organisations, research institutions, universities and public administrations, in order to maximise their benefit to the European society and economy;

(c) reinforce and network AI testing and experimentation facilities in Member States;(d) develop   and   reinforce   commercial application and production systems in order to facilitate the integration of technologies in value chains and the development of innovative business models and to shorten the time required to pass from innovation to industrial production and foster the uptake of AI-based solutions in areas of public interest and in society.

(d) AI-based solutions and data made available shall respect the principle of privacy and security by design and shall fully comply with data protection legislation.

Specific Objective 3 - Cybersecurity and Trust

The financial contribution from the Union under this Specific Objective shall pursue the following operational objectives:

(a) support the building-up and procurement of advanced cybersecurity equipment, tools and data infrastructures, together with Member States, in order to achieve a high common level of cybersecurity at European level, in full compliance with data protection legislation and fundamental rights, while ensuring the strategic autonomy of the Union;

(b) support the building-up and best use of European knowledge, capacity and skills related to cybersecurity and the sharing and mainstreaming of best practices;

(c) ensure a wide deployment of effective state-of-the-art cybersecurity solutions across the European economy, paying special attention to public authorities and SMEs;

(d) reinforce capabilities within Member States and private sector to help them comply with Directive (EU) 2016/1148 of the European Parliament and of the Council[1] including through measures supporting the uptake of cybersecurity best practices;

(e) improve resilience against cyberattacks, contribute towards increasing risk-awareness and knowledge of cybersecurity processes, support public and private organisations in achieving basics levels of cyber security, for example by deploying end-to-end encryption of data and software updates;

(f) enhance cooperation between the civil and defence spheres with regard to dual-use projects, services, competences and applications in cybersecurity, in accordance with a Regulation establishing the European Cybersecurity Industrial, Technology and Research Competence Centre and the Network of National Coordination Centres (the 'Cybersecurity Competence Centre Regulation').

Specific Objective 4 - Advanced Digital Skills

The financial contribution from the Union under this Specific Objective shall support the development of advanced digital skills in areas covered by the Programme in order to contribute to increasing Europe's talent pool, bridge the digital divide and foster greater professionalism, especially with regard to high performance and cloud computing, big data analytics, cybersecurity, distributed ledger technologies (e.g. blockchain), quantum technologies, robotics, AI, while taking gender balance into account. In order to tackle skills mismatches and to encourage specialisation in digital technologies and applications, the financial contribution shall pursue the following operational objectives:

(a)   support the design and delivery of high-quality, long-term training and courses, including blended learning, for students and for the workforce;

(b)   support the design and delivery of high-quality, short-term training and courses for the workforce, in particular in SMEs and in the public sector;

(c)   support high-quality on-the-job training and work placements for students, including traineeships, and the workforce, in particular in SMEs and in the public sector.

Specific Objective 5 - Deployment and Best Use of Digital Capacities and Interoperability

The financial contribution from the Union under this Specific Objective shall pursue the following operational objectives:

(a)   support the public sector and areas of public interest, such as health and care, education, judiciary, customs, transport, mobility, energy, environment, cultural and creative sectors, including relevant businesses established within the Union, to effectively deploy and access state-of-the-art digital technologies, such as HPC, AI and cybersecurity;

(b)   deploy, operate and maintain trans-European interoperable state-of-the-art digital service infrastructures across the Union, including related services, in complementarity with national and regional actions;

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1   Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (OJ L 194, 19.7.2016, p. 1).

(c)   support the integration and use of trans-European digital service infrastructures and of agreed European digital standards in the public sector and in areas of public interest to facilitate cost-efficient implementation and interoperability;

(d)   facilitate the development, update and use of solutions and frameworks by citizens, public administrations and businesses , including of open-source solutions and the re-use of interoperability solutions and frameworks;

(e)   offer the public sector and Union industry, in particular SMEs, easy access to testing and piloting of digital technologies and increase the use thereof, including their cross-border use;

(f)   support the uptake by the public sector and the Union industry, in particular SMEs and start-ups, of advanced digital and related technologies, including in particular HPC, AI, cybersecurity, other leading edge and future technologies, such as distributed ledger technologies (e.g. blockchain);

(g)   support the design, testing, implementation, and deployment and maintenance of interoperable digital solutions, including digital government solutions, for public services at Union level which are delivered through a data-driven reusable solutions platform aiming to foster innovation and establish common frameworks in order to unleash the full potential of the public administrations' services for citizens and businesses;

(h)   ensure the continuous capacity at Union level to lead digital development, in addition to observing, analysing and adapting to fast-evolving digital trends, and share and mainstream best practices;

(i)   support cooperation towards achieving a European ecosystem for trusted data sharing and digital infrastructures using, inter alia, distributed ledger services and applications, including support for interoperability and standardisation and by fostering the deployment of Union cross-border applications based on security and privacy by design, while complying with consumer and data protection legislation;

(j)   build up and strengthen the European Digital Innovation Hubs and their network.

1.4. Public intervention context

The Digital Europe programme, is based on the following provisions of the Treaty on the Functioning of the European Union (TFEU): Article 173(3) TFEU, focused on the EU's industrial competitiveness, with regard to most of activities undertaken under this Programme; Article 172 TFEU, notably with regard to the digital transformation of areas of public interest. The COVID-19 crisis has highlighted the critical role of digital technologies and infrastructures. In light of the exponential development of digital technologies, the constant geopolitical shifts and the large public investments of global competitors in key digital technologies, such as artificial intelligence, supercomputing and cybersecurity, and in digital skills, no Member State acting alone can make critical investments in digital capacities at the scale required. Given the challenges ahead and the level of investments needed, the intervention at EU level is necessary in order to improve the competitiveness of Europe in the digital economy and reinforce its strategic autonomy.

The Digital Europe programme's actions are complemented by an array of regulatory measures aiming to eliminate barriers in several critical technological areas, with regard, for instance, to the incentivise business to business and business to government (B2B and B2G) data sharing in across the EU (Data Governance Act, Data Act), the creation of a safer and fairer online environment for users and businesses (Digital Services Act, Digital Markets Act) and the improvement of the level of security of network and information systems across the Union (NIS2 Directive).

1.5. Actions

High-performance computing: DEP will deploy world-class exascale and post–exascale supercomputing capacities and ensure the widest access to and use of these capacities;

Artificial intelligence: DEP will unleash the potential of data with EU-wide common data spaces based on a cloud-to-edge federated infrastructure and promote the testing and adoption of AI technologies with a European AI platform and world-class testing and experimentation facilities;

Cybersecurity and trust: DEP will build up advanced cybersecurity equipment, tools and data infrastructures. It will support the development and best use of European knowledge, capacity and skills related to cybersecurity, promote the sharing of best practices and ensure a wide deployment of the state of the art cybersecurity solutions across the European economy (including a quantum secure communication infrastructure for Europe- EuroQCI).

Advanced digital skills: DEP will boost academic excellence in digital, by increasing the education offer in technologies, such as HPC, cybersecurity and AI. Training in these areas will be implemented through cooperation among tertiary education institutions, world-class research centres and innovative businesses.

Adoption and best use: DEP will deploy a network of European Digital Innovation Hubs offering public and private organisations all across Europe access to technology testing and support in their digital transformation. It will contribute to address challenges such as protecting the environment and fighting climate change through high impact deployments, for example, the Destination Earth initiative and the digital twins for smart communities. It will build capacities to reinforce the European blockchain ecosystem through the European Blockchain Services Infrastructure (EBSI). It will enable cross border interoperable digital public services centred on users, facilitating the sharing of data in areas like, justice and promote an inclusive and trustworthy digital space.

1.6. Delivery mode

For the 'artificial intelligence', 'advanced digital skills' and 'widening the best use of digital technologies' specific objectives, the Commission directly manages the programme. The high-performance computing specific objective is implemented primarily through the EuroHPC joint undertaking and the cybersecurity specific objective will be implemented primarily through the European Cybersecurity Industrial, Technology and Research Competence Centre and the Cybersecurity Competence Network. The lead DG is CNECT, with other DGs also involved, in particular DG DIGIT for the actions focused on the interoperability of the public administrations.

1.7. Graphic overview of the programme structure
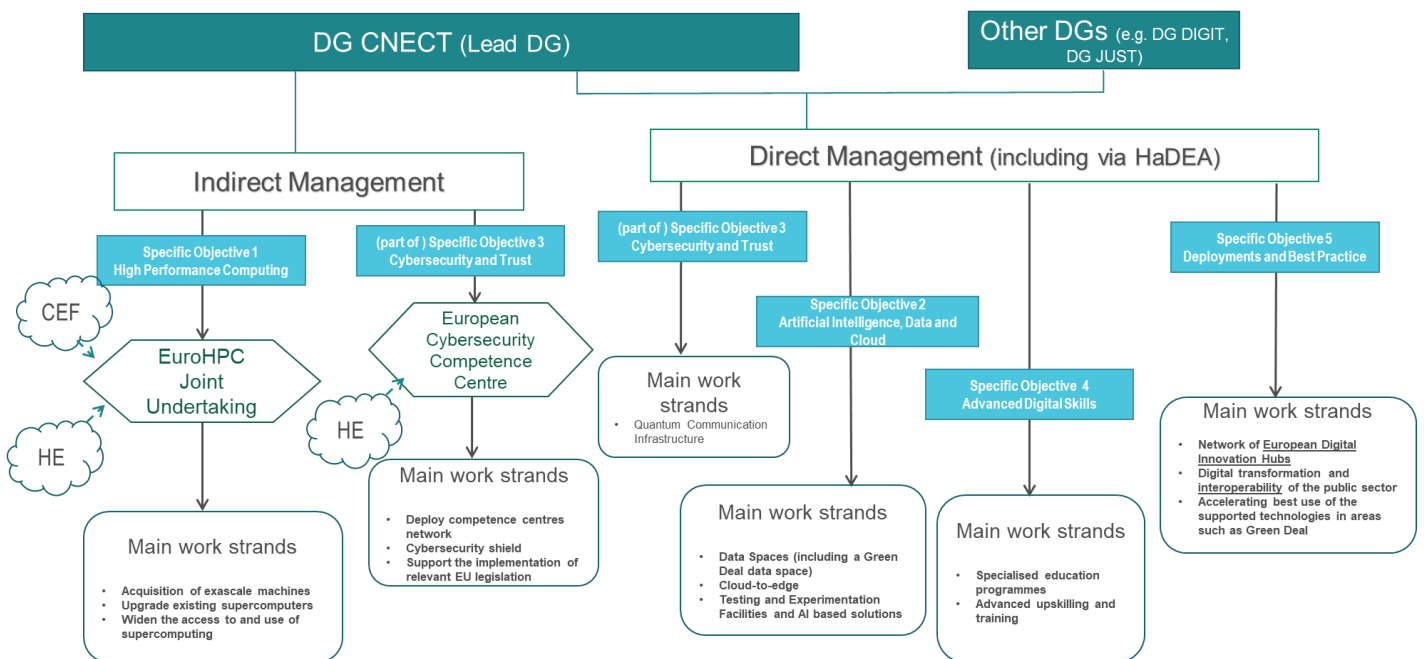
1.8. Legal basis and financial programming

1.8.1. Legal basis

Legal Basis	Period of application	Reference Amount (EUR million)
COM (2018) 434: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the Digital Europe programme for the period 2021-2027	2021 - 2027	7 588,0

1.8.2. Legal basis explanation

1.8.3. Financial programming table

	Financial Programming (EUR million)							
	2021	DB2022	2023	2024	2025	2026	2027	Total Programme
Total	**1 129,6**	**1 247,8**	**1 268,4**	**962,3**	**981,4**	**1 000,4**	**1 020,2**	**7 610,1**

1.8.4. Financial programming explanation

1.9. Link with the 2014-2020 MFF

Although DEP is a new programme, some of its activities target the sustainability and continuation of actions deployed under the previous MFF. The Digital Europe programme clearly builds on the successes of the H2020 programme making it possible to move technologies such as high performance computing and artificial intelligence into large-scale deployments. The European High Performance Computing strategy was implemented using funding from both Horizon 2020 and CEF programmes. Horizon 2020 supported artificial intelligence but focused on research and innovation and not on large-scale deployments. The deployment of Digital Service Infrastructures facilitating cross-border interoperability between public administrations, businesses and citizens was funded under the CEF Telecom programme, while the actions in the ISA[2] programme focussed on interoperability in public administration applications.

1.10. Relevant websites providing more information

https://ec.europa.eu/digital-single-market/en/europe-investing-digital-digital-europe-programme

2. Where are we in the implementation ?

2.1. Programme 2021-2027

The implementation of Digital Europe Programme can only start after the adoption by the co-legislator of the Digital Europe Programme Regulation. Following the adoption of the legal basis, the Commission will adopt the first multi-annual Work Programmes, and subsequently will launch the first calls. Following the corresponding evaluations, the first contracts will be signed, and the implementation of the programme will start.

2.2. Programme(s) 2014-2020 : Cumulative implementation rate and explanations

CEF

With an overall investment of almost EUR 280 million in the core service platforms, the Commission is enabling the EU-wide interoperability of specific digital services such as eHealth, Public Open Data, eID and Cybersecurity. The uptake of these services with CEF support reached a portfolio of 571 projects in the Member States and participating countries in the European Economic Area by the end of 2020, most of which are still being implemented. The last set of calls will expand the portfolio of projects with additional 88 projects approximately. With an EU contribution of almost EUR 350 million in generic services and an overall leveraged amount of more than EUR 450 million, CEF digital services support EU citizens, businesses and public administrations in interconnecting and adapting their systems to become interoperable across borders.

ISA2

	Commitments	Payments
Implementation Voted budget	**532 403 385**	**431 421 057**
Implementation Carry-overs	**87 078**	**343 511**
Implementation total	**532 490 464**	**431 764 568**
total envelop*	**532 501 555**	
cumulative implementation rate	100%	81%

* based on the total financial programming 2014-2020 = cumulative total of annual
last adopted budgets 2014-2020

The implementation of ISA² has been efficient. The 2020 work programme has been performed as envisaged and Covid-19 crisis has not impacted the delivery on programme's objectives. ISA² funding was mainly channelled to development of key and generic

interoperability enablers (4,7 millions), the support of instruments for public administrations (EUR 4 million) and EU Policies (EUR 7,5 million). The final payments under the ISA^2 are planned to be processed by the end of 2023.

3. How is the programme performing ?

3.1. Performance

3.1.1. Introduction

Performance assessment will be provided once the implementation of the programme 2021-2027 will have started

3.1.2. Active programme performance

Performance assessment will be provided once the implementation of the programme 2021-2027 will have started

3.1.3. Previous programme performance

Performance of ISA^2 - Interoperability solutions for public administrations, businesses and citizens 2014-2020

The programme's key performance indicators confirm that it has performed well. Some key interoperability enablers have shown even better performance than expected, which is explained by better-than-anticipated government interoperability acceptance and by faster-than-expected technological progress. Member States' positions have evolved from hesitant to very actively involved and requesting intensified common investment in interoperability enablers. In 2020, the programme was able to adapt to the Covid-19 crisis with no major negative impact on the programme implementation. In fact, the outreach of the programme increased due to larger stakeholder participation in online meetings and events, which may potentially boost the ISA^2 solutions' uptake.

The Commission report on the 'results of the interim evaluation of the ISA² programme' – COM(2019) 615 final– confirmed that ISA² performed well in all evaluation criteria, that the objectives pursued by ISA² remained pertinent, and that the programme results achieved so far are in line with its objectives. ISA² has played a central role in improving the interoperability landscape in the EU and discontinuing its activities would have jeopardised the efforts of European public administrations to improve interoperability and to foster the ICT-based modernisation of the public sector in Europe. Possible improvements had been suggested in the areas of raising awareness, user-centricity and sustainability. All these points have been addressed while preparing and implementing the last ISA² work programme. They have also been duly taken into account for the transition from ISA² to the Digital Europe Programme.

Raising awareness: ISA^2 has increased its outreach to all levels of public administrations and businesses, focusing on SMEs and start-ups. Its involvement in the Join, Boost, Sustain initiative is a great example of interlinking with related initiatives reaching stakeholders in cities and communities. Also, to expand the role of interoperability a draft of European Interoperability Framework for Smart Cities and Communities (EIF4SCC) has been developed together with DG CNECT in the framework of Living-in.eu movement. In 2020, the Interoperability Academy went online as part of the EU Academy (the corporate e-learning platform) reaching multiplayers directly and opening new cooperation avenues. So far, over 100 students have completed the online training modules on the European Interoperability Framework and Access to Base Registries; more online training courses are being prepared. Furthermore, various online webinars have been organised via the platform. The action on European Interoperability Architecture has closely cooperated with DGs REFORM, SANTE and TAXUD to support Member States, especially those lagging behind in digitalisation. This cooperation also included on Reform and Resilience Plans to make them "interoperable by design", and developing national taxation and health digital public services.

The ISA^2 programme has also intensified its cooperation with other EU programmes and projects such as Connecting Europe Facility (CEF), Structural Reforms Programme (SRSP), and Horizon 2020. This included organising joint events, sharing results and content, providing advice and support as well as identifying synergies between Member States' requests under the SRSP 2020 work programme and ISA² actions. ISA^2 solutions have provided direct support to several EU initiatives, i.e. the Single Digital Gateway, the EU Business Registers Interconnection System (BRIS), or the TOOP project. . For example, the Core Vocabularies have provided the basis for the data models which will be made available in the semantic repository of the Single Digital Gateway and the repository of links. Also, synergies have been identified both with the TOOP and the Digital Europe for All (DE4A) projects, for example in the context of the revision of the Core Criterion and Core Evidence Vocabulary (CCCEV) and the development of application profiles.

User-centricity: It was a key aspect for the 2020 ISA^2 Work Programme with dedicated workshops for EU regions or work on the central interoperability user platform Joinup. Potential users of future solutions have increasingly participated in their design phase (e.g. the Legal Interoperability ISA^2 action on better legislation).

Sustainability: The Digital Europe programme builds on achievements and lessons learnt from the ISA^2 programme (including the importance of continuous awareness raising and the need for user-driven approach) integrating CEF building blocks and ISA² solutions under the same Programme, and strengthening dedicated interoperability expertise and support.

Performance of CEF Telecom - **2014-2020**

CEF Telecom supported from 2014 to 2020, the deployment of an ecosystem of trusted cross-border digital service infrastructures (DSIs)[2] essential to trigger the digital transformation of public sector services in the Member States all for the benefits of citizens and businesses.

In 2020, the programme was able to adapt to the Covid-19 crisis with no major negative impact other than an extension of the call deadline for the first set of calls. In order to mitigate potential risks of a lower participation in the first call for grants, the deadline for submission of the applications was delayed with 2 months. In essence this measure enabled a successful oversubscription despite the difficult conditions.

The CEF mid-term evaluation[3] concluded that in the Telecom sector, the dual focus of CEF on digital cross-border services of public interest has an important impact on achieving the EU digital single market goals, enabling citizens and businesses to access high quality digital services across Europe. As such, it was acknowledged already in 2018 that by that time it had helped develop and implement common policies to address societal challenges including the digital transformation of healthcare, cybersecurity and digitisation of governments. These good results are proportionate to the level of funding that the programme counted on, by supporting the very first steps towards a full cross border digital infrastructure in areas of public interest. The mid-term evaluation also concluded that the programme proved to be an effective and targeted instrument for investment in trans-European infrastructure (TEN) in the digital sector, it strongly contributes to the Commission's priorities on jobs, growth and investment, and the Digital Single Market. The direct management of CEF grants has proven very efficient, with a strong project pipeline and a competitive selection process, a focus on EU policy objectives, coordinated implementation and the full involvement of Member States.

The CEF mid-term evaluation also highlighted that in the case of some DSIs, like Electronic Exchange of Social Security Information or Online Dispute Resolution (where EU Regulations and Directives require their deployment), CEF Telecommunications is providing an essential incentive for speeding up this process and important financial support for the Member States to become compliant. Other DSIs, like Cybersecurity, enable mechanisms to be used by Member States on a voluntary basis, by promoting actions that most likely would have not been carried out at EU scale without CEF support.

Concretely, what does that mean? If we take Cybersecurity as an example, the DSI contributes to EU preparedness to deal with cyber threats and incidents by supporting the implementation of the [Directive on security of network and information systems (NIS Directive, 2016/1148)](#) and the cybersecurity certification framework through the Cybersecurity Act (Regulation (EU) 2019/881).The Directive provides legal measures to boost the overall level of cybersecurity in the EU, encompassing the need for well-resourced Member State computer security incident response teams (CSIRTs) and swift and effective operational cooperation between them. CSIRTs have received funding to create, maintain or expand national capacities to run cybersecurity services and to co-operate across borders. Their operational cooperation is facilitated by interacting with the Core Service Platform co-operation mechanism of the Cybersecurity DSI, MeliCERTes, which supports information sharing and maturity development for CSIRTs. MeliCERTes provides CSIRTs under the NIS Directive with a common baseline set of tools so as to facilitate a shared understanding of artefacts, threats and incidents, provide secure communications and enhance data exchange between them. As from 2019, an additional cooperation mechanism to facilitate the creation of European-level Information Sharing and Analysis Centers (ISACs) has been created.

The deployment of DSIs has been marked by a considerable expansion of the ecosystem, passing from 8 to 20 DSIs supported in the last Work Programme. In effect, the programme started supporting the interoperability in a limited set of areas such as egovernment, Cybersecurity and cultural sector. Over the years, the programme started enabling through various solutions the interoperability also in other areas such as health, justice, social security, education and skills to name a few. In practice this meant that CEF has supported and enabled the interoperability of EU businesses, citizens and public administrations in more and more sectors.

An overview of the performance of the actions deployed with the support of the CEF Telecommunications Programme is available [here](#). This data will feed into the ex-post evaluation of the programme.

3.2. Key achievements

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[2] Europeana, eIdentification, eSignature, eDelivery, eInvoicing, eArchiving, Public Open Data, Automated Translation, Cybersecurity, eProcurement, Business Registers Interconnection System (BRIS), eHealth, Electronic Exchange of Social Security Information (EESSI), the European e-Justice portal, European Digital Media Observatory, European Platform on Digital Skills and Jobs, Online Dispute Resolution (ODR), Safer Internet, EU Student eCard and Blockchain.

[3] See the Report from the European Commission to the European Parliament, The Council, the European economic and social Committee and the Committee of the regions on the mid Term evaluation of the Connecting Europe Facility (CEF) and annexed Staff Working Douments COM(2018) 66 final

ISA² - Interoperability solutions for public administrations, businesses and citizens 2014-2020

54	955	2	4
actions have been supported that focus on developing digital solutions in the interoperability area.	EU initiatives have been screened since 2016 for potential information and communications technology and interoperability impact using the legal interoperability screening methodology.	EU–wide initiatives (European Interoperability Framework & Digital Public Administration) have been supported by ISA² aiming at a holistic interoperability approach in the EU.	pillars of 'location interoperability solutions for e-government' action (studies, frameworks and solutions, reports and events) benefit the EU through effective and usable public digital services, improved spatial awareness and analytical skills, and better support for the policy life cycle.
430	**4**	**28**	**4**
events in which ISA² have participated in or organised to increase its outreach.	core vocabularies have been developed by ISA² to facilitate efficient and effective electronic cross-border or cross-sector interaction between (a) EU public administrations and (b) public administrations and businesses and citizens.	interoperable digital solution have been developed under ISA²; they are operational and can be reused free of charge.	observatories have been run under ISA² to: 1) help foster the interoperability, capacity building policy and modernisation of public administrations; 2) support the adoption of open source and 3) foster one domain-specific interoperability (location); 4) support innovation and interoperability in the public sector

By systematically supporting Member States in implementing the European Interoperability Framework (EIF) along with monitoring such undertake, ISA² has effectively delivered on its objective to develop, maintain, and promote a holistic approach to interoperability in the Union and reduce fragmentation in the Union's interoperability landscape. The primary and secondary indicators of the updated National Interoperability Framework Observatory (NIFO) methodology are used to check fundamental areas where member states need to pursue in their efforts such as openness, transparency, reusability, technological neutrality and data portability, user-centricity, inclusion and accessibility, data semantics or integrated public service delivery through the EIF conceptual model. The aggregated view of all NIFO indicators will also be included as one of the Digital Europe Programme (DEP) indicators, showing in a holistic manner the extent of implementation of the Member State's interoperability frameworks or strategies with the EIF.

There has been a very active engagement with stakeholders from all levels of public administrations, businesses, SMEs and start-ups with increased awareness of and demand for reinforced EU interoperability support. Cooperation on interoperability with Member States CIOs has intensified, with increased demand for continued engagement around DEP and the future interoperability policy. North Macedonia joining ISA² has demonstrated that the interoperability policy and related support are attractive to close EU partners. The country is part of the digital and interoperability hub of NIFO participating in the annual reporting and monitoring activities on the sate-of-play of digitalisation and interoperability (including the EIF implementation).

ISA² piloted experimenting with and supporting emerging EU GovTech cooperation between public sector actors at national regional and local levels and between them and innovative (small) tech companies, in particular as part of the action on Innovative Public Services IPS. Market studies and a nascent observatory of IPS across Europe pave the way to the GovTech incubator funded by DEP and also support drafting and assessing Member States projects to be funded under the Resilience and Recovery Fund and the Technical Support Instrument.

Developing common vocabularies and data models (semantic interoperability) is essential for efficient and effective electronic cross-border and cross-sector interaction between European public administrations and between them and businesses and citizens. It also contributes to the emergence of a more effective, simplified, and user-friendly e-administration at the national, regional, and local levels of public administration – exemplified by the Once-Only Principle that reuses ISA² semantic assets. Members States use solutions such as Interoperability Maturity Assessment of a Public Service, European Interoperability Reference Architecture, and European Legislation Identifier in digitalising their public administrations and ensuring interoperability.

Core vocabularies provided by ISA² programme support many EU policies and their implementation in the Member States. The EU Open Data Portal and National Portals benefit from Asset Description Metadata Schema (ADMS) in uniformly describing their assets (i.e., their name, their status, theme, version, etc.) and their location on the Web. ISA² also supports major policy domains, such as the Single Digital Gateway Regulation, as well as technical solutions and frameworks to the Member States to meet the legal and technical requirements, and foster the interoperability of the IT systems to be rolled-out by the Commission and Member States.

In addition, the impact of ISA² can be illustrated by intensive cooperation with other EU programmes and projects such as Connecting Europe Facility (CEF), Structural Reforms Programme (SRSP), and Horizon 2020. Some ISA² actions and pilot solutions have evolved into CEF Telecom-funded building blocks (e.g. Big Data test infrastructure), which has led to designing a development pipeline from experimental interoperability action (under the Interoperability Knowledge and Support Centre) to mature, reusable interoperability solutions (under the Common Support Platform) in the DEP (chapter EDGES under strategic objective 5).

By systematically screening upcoming EU legislative initiatives for possible ICT and interoperability impacts, ISA² effectively delivers on its objective 'to identify, create and operate interoperability solutions supporting the implementation of Union policies and activities.' Such "digital-ready legislation" checking is amongst the EU government CIOs' most requested functions of a future EU interoperability policy. The programme's legal interoperability team has continued fine tuning its 'legal interoperability screening methodology' and helped redesign Tool #27 of the Commission's Better Regulation Toolbox, with support sources available for policymakers and ICT specialists such as the 'ICT Impact Assessment Guidelines'. These guidelines stress the importance of timely assessment of ICT impacts in order to identify and deploy reusable components, thus saving the efforts linked to new developments, and to ensure thorough planning of IT implementation.

CEF Telecom - **2014-2020**

20[4]	80	571
Trusted cross-border digital service infrastructures (DSIs) have been deployed. Together with the Member States, they have been identified as essential to trigger the digital transformation of public sector services in the Member States all for the benefits of citizens and businesses.	Calls for grants have been launched, mobilising stakeholders in all Member States and EFTA associated countries for the deployment of Digital service infrastructures	Actions have been funded to promote the uptake of an ecosystem of 20 Digital Services Infrastructures fully interoperable cross-border across the EU for citizens, businesses and public administrations.

The Connecting Europe Facility – Telecommunications (2014-2020) supported the deployment and promotion of 20 interoperable Digital Service Infrastructures (DSIs). DSIs are based on mature technical and organisational solutions to support exchanges and collaboration between citizens, businesses and public administrations The vision is to create a European ecosystem of interoperable digital services that will allow all citizens, businesses and administrations across the EU to fully benefit from living in a Digital Single Market.

Two examples of achievements are reported below:

The **Cybersecurity Digital Service** Infrastructure (DSI) contributes to the EU preparedness to deal with cyber threats by facilitating the implementation of the EU Cybersecurity strategy. The funding increases the cybersecurity capabilities and the cooperation of key European cybersecurity players, in particular, but not only, those addressed by the Directive on security of network and information systems (NIS Directive, 2016/1148) and the Cybersecurity Act (Regulation (EU) 2019/881). These are operators of essential services (OESs), single points of contact (SPOCs), national competent authorities (NCAs), as well as National Cybersecurity Certification Authorities (NCCAs) and national Computer Security Incident Response Teams (CSIRTs). As a result of the funding received, OESs are boosting their own internal cybersecurity capabilities and engage with relevant Information Sharing and Analysis Centres (ISAC) involving industry peers and public authorities. National bodies mainly focus on the take-up of the obligations deriving by European legislation. For example, they exchange best practices, train their staff and set-up incident reporting mechanisms. CSIRTs are expanding their capacities to run cybersecurity services and to co-operate across borders. Such cooperation is further facilitated by MeliCERTes, a platform set up by the European Commission with a common set

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[4] Europeana, eIdentification, eSignature, eDelivery, eInvoicing, eArchiving, Public Open Data, Automated Translation, Cybersecurity, eProcurement, Business Registers Interconnection System (BRIS), eHealth, Electronic Exchange of Social Security Information (EESSI), the European e-Justice portal, European Digital Media Observatory, European Platform on Digital Skills and Jobs, Online Dispute Resolution (ODR), Safer Internet, EU Student eCard and Blockchain.

of tools for information sharing and maturity development for CSIRTs. Through the projects concluded so far, governmental/national CSIRTs in 9 Member States received funding to increase their capacities, for example through training and acquisition of specialised tools. To date, 78 projects for Cybersecurity are being deployed in 25 Member States with an overall funding of 36,5 million EUR.

The **eHealth Digital Service** Infrastructure facilitates the movement of health data across national borders, ensuring the continuity of care and the safety of citizens seeking healthcare outside their home country, and enabling the pooling of EU-wide medical expertise to treat rare diseases. The actions supported by the eHDSI aim at setting up the necessary Member State infrastructure for such data exchange. They also support infrastructures enabling sustainable patient access to highly specialised care. Moreover, they ultimately contribute to the Digital Single Market through the provision of EU-wide interoperable eHealth services, thus boosting competitiveness and supporting an inclusive e-society. The DSI covers 3 services. Firstly, the cross-border ePrescription/ eDispensation (eP) service allows a patient who is abroad to receive the equivalent medication that he/she would receive in his/her home country. Secondly, the Patient Summary (PS) services provides a health professional access to the verified key health data of a patient needing unplanned cross-border healthcare. Finally, the European Reference Networks (ERN) are virtual networks bringing together healthcare providers and centres of expertise across Europe to tackle complex or rare medical conditions that require specialised treatment and a concentration of knowledge and resources. To the moment, 93 projects for eHealth are being deployed in 26 Member States with an overall funding of 27 million EUR.

3.3. Evaluations, studies and reports

The key findings of the latest evaluation - interim evaluation of the ISA² programme - [SWD(2019) 1615 final] were presented in the Programme Statement for the financial year 2019. The final evaluation of the ISA^2 programme (PLAN/2020/7027) is ongoing and will bring results by end 2021.

There is also an evaluation of the implementation of the European Interoperability Framework (EIF) ongoing (PLAN/2020/7507). It will evaluate the current EIF and assess its support in setting up interoperable digital public services. It will also elaborate the proposal on the EU governments interoperability strategy, announced in the Commission's Communication 'Shaping Europe's digital future'. The aim is to ensure coordination and common standards for secure and borderless innovative public sector data flows and services.

The key findings of the mid-term evaluation of the CEF Telecom programme - (see SWD(2018) 44 final) were presented in the Programme Statement for the financial year 2019.

4. Programme 2021-2027 - Key monitoring indicators

Specific Objective 1 :Make Europe a world-leading region in high-performance computing, improving our scientific potential and industrial competitiveness

Indicator 1:HPC infrastructures jointly procured

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
					Milestones					
					Actual Progress					Final

Are we on track	
Indicator type	Output
Unit of measurement	Absolute number
Cut-Off Date	
Data source	EC monitoring
Link to the objective	Acquire and deploy advanced supercomputing capabilities to upraise Europe's scientific capabilities and industrial competitiveness
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 2:Usage of the exascale and post-exascale computers in total and by various stakeholder groups (universities, SMEs etc.)

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
					Milestones					
					Actual Progress					Final

Are we on track	
Indicator type	Result
Unit of measurement	% of totally available computing time in minutes (expressed as fraction)
Cut-Off Date	
Data source	Measured by the machines themselves
Link to the objective	Ensure the widest access to high-performance computing infrastructures
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Specific Objective 2 :Boost the development of artificial intelligence and use it to respond to critical issues of our time

Indicator 1:Co-investment in sites for experimentation and testing

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
					Milestones					
					Actual Progress					Final

Are we on track	
Indicator type	Output
Unit of measurement	Euro
Cut-Off Date	
Data source	EC monitoring (part of the projects reporting requirements)
Link to the objective	Deploy world class reference sites for experimentation and testing in real setting focusing on the applications of AI in essential sectors
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 2:Usage of common European libraries or interfaces to libraries of algorithms, usage of Common European Data Spaces and usage of sites for experimentation and testing related to activities under this regulation

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
					Milestones					
					Actual Progress					Final

Are we on track	
Indicator type	Result
Unit of measurement	Absolute numbers
Cut-Off Date	
Data source	EC monitoring (part of the projects reporting requirements)
Link to the objective	Ensure wide access to artificial intelligence capacities for businesses and public administrations
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 3:Cases for which organisations decide to integrate artificial intelligence in their product, processes or services, as a result of the Programme

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
	Milestones									
	Actual Progress									Final

Are we on track	
Indicator type	Result
Unit of measurement	Unique entities
Cut-Off Date	
Data source	EC monitoring (e.g. survey sent to users of the capacities offered by the programme)
Link to the objective	Support the integration of artificial intelligence by businesses and public administrations
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Specific Objective 3 :Invest in cybersecurity to guarantee the resilience, integrity and trustworthiness of the Digital Single Market, including critical networks, infrastructures and services

Indicator 1:Cybersecurity infrastructure and/or tools jointly procured

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
	Milestones									
	Actual Progress									Final

Are we on track	
Indicator type	Output
Unit of measurement	Infrastructures, services and tools (see definition)
Cut-Off Date	
Data source	EC monitoring
Link to the objective	Deploy advanced cybersecurity equipment, tools, services and data infrastructures
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 2:Users and communities getting access to European cybersecurity facilities

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
	Milestones									
	Actual Progress									Final

Are we on track	
Indicator type	Result
Unit of measurement	Unique companies/organisations/entities
Cut-Off Date	
Data source	EC monitoring
Link to the objective	Ensure wide access to and usage of cybersecurity capacities to strengthen the resilience, integrity and trustworthiness of the Digital Single Market, including critical networks, infrastructures and services
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Specific Objective 4 :Promote advanced digital skills to address the shortage of digital experts, particularly in key technological areas

Indicator 1:Persons who have received training to acquire advanced digital skills

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
	Milestones									
	Actual Progress									Final

Are we on track	
Indicator type	Output
Unit of measurement	Absolute number
Cut-Off Date	
Data source	EC monitoring
Link to the objective	Contribution of the DEP to strengthen advanced digital skills, by increasing the education offer and the number of experts trained (art. 7.1 of the proposed Regulation)
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 2:Enterprises having difficulty recruiting ICT specialists

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
	Milestones									
	Actual Progress									Final

Are we on track	
Indicator type	Impact
Unit of measurement	Percentage
Cut-Off Date	
Data source	Eurostat
Link to the objective	Contribution of the DEP to bridge the gap of experts needed to operate key digital technologies and tackle skills mismatches (art. 7.1 of the proposed Regulation)
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 3:People reporting improved employment situation after the end of the training supported by the Programme

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
	Milestones									
	Actual Progress									Final

Are we on track	
Indicator type	Result
Unit of measurement	Absolute number
Cut-Off Date	
Data source	Survey data (self-assessment by the participants in the Master's programmes supported by the DEP)
Link to the objective	Contribution of the DEP to bridge the gap of experts needed to operate key digital technologies and tackle skills mismatches (art. 7.1 of the proposed Regulation)
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Specific Objective 5 : Widen the adoption and best use of digital technologies in all regions and sectors to make Europe more competitive and address major societal challenges

Indicator 1: Take-up of digital public services

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
					Milestones					
					Actual Progress					Final

Are we on track	
Indicator type	Result
Unit of measurement	Normalised 0-1 progress scale
Cut-Off Date	
Data source	EC monitoring
Link to the objective	Modernise public services through the use of interoperable, citizen-centric digital solutions in order to increase citizen welfare and EU competitiveness.
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 2: Enterprises with high digital intensity score

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
					Milestones					
					Actual Progress					Final

Are we on track	
Indicator type	Impact
Unit of measurement	% of EU enterprises (expressed as a fraction)
Cut-Off Date	
Data source	Eurostat
Link to the objective	Support the integration of digital technologies by European businesses, notably SMEs
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 3: Extent of alignment of the National Interoperability Framework with the European Interoperability Framework

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
					Milestones					
					Actual Progress					Final

Are we on track	
Indicator type	Result
Unit of measurement	1-4 continuous scale
Cut-Off Date	
Data source	The indicator is calculated from the current European Interoperability Framework (EIF) monitoring mechanism. The data is collected via an online survey covering the 27 Member States, combined with existing measurements from existing EC secondary data sources such as DESI indicators.
Link to the objective	Modernise public services through the use of interoperable, citizen-centric digital solutions in order to increase citizen welfare and EU competitiveness.
Link MFF 14-20 / MFF 21-27	This indicator is part of the monitoring of specific objective 5 of DEP: Widen the adoption and best use of digital technologies in all regions and sectors to make Europe more competitive and address major societal challenges
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

Indicator 4:Businesses and public sector entities which have used the European Digital Innovation Hubs' services

Baseline	2021	2022	2023	2024	2025	2026	2027	2028	2029	Target
	Milestones									
	Actual Progress									Final

Are we on track	
Indicator type	Result
Unit of measurement	Unique entities
Cut-Off Date	
Data source	EC monitoring
Link to the objective	Ensure wide access to European Digital Innovation hubs by businesses and public administrations
Link MFF 14-20 / MFF 21-27	
Other methodological comments	
Full metadata available at this address	
Justification of the trend	

5. Programme 2014-2020 - Key monitoring indicators

Previous Program 1 : Connecting Europe Facility (CEF)

Specific Objective 7 :To contribute to the interoperability, connectivity, sustainable deployment, operation and upgrading of trans-European digital service infrastructures and coordination at European level

Indicator 1:Facilitating digital interaction between public administration and citizens/ businesses

Baseline	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target
Citizens using public services on-line										
2014	Milestones									2020
						0,60	0,673			0,673
0,549	Actual Progress									Final
	0,549	0,548	0,574	0,56	0,614	0,641	0,673			
Businesses using public services on-line										
2011	Milestones									2020
							1			1
	Actual Progress									Final
	0,466	0,73								

Are we on track	On track
Indicator type	Impact
Unit of measurement	Percentage of internet users needing to submit forms to the public administrations who chose the online channel
Cut-Off Date	26/01/2021
Data source	Eurostat - Community survey on ICT usage in Households and by Individuals- Digital Agenda scoreboard
Narrative	The KPI measures the percentage of citizens who sent filled forms to public authorities, over the internet in the previous 12 months
Methodology	Eurostat - Community survey on ICT usage in Households and by Individuals The data collected on the household, is reported by 'the household'. In general, one individual in the household will answer the household related questions having the household perspective in mind. The survey is performed annually and the individuals consulted are between 16 to 74 years old.
Link MFF 14-20 / MFF 21-27	The Digital Agenda scoreboard and the Community survey on ICT usage in Households and by Individuals will continue to be monitored in the following years. However, the Commission will not continue to report on this indicator in the MFF 2021-2027 for the purpose of the Digital Europe Programme Statement. This is due to the fact that new indicators created in the context of the Digital Europe programme will give a more accurate measurement of the programme implementation than this indicator.
Other methodological comments	As of 2020, the data reported covers EU27 instead of EU28. As a consequence the target was also adjusted (from 70% to 67%) as compared to the previous Programme Statement in view of the transition from EU28 to EU27.

Full metadata available at this address	
Justification of the trend	Until 2019 the data reported was applicable to EU 28. 2020 marks a break in the trend due to this change in the data collection.

Indicator 2:Availability of cross-border public services

Baseline	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target
2014	Milestones									2020
0,662					0,8		1			1
	Actual Progress									Final
	0,662	0,65	0,695	0,72	0,733	0,777	0,796			

Are we on track	On track
Indicator type	Impact
Unit of measurement	Score on a scale from 0-100 reflecting the average of the national and cross-border online availability for basic and extended services. Services provided through a portal receive a higher score, services which provide only information (but have to be completed offline) receive a lower score. More details on methodology available through the e-government Benchmark
Cut-Off Date	26/01/2021
Data source	e-government Benchmark report
Narrative	Digital technologies increasingly place new demands and expectations on the public sector. Realising the full potential of these technologies is a key challenge for governmental organisations. Effective e-government can provide a wide variety of benefits including more efficiency and savings for both governments and businesses. It can also increase transparency and openness. This dimension measures both the demand and supply sides of digital public services as well as open data. The indicator measures the degree to which public services for citizens and businesses are interoperable and work cross-border. It is calculated as the average of the national and cross-border online availability for basic and extended services.
Methodology	2020 marked an improvement in the methodology, where both basic and extended services are taken into account for both citizens and businesses. The average of two sub-indicators provides the final score. The change affects the sub-indicators that until 2019 were e-government Services for Businesses (DESI indicator) and Citizens mobility – online availability (Digital scoreboard). As of 2020, the basis for its calculation are instead 2 DESI indicators: Digital public services for citizens and Digital public services for businesses. The first one reflects the share of public services needed for services related to family, career and studying life events that are available online for domestic as well as for foreign users. The second one reflects the share of public services needed for starting a business and for conducting regular business operations that are available online for domestic and foreign users. More details on methodology available through the e-government Benchmark.
Link MFF 14-20 / MFF 21-27	The e-government Benchmark report will continue to be updated. However, the Commission will not continue to report on this indicator in the MFF 2021-2027 for the purpose of the Digital Europe Programme Statement. This is due to the fact that new indicators created in the context of the Digital Europe programme will give a more accurate measurement of the programme implementation than this indicator.
Other methodological comments	It is a composite indicator that comprises: eGovernment Services for Businesses (DESI indicator) and Citizens mobility – online availability (Digital scoreboard).The data presents a break in the series that seems to point to a regression. However this is due to the change in the methodology as well as the shift from EU28 to EU27.
Full metadata available at this address	
Justification of the trend	Until 2019 the data reported was applicable to EU 28. 2020 marks a break in the trend due to this change in the data collection, as well as some minor changes in the methodology as reported above.

Previous Program 2 : Interoperability Solutions and common frameworks for European public administrations, businesses and citizens (ISA2)

Specific Objective 1 :to facilitate efficient and effective electronic cross-border or cross-sector interaction between European public administrations and between them and citizens and businesses, in order to enable the delivery of electronic public services supporting the implementation of Union policies and activities

Indicator 1:the number of key interoperability enablers

Baseline	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target
	Milestones									2020
3			9	9	9	10	10			10
	Actual Progress									Final
			9	9	11	11	11			11

Are we on track	On track
Indicator type	Output
Unit of measurement	Number of "key interoperability enablers" produced
Cut-Off Date	31/12/2020
Data source	European Commission, DIGIT D2
Narrative	"Key interoperability enablers" are actions that develop key generic interoperability solutions to help public administrations provide services. This type of solution is essential to facilitate efficient and effective electronic cross-border or cross-sector interaction between European public administrations as well as between them and citizens and businesses in order to enable the delivery of interoperable electronic public services, which is one of the ISA2 programme objectives.
Methodology	The value of the indicator reflects the number of the ISA2 programme actions that identify, develop and implement interoperability solutions that are considered essential to facilitating interoperability in Members States. The quantity of such solutions depends on the number and type of proposals submitted by the Member States and Commission services and accepted for implementation in each annual work programme following the positive opinion of the comitology committee.
Link MFF 14-20 / MFF 21-27	Reporting on this indicator will discontinue in the MFF 2021-2027
Other methodological comments	The number mentioned in the baseline for the indicator corresponds to the major actions that were carried over from the previous programme ISA to the new programme ISA2 and should not be confused with the amount of outputs created by the previous programme (ISA)The indicator value for the years 2017-2020 could only be estimated at the beginning of the programme. This is because the number and type of the solutions produced by the ISA2 actions depends on the number and the type of proposals submitted by the Member States and Commission services, and then accepted for implementation in each annual work programme. As a result of proposals received in 2017 for the WP2018, the number of key interoperability enablers produced in 2018 was already higher than estimated in 2015.
Full metadata available at this address	
Justification of the trend	For most of the monitored period, the indicator has been on track except when it over-performed in 2018 and as a result exceeded the target value. This is explained by rates of government interoperability acceptance and technological progress exceeding initial expectations. There has been an increasing demand in Member States for intensified common investment in interoperability enablers.

Indicator 2:the number of supporting instruments for public administrations delivered to and used by European public administrations

Baseline	2014	2015	2016	2017	2018	2019	2020	2021	2022	Target
	Milestones									2020
4			9	9	11	13	13			13
	Actual Progress									Final
			9	9	12	13	13			13

Are we on track	On track
Indicator type	Output
Unit of measurement	Number of supporting instruments used by EU public administrations
Cut-Off Date	31/12/2020
Data source	European Commission, DIGIT D2
Narrative	"Supporting instruments for public administrations" are actions to develop support solutions that can help public administrations build interoperable services and that contribute to the development of more effective, simplified, and user-friendly e-administration at all levels. Delivering such supporting instruments to EU public administrations has been prerequisite to meeting main objectives of the ISA2 programme.
Methodology	The value of the indicator reflects the number of the ISA2 programme actions that identify, develop, and implement support solutions that can help EU public administrations build interoperable state-of-the-art services. The number of such solutions depends on the number and type of proposals submitted by the Member States and Commission services and accepted for implementation in each annual work programme following the positive opinion of the comitology committee.
Link MFF 14-20 / MFF 21-27	Reporting on this indicator will discontinue in the MFF 2021-2027
Other methodological comments	The number mentioned in the baseline for the indicator corresponds to the major actions that were carried over from the previous programme ISA to the new programme ISA2 and should not be confused with the amount of outputs created by the previous programme (ISA).The value of the indicator for the years 2017-2020 could only be estimated at the beginning of the programme. This is because the number and type of the solutions produced by the ISA2 actions depends on the number and the type of proposals submitted by the Member States and Commission services, and then accepted for implementation in each annual work programme. As a result of proposals received in 2017 for the WP 2018, the number of supporting instruments for public administrations delivered in 2018 was already higher than estimated in 2015.
Full metadata available at this address	

Justification of the trend	In general, the indicator has been on track except when it over-performed in 2018, which is explained by the increased need of Member States to modernise their public services and to improve electronic interaction among Member States as well as between Member States public administrations, individuals and companies. The target value has been reached as planned.

6. The programme contribution to horizontal policies

6.1. Contribution to climate mainstreaming

6.1.1. Tracking and estimates

2021 estimates	2022-2027 programming						Total
2021	2022	2023	2024	2025	2026	2027	
0,0	0,0						0,0

(*)Consolidated and updated comparable information for the annual expenditures adopted, estimated or programmed for the 2021-2027 programming period (totals by programme in EUR Million).

6.1.2. Explanation and justification on the financial contribution

By bringing European human centred AI-solutions as set out in white paper on AI and by unleashing the powers of digital, the Digital Europe Programme is expected to contribute to Europe's common goal of being climate neutral in 2050 as set out in the European Green Deal.

 Several actions in the first Work Programme are expected to contribute directly to this target. Such is the case of selected actions contributing to the creation of a European Green Deal data space, the Urban Digital twins or the Destination Earth initiative.

Other actions might also marginally contribute with positive externalities although the climate action is not their main objective. Such is the case of the requirements of energy efficiency in the build-up of the cloud-to-edge capacities.

The tracking will be performed ex –post based on the financial system of the Commission.

6.2. Contribution to biodiversity mainstreaming

Not applicable

6.3. Contribution to clean air financing

Not applicable

6.4. Contribution to gender equality

Not applicable

6.5. Contribution to the sustainable development goals

6.5.1. Goals

SDG 3 Ensure healthy lives and promote well-being for all at all ages

The Digital Europe programme is expected to contribute to this SDG through the support provided for the digitalisation of the health sector in particular through the uptake of digital health solutions and services.

Several actions in the first Work Programme are expected to contribute directly to this goal. Such is the case of selected actions such as the deployment of the Data spaces for Health or the Testing and Experimentation facility for Health.

 Other topics might also marginally contribute with positive externalities although healthcare is not their main objective. Such is the case of support to specialised education programmes in key digital technologies for professionals in various areas, including the health sector.

SDG 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

The Digital Europe programme will promote learning opportunities in advanced digital skills in key capacity areas like data and AI, cybersecurity, quantum and HPC. The support will target training opportunities for the future experts as well as upskilling of the existing workforce through short trainings reflecting the latest developments in the above mentioned key capacity areas.

SDG 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

The Digital Europe programme is expected to contribute in bridging the investment gap in Europe and to generate jobs and economic growth. It will support the deployment of innovative technologies in key capacity areas and boost their market uptake through high impact deployments. The programme aims also to support the promotion of the advanced digital skills needed for the deployment of the technologies deployed by the programme. The Digital Europe Programme and the legacy actions (i.e. ISA2 and CEF Telecommunications) are expected to contribute also to the economic productivity through technological upgrading and innovation. The public sector contributes 20 % to the EU GDP through procurement, making it a key factor of the European and global economy. A modernised digital public sector means better public services, less bureaucracy and consequently more time for citizens and businesses to be productive in their core professional activities.

SDG 9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

The Digital Europe programme will contribute to the broader digital transformation of areas of public interest and of industry. The acquisition and deployment of advanced supercomputing capabilities aim to enhance Europe's industrial competitiveness. Moreover, the reinforced network of European Digital Innovation Hubs will contribute to the digitisation of industry and address issues of technological accessibility, ensuring that businesses, including SMEs, have access to cutting-edge technologies and finance for adapting to digital change. The deployment of cross border interoperable digital solutions, will enhance collaboration between European Public administration.

SDG 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Selected actions under the Digital Europe Programme as well as the legacy solutions deployed in the context of the ISA2 and CEF Telecommunications Programmes aim to enlarge and maximise the benefits of the digital transformation for citizens and businesses. Contribution to this SDG is expected from selected topics that aim to support the digitalization and interoperability of public administrations, piloting of AI applications in law enforcement domain, as well as the digital transformation of Justice and consumer protection. The digital transformation of public administrations shall foster trust in online services, improve the service delivery and the convenience of services for European businesses and citizens, and reduce digital administrative barriers.

SDG 17 Strengthen the means of implementation and revitalize the global partnership

Selected legacy actions in the framework of ISA^2 contribute to SDG 17.6 by promoting collaboration with third countries, international organisations or bodies, and pursuing public reuse of interoperability solutions. International cooperation with Uruguay, Ukraine, the Western Balkans, Japan, Australia, Vietnam, etc. in the areas of semantic interoperability and solutions' reuse allows improving frameworks and specifications.