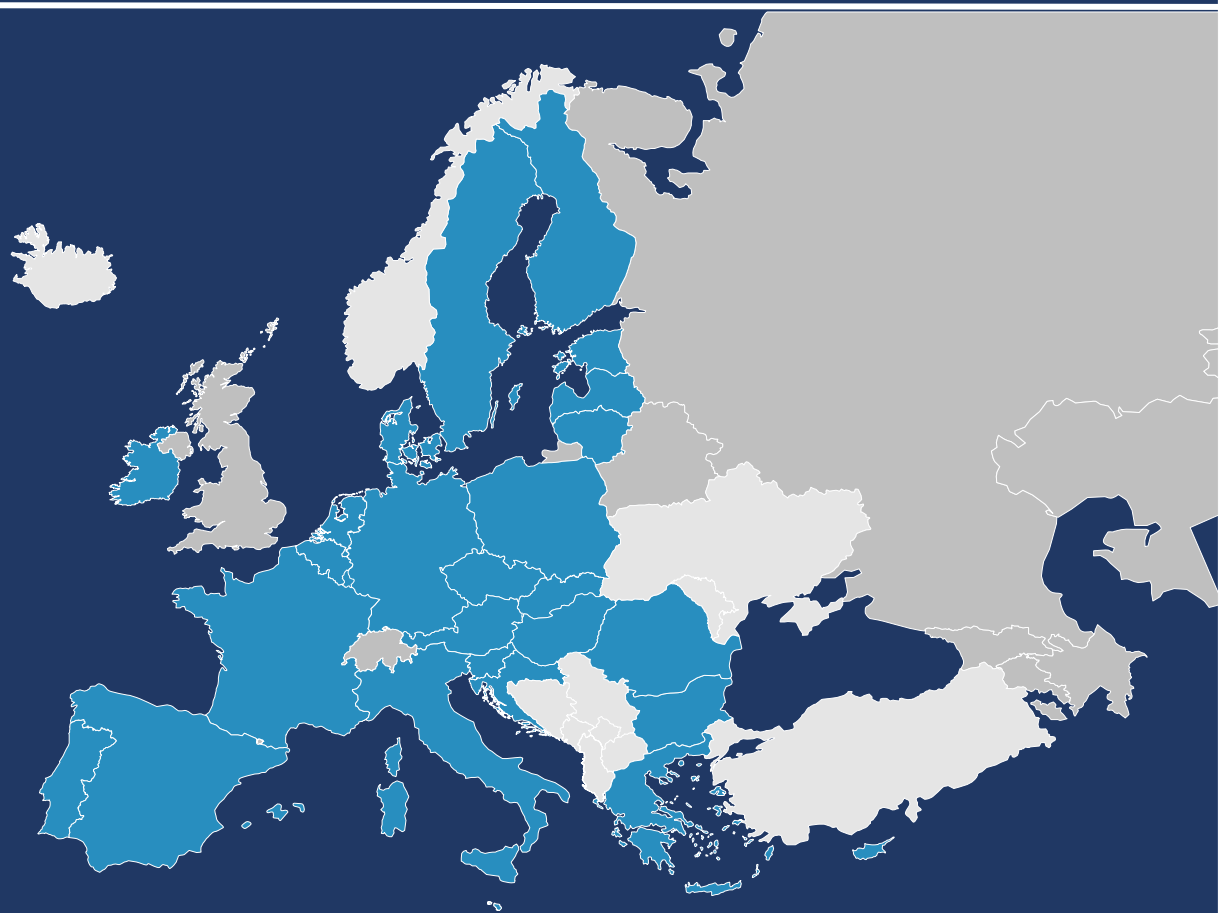# European Union

2024 Digital Public Administration Factsheet

Supporting document

Main developments in digital
public administrations and
interoperability

JULY 2024

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2030 DIGITAL DECADE

The **Digital Decade policy programme 2030** sets out digital ambitions for the next decade in the form of clear, concrete targets. The main goals can be summarised in 4 points:

1) a digitally skilled population and highly skilled digital professionals;
2) secure and sustainable digital infrastructures;
3) digital transformation of businesses;
▪ digitalisation of public services.

Skills
20 million employed **ICT specialists**, more graduates + gender balance
80% of adults can **use tech** for everyday tasks

Government
Key Public Services – 100% online
Everyone can **access health records online**
Everyone can use **eID**

Infrastructure
Gigabit connectivity for everyone, **high-speed mobile coverage** (at least 5G) everywhere
EU produces 20% of world's **semiconductors**
10 000 **cloud edge nodes** = fast data access
EU **quantum computing** by 2025

Business
75% of companies using **Cloud, AI or Big Data**
Double the number of **unicorn startups**
90% of **SMEs taking up tech**

The production of the **Digital Public Administration factsheets and their supportive documents** support the objectives and targets of the Digital Decade programme. By referencing national initiatives on the digital transformation of public administrations and public services, as well as interoperability, they complement existing data and indicators included in the Digital Decade reports and related resources. They also highlight and promote key initiatives put in place or planned by EU countries to reach the Digital Decade's targets.

Executive Summary

In an era where digital transformation is reshaping the way governments operate and serve their citizens, the European Commission is fully committed to be at the forefront of this evolution, driving efforts to modernise public administrations across the European Union. Recognising the critical need for interoperable digital services, the Commission is dedicated to implementing forward-thinking strategies, robust regulations, and substantial investments to support Member States. These initiatives are not only pivotal in meeting the ambitious Digital Decade objectives for 2030, such as having 100% of key public services available online by 2030, but also in fostering a more digitally inclusive and resilient future. By championing a more connected and efficient European landscape, the Commission is paving the way for enhanced public services, streamlined administrative processes, and improved accessibility for all citizens and businesses within the EU.

The EU Digital Public Administration factsheet and supporting document present an overview of the European landscape in terms of digitalisation of public administrations and interoperability, outline the main EU actors responsible for this transition and offer an overview of the main strategies and legislation adopted for the digital transformation of the public administration, as well as the different existing infrastructures. More specifically, this supporting document provides an overview of all the latest EU initiatives linked to the digital transformation of public administrations and public services, interoperability, data access, management and reuse, trust and cybersecurity, as well as the innovative use of technologies by the public sector, alongside funding programmes that support their implementation.

The EU's main actors and institutions responsible for the coordination and implementation of digital public administration services and the implementation of legislative initiatives for the modernisation of the public sector are overseen by the Executive Vice-President-designate for a Europe fit for the Digital Ages, Ms. Vestager. Ms. Vestager is the highest representative of the EU in charge of ensuring Europe's digital development, with the support of the Commissioner for Budget and Administration, Mr. Hahn, the Commissioner for Internal Market, Mr. Breton, the Directorate-General for Digital Services (DG DIGIT), led by Ms. Gaffey, and the Directorate-General for Communications Networks, Content and Technology (DG CNECT), led by Mr. Viola.

In the last four years, key new initiatives have been adopted at EU level to guide the digital transformation of European public administrations and public services, such as the strategy Shaping Europe's Digital Future, and the European Declaration on Digital Rights and Principles, as well as the Digital Education Action Plan for the period 2021-2027. In addition, the Digital Decade Policy Programme 2030 was designed as an overarching strategy to drive digital transformation across the EU. Additionally, 2023-2024 has been a key period for the adoption of initiatives linked to data and interoperability. The Interoperable Europe Act, which entered into force on 11 April 2024, aims to set up a new cooperation framework for EU public administrations to ensure the seamless delivery of public services across borders, and to provide for support measures promoting innovation, enhancing skills and knowledge exchange. In addition, the Data Act entered into force on 11 January 2024 to regulate the access and use of data generated in the EU. These initiatives will enhance EU's digital infrastructures, while ensuring data security and citizens' trust. When it comes to the innovative use of technologies by the public sector, this year has been marked by the adoption of the Artificial Intelligence Act in December 2023. Among other provisions, the AI Act includes the introduction of the European AI Office established in February 2024 within the Commission to oversee the AI Act's enforcement and implementation within Member States. This regulation is the world's first comprehensive regulation on AI made by a major regulator.

1. Interoperability State-of-Play

In 2017, the European Commission published the European Interoperability Framework (EIF) to give specific guidance on how to set up interoperable digital public services through a set of 47 recommendations divided in three pillars. The EIF Monitoring Mechanism (MM) was built on these pillars to evaluate the level of implementation of the framework within the Member States. The mechanism is based on a set of 91 Key Performance Indicators (KPIs) clustered within the three scoreboards (Principles, Layers, Conceptual model, and Cross-border interoperability), outlined below.

Starting from the 2022 edition, an additional scoreboard, Scoreboard 4, focusing on cross-border interoperability, has been introduced. This scoreboard assesses the adherence to 35 Recommendations outlined in the EIF framework. Specifically, it encompasses Interoperability Principles 2, and 4 through 11 from Scoreboard 1, all recommendations pertaining to Interoperability Layers from Scoreboard 2, as well as Conceptual Model recommendations 36 to 43 and 46 to 47 from Scoreboard 3.

Scoreboard 1 Interoperability Principles	Recommendation(s) n°
Principle 1 - Subsidiarity and Proportionality	1
Principle 2 - Openness	2-4
Principle 3 - Transparency	5
Principle 4 - Reusability	6-7
Principle 5 - Technological neutrality and data portability	8-9
Principle 6 - User-centricity	10-13
Principle 7 - Inclusion and accessibility	14
Principle 8 - Security and privacy	15
Principle 9 - Multilingualism	16
Principle 10 - Administrative simplification	17
Principle 11 - Preservation of information	18
Principle 12 - Assessment of Effectiveness and Efficiency	19

Scoreboard 2 Interoperability Layers	Recommendation(s) n°
Interoperability Governance	20-24
Integrated Public Service Governance	25-26
Legal Interoperability	27
Organisational Interoperability	28-29
Semantic Interoperability	30-32
Technical Interoperability	33

Scoreboard 3 Conceptual Model	Recommendation(s) n°
Conceptual Model	34-35
Internal information sources and services	36
Basic Registries	37-40
Open Data	41-43
Catalogues	44
External information sources and services	45
Security and Privacy	46-47

Scoreboard 4 **Cross-border Interoperability**

Source: European Interoperability Framework Monitoring Mechanism 2023

Each scoreboard breaks down the results into thematic areas (i.e. principles). The thematic areas are evaluated on a scale from one to four, where one means a lower level of implementation and four means a higher level of implementation. The graphs below show the result of the fourth EIF Monitoring Mechanism data collection exercise within the 27 Member States (EU average) in 2023.
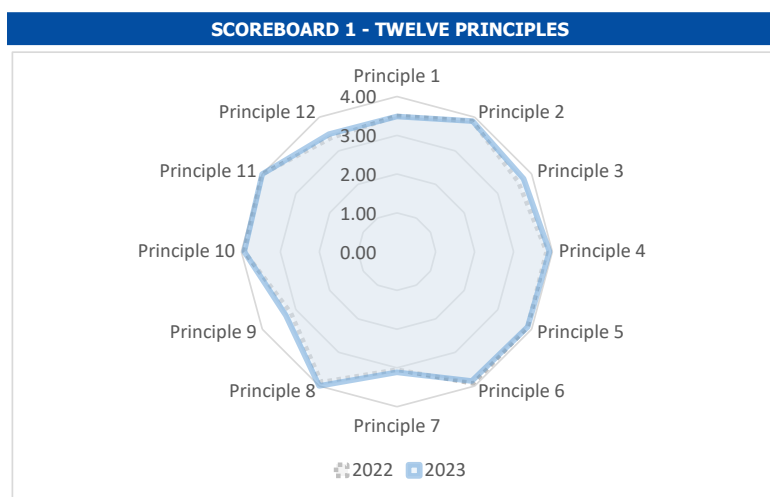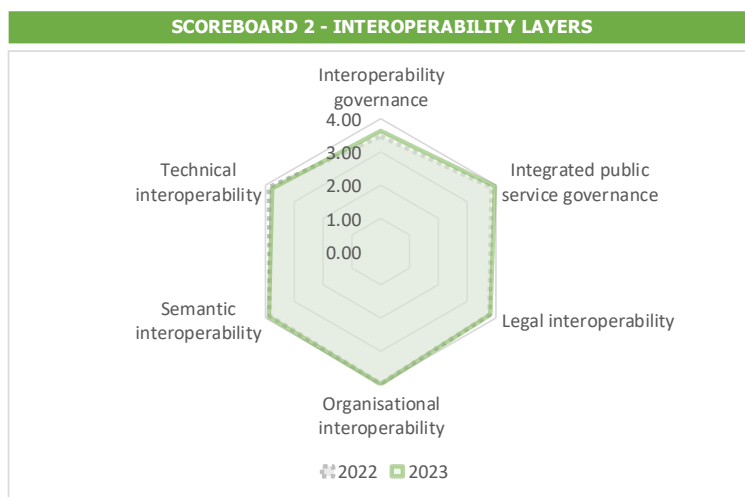

Source: European Interoperability Framework Monitoring Mechanism 2023

The results in Scoreboard 1 show an overall good implementation of the EIF principles for the 27 Member States with multiple principles scoring at 4. Principle 12 (Assessment of Effectiveness and Efficiency) demonstrated improved performance between 2022 and 2023. Areas of improvement are concentrated in Principle 1 (Subsidiarity and Proportionality), 7 (Inclusion and Accessibility) and 9 (Multilingualism) for which the score of 3 shows an upper-medium performance in the implementation of the corresponding recommendations.

The result of 3 for Principle 1 (**subsidiarity and proportionality**), at European level, shows a partial implementation of EIF recommendations in existing National Interoperability Frameworks and related policies. When analysing the overall European countries' performance on Principle 7 on **inclusion and accessibility**, the results revealed a partial implementation of the accessibility standards set forth by the Directive (EU) 2016/2102 on the accessibility of the websites and mobile applications of public- sector bodies (Recommendation 14). In addition, Principle 9 (**Multilingualism**) showed a heterogeneous implementation of its recommendations. For instance, the possibility of accessing instructions for completing the procedures in an official EU language is not always ensured in European countries, especially for procedures related to moving.

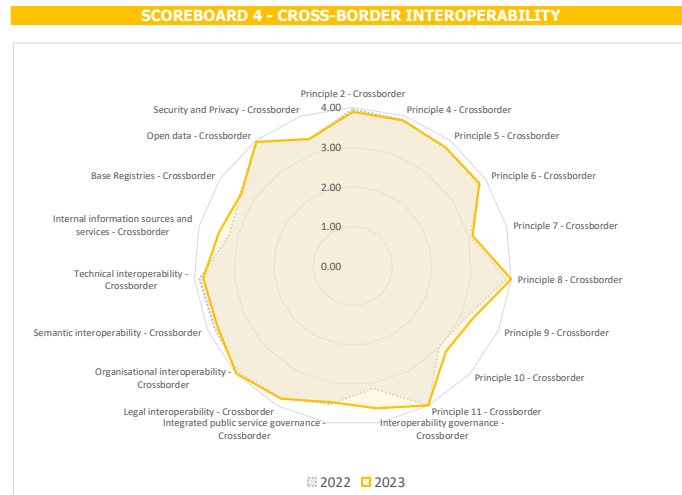Source: European Interoperability Framework Monitoring Mechanism 2023

Regarding the implementation of interoperability layers assessed for Scoreboard 2, the 27 Member States show on average a very good performance in implementing almost all layers, with a maximum score of 4. While the EU average was already high, improvement can be observed in the 2023 results, particularly in **interoperability governance**. However, to improve the EU average on **interoperability governance**, EU Member States could, for instance, further promote the use of a Common Assessment Method for Standards and Specifications (CAMSS) or similar assessment method for standard and specification at Member State level, as well as the use of ICT Catalogues.
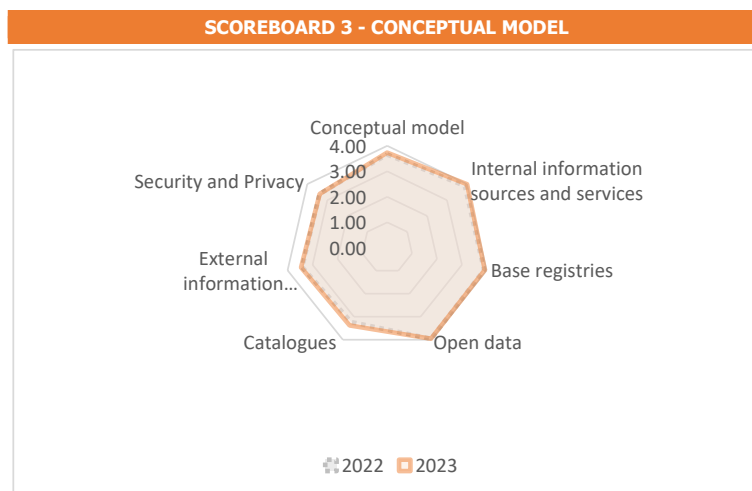
Source: European Interoperability Framework Monitoring Mechanism 2023

The EU average on the Conceptual Model in Scoreboard 3 shows a good performance especially for open data, base registries and Internal Information Sources and Services. However, some improvements can be made in implementing recommendations related to Catalogues as well as in the area of Security and Privacy although their performance was slightly better in 2023. The results on **Catalogues**, at European level, are upper-medium. Indeed, although some European

countries have continued implementing open data portals, public data catalogues, and other types of catalogues (such as software component libraries and specifications), uniform adoption across Europe has not yet been achieved. The score for **Security and Privacy** at the European level, showed an overall good implementation of Recommendation 46 within national frameworks, with an increase in the implementation of all Privacy and Security elements, with the exception of risk management. However, scores for Recommendation 47 are medium, as the number of trust service providers present on national trusted lists complying with the eIDAS Regulation varies across countries and remains insufficient in some of them.

Source: European Interoperability Framework Monitoring Mechanism 2023

Cross-border Interoperability in Scoreboard 4 results show a good performance in a majority of indicators. However, there is still margin for improvement. For instance, Member States could focus on Principle 7 (Inclusion and Accessibility), Principle 9 (Multilingualism) and Principe 10 (Administrative simplification), as well as Base Registries and Security and Privacy, which all have a score of 3. Despite this, it should be noted that Principle 9 (Multilingualism), Principle 10 (Administrative simplification) and Internal Information Sources and Services have slightly improved in 2023, as seen on the figure above. In addition, interoperability governance has significantly improved in 2023.

Specific areas of improvement include, among others, the simplification of processes and the use of digital channels whenever appropriate for the delivery of European public services, and more specifically by using the eID service (**Principle 10 - Administrative simplification** - Recommendation 17). Furthermore, concerning the recommendations for **Base registries**, the development of interfaces with base registries and authoritative sources of information where the publication of the semantic and technical means and documentation needed for others to connect and reuse available information can be performed should be prioritised (Recommendation 38). Lastly, efforts are necessary on the use of trust services according to the Regulation on eID and Trust Services as mechanisms that ensure secure and protected data exchange in public services (**Security and Privacy** - Recommendation 47).

A complementary analysis of the European results in the 2023 edition of the EIF Monitoring Mechanism will be available within the State of Play Report on Digital Public Administration and Interoperability in Europe. Whereas additional data on specific Member States' results on the EIF Monitoring Mechanism is available online through interactive dashboards.

Curious about the state-of-play on digital public administrations in the EU?

Please find here some relevant indicators and resources on this topic:
- Eurostat Information Society Indicators
- Digital Economy and Society Index (DESI)
- eGovernment Benchmark

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2. Digital Public Administration Governance

For more details on the European Commission's responsible bodies for digital policy and interoperability, its main actors, as well as relevant digital initiatives.

Executive Vice-President for a Europe fit for the Digital Age

As Executive Vice-President for a Europe fit for the Digital Age, Ms. Margrethe Vestager has a dual function. She chairs the Commissioners' Group on a Europe fit for the Digital Age and, in addition, she is responsible for the competition portfolio. Her mission is to ensure all policy dimensions are fully considered. She is also accountable for the Secretariat-General and the Directorate-General for Competition.

Commissioner for Budget and Administration

As Commissioner for Budget and Administration, Mr. Johannes Hahn is responsible for the DG for Budget; the DG for Human Resources and Security; the DG for Digital Services (DIGIT); the DG for Translation; and the DG for Interpretation. Similarly, he is responsible for the Office for the Administration and Payment of Individual Entitlements; the Office for Infrastructure and Logistics in Brussels; the Office for Infrastructure and Logistics in Luxembourg; the European Personnel Selection Office; the Publications Office of the European Union; and the European School of Administration. Respecting its investigative independence, he is also responsible for the European Anti-Fraud Office. Mr. Hahn oversees implementing the full digitalisation of the Commission and ensures that staff acquire the necessary digital skills.

Commissioner for Internal Market

As Commissioner for Internal Market, Mr. Thierry Breton is responsible of the DG for Defence Industry and Space, as well as the DG for Communications Networks, Content and Technology and the DG for Internal Market, Industry, Entrepreneurship and SMEs. He works under the guidance of the Executive Vice-President for a Europe fit for the Digital Age.

Directorate-General for Digital Services (DIGIT)

The mission of the Directorate-General for Digital Services (DIGIT), led by Ms. Veronica Gaffey, is to deliver digital services, enabling the effective implementation of EU policies and to support the Commission's internal administration.
With this goal in mind, DIGIT, as a trusted partner has the responsibility to provide the EC, and whenever appropriate other European Institutions and bodies, with high quality and innovative
- Workplace solutions: creating new ways of working and collaborating for staff;
- Business solutions: delivering information systems supporting rationalised business processes within the framework of the corporate IT Governance strategy;
- Infrastructure solutions: providing reliable, cost-effective, and secure infrastructure and services;
- Effective solutions: aligning IT investments with business priorities, facilitating relationships with our strategic partners, balancing risk with business value for the Institution.
- Support the modernisation of public administrations by promoting and facilitating interoperability so that European public administrations can work seamlessly and together across boundaries - Interoperability solutions.

Through Interoperable Europe, DIGIT facilitates the deployment of trans-European digital public services to administrations, citizens, and enterprises/businesses. Finally, it is also responsible for developing the building blocks for digital government, under the Digital Europe Programme, the funding programme focused on bringing and ensuring a wide use of digital technologies by businesses, citizens and public administrations.

DIGIT Unit B2 – Interoperability and Digital Government Unit

The Unit is led by Ms. Leontina Sandu, who currently oversees the implementation of the Interoperable Europe Act, and coordinates interoperability-related affairs. The Unit is managing the execution of specific Objective 5 of the Digital Europe Programme, particularly the Common Service Platform (CSP) and the Interoperability Knowledge and Support Centre (IKSC). The Unit supports the development of digital solutions which enables European societies to benefit from interoperable cross-border and cross-sector public services.

Directorate-General for Communications Networks, Content and Technology (CONNECT)

The mission of the Directorate-General for Communications Networks, Content and Technology (CONNECT), led by Mr. Roberto Viola, is to conceive and implement the policies required to create a digital single market to foster growth and employment. The aim is to enable citizens, businesses, and public administrations to access and provide digital goods, content, and services seamlessly and fairly. DG CONNECT is thus responsible for fostering a modern, secure, open and pluralistic society and for helping drive the digital transformation of European industry and public services using innovative digital technology, among others.

DG CONNECT Unit H4 – eGovernment & Trust

The mission of the Unit is to advance the quality and innovation of public administrations and accelerate the large-scale public sector and private sector use of trusted identification and trust services in the digital single market. The Unit promotes modernisation of public services to meet citizens' expectations regarding efficiency, quality, transparency, accountability, user centricity and inclusiveness.

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (GROW)

The mission of the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (GROW), led by Ms. Kerstin Jorna, is to enhance the European business environment by developing and carrying out the Commission's policies related to business and industry. The Directorate- General is also accountable for the Single market policies. With this goal in mind, GROW, as a trusted partner, has the responsibility to foster entrepreneurship and growth by reducing the administrative burden on small businesses and by facilitating access to funding for SMEs and to help turn the EU into a smart, more sustainable and inclusive economy.
DG GROW is responsible for the implementation of the Once Only Principle. This principle facilitates the sharing of data between public entities, so citizens are only required to enter their information once.

Other DGs

Within the European Commission, individual Directorates-General are responsible for the implementation of IT solutions within the mandate of their respective competencies:
- DG JUST – for a modern judicial system;
- DG EMPL – for policy in the field of employment, social affairs and inclusion, which is a shared competence between the EU and its member countries;
- DG REGIO – for strengthening economic, social and territorial cohesion by reducing disparities between regional and national levels of development in the European Union.
- DG REFORM – for providing tailor-made support to all EU countries for their institutional, administrative and growth-enhancing reforms.
- Internal Audit Service (IAS) of the European Commission

Operating under the responsibility of Mr. Didier Reynders, European Commissioner for Justice, the Internal Audit Service (IAS) is a core part of the internal audit system for the European Commission and EU agencies. The mission of the IAS is to provide independent, objective assurance and consulting services designed to   add value and improve the operations of the European Commission.

3. Digital transformation of public administrations

Main digital strategies, action plans and legislations

Shaping Europe's Digital Future

The strategy on Shaping Europe's Digital Future covering the period of 2019-2024, is the European Union's approach to a digital transformation that will address how the European Union should continue to meet new risks and challenges posed by digital technology. It is based on the following three pillars:
- Technology that works for the people - investing in digital competences for all Europeans; further protecting people from cyber threats; and ensuring Artificial Intelligence is developed in ways that respect people's rights;
- A fair and competitive digital economy - enabling a vibrant community of innovative and fast-growing start-ups and SMEs to access finance and to expand; proposing a Digital Services Act to strengthen the responsibility of online platforms; and ensuring that all companies compete in Europe on fair terms;
- Open, democratic and sustainable society - using technology to help Europe become climate-neutral by 2050; empowering citizens with better control and protection of their data; and creating a European health data space to foster targeted research, diagnosis and treatment.

2030 Digital Compass and the Declaration on European Digital Rights and Principles

The 2030 Digital Compass is a strategy launched on 9 March 2021 that sets objectives to achieve EU's vision for the digital future. The strategy identifies the main goals through four priority areas:
- Digitally skilled population and highly skilled digital professionals
- Secure and performant sustainable digital infrastructures
- Digital transformation of businesses
- Digitalisation of public services

The Commission shall review the targets by 2026 to take stock of technological, economic and societal developments.

On 26 January 2022, building on previous initiatives including the Tallinn Declaration on eGovernment, the Berlin Declaration on Digital Society and Value-based Digital Government, and the Lisbon Declaration, the Commission proposed a Declaration on European Digital Rights and Principles with the aim to inform people and provide a reference for policymakers and digital operators in their actions in the digital environment. More specifically, the Declaration has at its core key rights and principles for the digital transformation, such as placing people and their rights at its centre, supporting solidarity and inclusion, ensuring the freedom of choice online, fostering participation in the digital public space, increasing safety, security, and empowerment of individuals, and promoting the sustainability of the digital future. On 15 December 2022, the Declaration was adopted and signed by the President of the European Commission, Ursula von der Leyen, with the European Parliament President, Roberta Metsola, and the Czech Prime Minister, Petr Fiala, representing the rotating Presidency of the Council of the European Union.

The Berlin Declaration on Digital Society and Value-based Digital Government

The Berlin Declaration on Digital Society and Value-based Digital Government of 2020, henceforth referred to as Berlin Declaration, was preceded by the Tallinn Declaration. The Berlin Declaration reaffirms and acknowledges the importance of the public sector in the European Single Market, taking the service-oriented and citizen-centric principles formulated in the Tallinn Declaration a step forward. The Berlin Declaration reiterates the common political commitment of the Commission and the Member States to continue investing in high quality, user-centric and seamless cross-border digital public services.

Regulation (EU) 2021/694 of the European Parliament and of the Council of 29 April 2021 establishing the Digital Europe Programme

As part of the Multiannual Financial Framework 2021-2027, the European Commission decided to set up a new funding programme, the Digital Europe Programme, whose goalis to boost Europe's digital transformation and to further develop the digital single market and promote the uptake of digital technologies in both the public and private sectors. The funding programme is to provide EUR 7.5 billion to be invested in specific domains such as supercomputing, artificial intelligence, cybersecurity, advanced digital skills and ensuring a wide use of digital capacity across the economy and society. The Regulation establishing the Digital Europe Programme was published on 11 May 2021, entered into force on the same date, and has applied retroactively since 1 January 2021. The Digital Europe Amended Work Programme 2023-2024 was released on the 14th of December 2023.

Digital Decade programme for 2023-2024

The first State of the Digital Decade report evaluating the EU's advancement towards a prosperous digital transformation as outlined in the Digital Decade Policy Programme 2030, was released on 27 September 2023. It underscores the necessity to expedite and deepen collective efforts, including through policy measures and investment in digital technologies, skills, and infrastructures. The report offers specific recommendations to Member States ahead of adopting their national strategic roadmaps and for future adjustments. Furthermore, it monitors the implementation of the Declaration on European Digital Rights and Principles, which translates the EU's vision of digital transformation into principles and commitments. In addition, the European Commission is expediting the launch of multi-country projects to achieve digital targets and objectives. These large-scale endeavours, funded by the EU budget, Recovery and Resilience Facility, Member States, and private sector, aim to address critical gaps in EU capacities. They foster an interconnected, secure Digital Single Market. Initial projects span areas like data infrastructure, 5G, cybersecurity, and digital skills.

Digitalisation of internal processes

Common Communications Network/ Common Systems Interface (CCN/CSI)

The CCN/CSI network is a common platform based on the common communication network (hereinafter the 'CCN') and common system interface (hereinafter the 'CSI'),developed by the European Commission for electronic communications between competent authorities regarding customs and taxation.

Digitalisation supporting the EU Green Deal

European Green Deal

The European Green Deal, presented by the European Commission on 11 December 2019, is the EU's strategic plan to achieve climate neutrality by 2050. Its main initiatives include reducing greenhouse gas emissions by at least 55% by 2030, investing in renewable energy, promoting a circular economy, improving building energy efficiency, ensuring sustainable industry, and creating a sustainable food system. The Green Deal harnesses digitalisation by leveraging technologies such as big data, AI, and IoT to enhance energy efficiency and resource management. It also promotes smart initiatives, digital product passports, green data centres, and ICT for sustainability, aiming to integrate digital solutions to support environmental goals.
Since it adoption, several initiatives have been established, including the EU Industrial Carbon Management Communication which outlines strategies for sustainably capturing, storing and using carbon to reach climate neutrality by 2050. The use of advanced digital technologies such as CO_2 capture, removal and storing technologies, plays a crucial role in achieving this goal. The European Green Digital Coalition (EGDC), an EU Parliament Pilot Project, is a coalition between ICT companies who signed a Declaration to support the Green and Digital Transformation of the EU. The aim of the EGDC is to optimise the sustainability benefits of digitalisation.

4. Interoperability and data

Interoperability

Interoperable Europe Act

The Interoperable Europe Act was adopted by the European Parliament and EU Council on 5 February 2024 and entered into force on 11 April 2024. The Act is expected to significantly reduce administrative burdens, enhance efficiency and productivity, and support the development of new digital services. It aligns with the EU's broader digital transformation goals, aiming for 100% online availability of key public services by 2030. The implementation is funded through the Digital Europe Programme. The Act will be implemented through the following set of measures:
- Setting in place a multi-level governance framework to define the interoperability agenda, steered by the Interoperable Europe Board.
- Mandatory interoperability assessments for all public sector bodies, including the European institutions, bodies and agencies, for which the Commission will provide the guidelines.
- The Interoperable Europe Portal – a one-stop-shop for all interoperability related information, trainings and support materials.

The Act streamlines cross-border services, making interactions with public institutions smoother. The Act promotes transparency, trust, and innovation, ultimately fostering a more connected and efficient European Union. The next step in its implementation includes several key measures including: the governance framework, a multi-level governance framework will be established, led by the Interoperable Europe Board. The board is composed of representatives from the Members States and the Commission and will develop a strategic agenda for interoperability.

In addition, starting from January 2025, all public sector bodies will undergo mandatory interoperability assessments to ensure their IT systems are designed for cross-border interoperability. The Interoperable Europe Portal will be developed to share and reuse interoperability solutions and serves as a community platform providing access to resources, trainings and support materials. Additionally, the Act also promote the use of regulatory sandboxes, GovTech cooperation, and policy experimentation to develop and scale up interoperability solutions. The local authorities, SMEs, research institutions and civil society will be actively involved in the development and implementation of interoperability solutions.

Interoperability Action Plan supporting the implementation of the European Interoperability Framework

The revised European Interoperability Framework (EIF) was adopted on 23 March 2017. The framework provided specific guidanceon how to set up interoperable digital public services. It offers public administrations a set of 47 concrete recommendations on how to improve governance of their interoperability activities, establish cross-organisational relationships, streamline processes supporting end-to-end digital services, and ensure that both existing and new legislation do not compromise interoperability efforts.

In October 2021, a Study supporting the evaluation of the implementation of the EIF was written by CEPS and published by the Commission with the purpose of assessing whether relevant recommendations should become part of a mandatory instrument.

The revised EIF is accompanied by the Interoperability Action Plan, outlining priorities to support the implementation of the EIF. The Action Plan consists of 22 actions, groupedinto five focus areas:
- Ensuring governance, coordination and sharing of interoperability initiatives;
- Developing interoperability solutions to foster collaboration between organisations;
- Engaging stakeholders and raising awareness of interoperability;
- Developing, maintaining and promoting key interoperability enablers;
- Developing, improving and promoting supporting instruments for interoperability.

As the ISA² programme came to an end in December 2020, the European Commission evaluated it along with the European Interoperability Framework and presented Interoperable Europe, a reinforced public sectorinteroperability strategy committed to transform the public administrations in Europe and help them in their digital transformation. An expert group on Interoperability of European Public Services has also been formed whose goal is to identify and exchange food

practices when implementing the EIF, to provide the Commission with opinions, analysis and reports on interoperability of public services, to identify and assess the legal, organisation, semantic and technical obstacles preventing the set-up of interoperable European public services, among others.

For regional and local interoperability, the European Interoperability Framework for Smart Cities and Communities (EIF4SCC) aims to support local administrations and policy makers in offering interoperability services to citizens and businesses by providing definitions, principles, recommendations, practical use cases and a common model that will enable public service delivery across domains, cities, regions and borders. The EIF4SCC is managed by DG CONNECT under the framework of the Living-in.eu movement. This initiative aims to roll out interoperable urban digital platforms and a set of standards and technical specifications, such as the Minimum Interoperability Mechanisms (MIMs).

Interoperable Europe Core Vocabularies

Core Vocabularies are simplified, reusable, and extensible data models that capture the fundamental characteristics of an entity, such as a person or a public organisation, in a context-neutral manner.

Public administrations can use and extend the Core Vocabularies in the following contexts:

- Information exchange between systems: The Core Vocabularies can form the basis of a context-specific data model to exchange data among existing information systems.
- Data integration: The Core Vocabularies can be used to integrate data disparate data sources.
- Data publishing: The Core Vocabularies can be used as the foundation of a common export format for data in base registries like cadastres, business registers and service portals.
- Development of new systems: The Core Vocabularies can be used as a default starting point for designing the conceptual and logical data models in newly developed information systems.

Interoperable Europe is developing the Core Vocabularies for public administrations in an open process with the active involvement of the SEMIC and Catalogue of Service action stakeholders.

Connecting Europe Facility (CEF) Building Blocks

The Connecting Europe Facility (CEF) programme gives governments, businesses and solutions providers access to free tools to help build digital services. The open and reusable digital solutions provided by the CEF, Building Blocks, are endorsed by the Commission and ensure that the digital services are fully compatible across borders and sectors, helping ensure interoperability. The available Building Blocks for the development of digital public administration infrastructure include:

- Big Data Test Infrastructure, a set of services to help public administrations explore and experiment with various data sources, software and methodologies, and collect useful insights that will contribute to better public decisions;
- European Blockchain Services Infrastructure (EBSI), a EU-wide blockchain infrastructure leveraging the creation of cross-border services for public administrations and their ecosystems to verify information and make services trustworthy, as well as help citizens take control of their data and effortless interaction from businesses with government agencies;
- Context Broker, a digital platform component that enables the integration of gathered data from different sources, including insights for further exploitation that can support smart decisions at the right time;
- eDelivery, a set of technical specifications and standards, installable software, and auxiliary services to allow projects to create a network of nodes for secure digital data exchange, laying the foundation for cross-domain and cross-project interoperability;
- eID, a set of services provided by the European Commission to enable the mutual recognition of national electronic identification schemes (eID) across borders for citizens to access online services from other European countries;
- eInvoicing, a digital solution that enables public sector contractors and companies to receive and process electronic invoices, reducing costs and administrative burden;
- eSignature, a set of free standards, tools and services that help public administrations and businesses accelerate the creation and verification of electronic signatures across all Member States; and

- eTranslation, an automated translation tool available to translate text excerpts or complete documents that can be integrate into digital systems and covering more than 24 languages.

Common Assessment Model Standards and Specifications (CAMSS)

CAMSS aims at promoting collaboration between public administrations through a Common Assessment Method for Standards and Specifications. This helps to expand interoperability between EU Member States through the sharing of information and knowledge, and the alignment of national processes by using CAMSS. It also aims to speed up the assessment processes, reduce their cost throughout European public administrations and avoid ICT vendor specific lock-in. The main objective of CAMSS is to become the method of reference for the assessment of technical specifications and standards in the field of ICT, helping to promote transparency regarding selection procedures for eGovernment solutions and standards, and increasing the sharing and reuse of eGovernment projects. The CAMSS toolkit consists of:

- A documented reference assessment process;
- A set of quality requirements (criteria);
- Assessment tools: online and offline (also in open source);
- The collection of assessments performed with the method;
- A list of standards which compiles standards and specifications (recommended and mandatory) that are included in national lists.

CAMSS is supported through Interoperable Europe.

Data access, management and reuse

Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a Framework for the Free Flow of Non-Personal Data in the European Union

In line with the objectives of the Communication on Building a European Data Economy, the Regulation, applicable as of 28 May 2019, aimed to achieve a more competitive and integrated EU market for data storage and/or processing services and activities. More specifically, this entails:

- Reducing the number and range of data localisation restrictions;
- Enhancing legal certainty;
- Facilitating cross-border availability of data for regulatory control purposes;
- Improving the conditions under which users can switch data storage and/or processing service providers or port their data back to their own IT systems;
- Increasing trust in and the security of cross-border data storage and/or processing.

European Data Strategy

The European Data Strategy communication, as published on 19 February 2020, outlines a vision of a genuine single market for data which tackles the problems that have been identified through various policy measures and funding. The strategy is based on four pillars, as follows:

- Cross-sectoral governance framework for data and access use – Key actions include proposing a legislative framework for the governance of common European data spaces; Enacting legislation on high-value data sets; Proposing a Data Act, where possible; and analysing the importance of data in the digital economy and reviewing the existing policy framework in this area.
- Investments in data and strengthening Europe's capabilities and infrastructures for hosting, processing and using data, interoperability – Key actions include investing in a high-impact project on European data spaces; Signing a Memorandum of Understanding with Member States on cloud federation; Launching a European cloud services marketplace; and establishing an EU (self) regulatory cloud rulebook.
- Empowering individuals, investing in skills and in SMEs – The key action of this pillar involves exploring the ways in which the portability right for individuals under Article 20 of the GDPR can be enhanced in order to give them more control over who can access and use machine-generated data.
- Common European data spaces in strategic sectors and domains of public interest – The key action of this pillar involves creating a framework designed to measure data flows and estimate their economic value within Europe, and between Europe and other global actors.

European Common Data Spaces

The European Common Data Spaces initiative is part of the EU's Digital Strategy, aiming to create interoperable and secure data environments across various sectors such as health, energy, agriculture, and manufacturing. These data spaces are designed to facilitate data sharing, enhance innovation, and ensure data sovereignty while adhering to robust privacy and security standards. The Commission also provides support for developing Common European Data Spaces in the form of reference architecture, building blocks, semantics, interoperability specifications and data models, accompanied by related advisory services, provided by the Data Spaces Support Centre. To date, two staff working documents have been published, offering an overview of the progress of the Common European Data Spaces. The most recent report on the state of play was released in January 2024. Here are some of the initiatives developed under the European Common Data Spaces:

- European Health Data Space: aims to promote better exchange and access to different types of health data to support healthcare delivery and health policy making purposes. In spring 2024, the European Parliament and the Council reached a political agreement on the Commission proposal for the EHDS.
- European Data Space for smart communities (DSASSCC): aims to build territorial, place-based data spaces for smart communities.
- European Mobility Data Space (EMDS): aims to facilitate data access, pooling and sharing for more efficient, safe, sustainable and resilient transport.

Regulation on European Data Governance

In February 2020, the European Commission published its European Strategy for Data. A subsequent consultation revealed that 90% of respondents considered that the EU lacks a solid data governance mechanism that would facilitate data sharing across the EU and between sectors. Hence, in November 2020, the European Commission published its draft Data Governance Act and a year later, in November 2021, it reached a provisional agreement with Parliament to promote the availability of data across the EU. The informal agreement entered into force on June 2022 and the Data Governance Act has been applicable since September 2023. Specifically, the Act:

- Introduces conditions under which public sector bodies may allow the re-use of certain data they hold (e.g. data protected on the grounds of confidentiality, protection of intellectual property rights or of personal data),
- Imposes obligations on providers facilitating the sharing of personal and non-personal data,
- Establishes a 'register of recognised data altruism organisations' in order to increase trust in the operations of registered organisations that facilitate the voluntary sharing of data for the common good,
- Creates a formal expert group: the 'European Data Innovation Board'.

Data Act

The European Commission published in February 2020 a Communication on a European strategy for data which stressed that further actions should be taken towards a European Data Act. This initiative aims at facilitating access to and use of data, particularly by fostering business-to-government data sharing and further supporting business-to-business data sharing.

In May 2021, the Commission published its Inception Impact Assessment on the forth coming Data Act and conducted a public consultation until 25 June 2021. Feedback has been taken into consideration for the initiative to be tabled in Q3-Q4 of 2021.

In February 2022, the Commission proposed new rules on who can use and access data generated in the EU across all economic sectors. Following the Data Governance Act, this proposal is the second main legislative initiative resulting from the February 2020 European strategy for data. According to the Commission, these initiatives will unlock the economic and societal potential of data and technologies in line with EU rules and values. The aim is to create a single market to allow data to flow freely within the EU and across sectors for the benefit of businesses, researchers, public administrations and society at large. The Data Act clarifies who can create value from data and under which conditions. The Data Act has been adopted in March 2023 by the European Parliament after several amendments and entered into force in January 2024.

Open Data

Open-Source Strategy 2020-2023

The Open Source Software strategy of the European Commission, approved on 21 October 2020, aims to encourage the development of open, secure, private and accessible software solutions. The implementation of the strategy was guided by 6 principles (open, transform, share, contribute, secure, stay in control) and 5 key objectives aim to enable the Commission to:
- Progress towards digital autonomy of Europe's own, independent digital approach;
- Implement the European Commission Digital Strategy;
- Encourage sharing and reuse of software and applications, as well as data, information and knowledge;
- Contribute to the knowledge society by sharing the Commission's source code;
- Build a world-class public service.

While the strategy for 2020-2023 has concluded, ongoing efforts are aimed at further fostering open-source initiatives and enhancing cross-border interoperability in digital public services through the Interoperable Europe Act.

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

The Directive on open data and the re-use of public sector information, also known as the 'Open Data Directive' (Directive (EU) 2019/1024) entered into force on 16 July 2019. It replaces the Public Sector Information Directive, also known as the 'PSI Directive' (Directive 2003/98/EC) which dated from 2003 and was subsequently amended by the Directive 2013/37/EU. The proposal for a revision of the Direction was adopted by the European Commission on 25 April 2018. On 22 January 2019, negotiators from the European Parliament, the Council of the EU and the Commission reached an agreement on the revision proposed by the Commission. When adopted in June 2019, the Directive was renamed as the Open Data and Public Sector Information Directive, with the objective to make public sector and publicly funded data re-usable.

The aim of the rules is to broaden the scope of application to include data held by public undertakings (under a specific set of rules) and research data resulting from public funding.

Free and Open-Source Solutions for European Public Services (FOSSEPS) Pilot Project

The FOSSEPS Pilot Project has been launched in February 2022 by the European Commission and the European Parliament as a response to the need to manage and protect open source.

The project aimed to achieve the following specific objectives:
- Build a European open-source Applications Catalogue (with data drawn from national catalogues) and release on the web for public search and use.
- Create an inventory of Europe's most critical open-source software used by European Public Services.
- Encourage and establish a framework e.g. via a European Public Services Open-Source User Group (EPS-OS-UG), for sharing of knowledge, experiences and initiatives on open source at a European level.

Base registries

European Business Register (EBR)

The European Business Register (EBR) is a cooperative network of business registers from across Europe. It provides a unified access point to official information on European companies, enabling users to retrieve data such as company names, registered addresses, financial statements, and legal statuses. This service supports transparency and facilitates cross-border commerce by allowing businesses and individuals to verify company information reliably and efficiently. EBRA aims to promote business integrity and legal certainty within the European Single Market, aiding in due diligence and compliance efforts across member states.

EU VAT Information Exchange System (VIES)

The EU VAT Information Exchange System (VIES) is an electronic means of validating VAT (Value Added Tax) numbers for businesses registered in the European Union. Managed by the European Commission, VIES allows companies and tax authorities to verify the legitimacy of VAT numbers used in cross-border transactions within the EU. By doing so, it helps prevent VAT fraud and ensures compliance with tax regulations. The system provides real-time access to the VAT

registration details of businesses across EU member states, facilitating smoother and more secure trade within the single market. Users can check the validity of VAT numbers and receive confirmation of their status as valid or invalid, thus enhancing transparency and trust in cross-border trade.

European Registry of Authorised Types of Vehicles (ERATV)

The European Registry of Authorised Types of Vehicles (ERATV) is an EU-wide database that provides information on types of railway vehicles authorized for operation within the European Union. Managed by the European Union Agency for Railways (ERA), the registry ensures transparency and uniformity in the authorization process, supporting the interoperability and safety of rail transport across member states. ERATV contains detailed data on vehicle types, including technical specifications, authorization dates, and the specific conditions under which they can operate. This centralized system aids manufacturers, operators, and authorities in verifying the authorization status of railway vehicles, facilitating smoother cross-border rail operations and compliance with EU regulations.

EU Trademark and Design Registry (EUIPO)

The EU Trademark and Design Registry (EUIPO), managed by the European Union Intellectual Property Office (EUIPO), is a comprehensive database that provides information on trademarks and design rights registered within the European Union. This registry enables businesses and individuals to search and verify the status of EU trademarks and designs, ensuring that their intellectual property is protected across all EU member states. The system includes details on the application, registration, and renewal of trademarks and designs, facilitating the enforcement of intellectual property rights and helping to prevent infringements. By offering transparency and accessibility, the EUIPO supports innovation and fair competition in the EU's single market.

Directive 2012/17/EU of the European Parliament and of the Council of 13 June 2012 Amending Council Directive 89/666/EEC and Directives 2005/56/EC and 2009/101/EC of the European Parliament and of the Council as Regards the Interconnection of Central, Commercial and Companies Registers

Directive 2012/17/EU on the interconnection of business registers entered into force on 7 July 2012. Ensuring that information about companies was always up to date was one of the main objectives of this Directive. Business registers were required to make available information on the rules in their national law, according to which third parties could rely on certain company documents. This information was also available on the eJustice portal. The Directive also required a Business Registers Interconnection System (BRIS) to be established. The Commission implementing Regulation (EU) 2015/884 set out technical specifications and procedures required for the system of interconnection of business registers. Member States had to transpose the remaining rules and make the necessary preparations for connecting to the new system by 8 June 2017. BRIS made it easy to access information on EU companies via the eJustice or other national portals. In addition, it facilitated electronic communication between registers in relation to cross-border mergers and branches of companies registered in other Member States.

Data platforms and portals

The following table lists the European data platforms and portals infrastructures:

EU Open Data Portal	The main access point to a growing range of data from the European Union (EU) institutions and other EU bodies. It provides data for free reuse.
Eurostat	The statistical office of the European Union. It provides high-quality statistical information to enable comparisons between countries and regions.
Copernicus Data Space Ecosystem	Copernicus is the European Union's flagship Earth observation initiative, designed to provide valuable information services to citizens and organisations across the EU. It uses a combination of satellite Earth observation and in-situ (non-space) data to monitor and understand our planet and its environment.

CORDIS (Community research and Development Information Service)	CORDIS is the European Commission's primary public repository and portal to disseminate information on all EU-funded research projects and their results.
Eur-Lex	Eur-Lex provides access to European Union law, including the Official Journal of the European Union, EU treaties, legislation, case law, and legislative proposals.
European Envrionment Agency (EEA) Data and Maps	The European Environment Agency (EEA) is an agency of the European Union that delivers knowledge and data to support Europe's environment and climate goals.

Cross-border infrastructures

The following table lists the European cross-border infrastructures:

EUCARIS	EUCARIS (the European Car and Driving Licence Information System) facilitates the exchange of vehicle and driving license information between EU member states.
TESTA, Secure and Reliable Communication for EU Public Administrations	The TESTA network service, originating from the IDA programme in 1996, has been supported by various EU programmes, including IDA, IDABC, ISA, ISA[2], and most recently, the Digital Europe Programme (DEP). As the trusted solution endorsed by the Member States, TESTA was developed to meet the need for secure information exchanges between EU public bodies, ensuring guaranteed service levels for network availability, performance, and security. Key features: • Offers a secure and highly available infrastructure with guaranteed service levels for network availability, confidentiality, and integrity; • Encrypted by EU approved encryption devices; • Isolated from the Internet; • Supports sensitive information exchanges between the public authorities in the 27 Member States, UK, EFTA, the candidate countries (currently Montenegro and North Macedonia) and the European Union Institutions and Agencies (EUIBAs); • Efficient cross-border inter-administrative operations; • Allows easy onboarding of new applications and Information Systems.
Once-Only Technical System (OOTS)	The Once-Only Technical System lets EU public authorities securely exchange official documents and data at the request of citizens and businesses as part of cross-border administrative procedures, e.g., when registering an address or vehicle when moving abroad. This innovative system eliminates the complicated manual search, mapping, and fetching of data between Member State authorities, improving efficiency, making people's lives easier, and reducing the costs of mobility in the Single Market. The Once-Only Technical System is now connected to EUCARIS, making the cross-border registration of vehicles in and between different EU Member States and other vehicle-related procedures even easier.
EU Digital Wallet	On 3 June 2021, the Commission proposed a trusted and secure digital identity for all Europeans, including digital identity wallets. Personal digital wallets will enable citizens to digitally identify themselves, store and manage identity data as well as official documents in electronic format (e.g. driving license, medical prescriptions, diplomas, etc.). This tool will therefore enable

	citizens to prove their identity when necessary to access online services, share digital documents.
	In February 2022, the Commission has launched an online platform to gather feedback from interested parties to shape future European Digital Identity Wallets. Two years later, the final act was signed on 11 April 2024 and published in the EU's Official Journal on 30 April 2024. It entered into force on 20 May 2024.
European Blockchain Services Infrastructure (EBSI)	The European Blockchain Services Infrastructure (EBSI) was developed in 2018 when 29 countries (all EU members states, Norway and Liechtenstein) and the EU Commission joined forces to create the European Blockchain Partnership (EBP).
	The EBP's vision is to leverage blockchain to create cross-border services for public administrations, businesses, citizens and their ecosystems to verify information and make services trustworthy.

5. Digital transformation of public services

Regulation of the European Parliament and of the Council on a single market for digital services (Digital Services Act)

In parallel to the abovementioned Digital Markets Act, the Commission also unveiled in December 2020 a legislative proposal on Digital Services Act (DSA), so as to update the current EU legal framework governing digital services. This proposal aims at creating a safer and trusted online environment for European citizens and businesses, by laying down a set of harmonised EU-wide rules to ensure transparency, accountability, and regulatory oversight of the EU online space.

Following the adoption of the Digital Services Package by the European Parliament in July 2022, both the Digital Services Act and Digital Markets Act have been adopted by the Council of the European Union, signed by the Presidents of both institutions and published in the Official Journal. The DSA has been published in the Official Journal as of 27 October 2022 and came into force on 16 November 2022. The DSA is directly applicable across the EU from 17 February 2024, after entry into force.

Interoperability Maturity Assessment of a Public Service (IMAPS)

The IMAPS (Interoperability Maturity Assessment of a Public Service) is a self- assessment tool that will evaluate and ultimately improve European public service interoperability maturity. It currently consists of:

- A compact and user-friendly self-assessment. The 30-minute questionnaire looks at the context of the public service, how the service is delivered, how it consumes existing services and how it is managed.
- On completion of the IMAPS, the Results Output will offer tailored recommendations and confidential improvement guidance.

The IMAPS is designed to help public service owners (i.e. those in charge of key servicessuch as online tax filing, online business registration, online change of address, etc. – no matter at what government level: national, regional, local, international) evaluate, improve and consider all key interoperability aspects of their public service.

Your Europe Single Digital Gateway

Your Europe Single Digital Gateway is an EU initiative designed to simplify access to information, administrative procedures, and assistance services across the European Union.
The Gateway regulation, adopted in 2018, has led to the European Commission and national administrations developing a network of national portals. These portals provide citizens and businesses with comprehensive information on how EU rules are applied for cross-border users, how to access the procedures online and the available assistance services. This initiative aims to streamline access to essential information and services, facilitating smoother interactions and compliance with EU regulations for users across member states. The gateway aims also to enhance the functioning of the single market by reducing administrative burdens and increasing transparency.
On 12 December 2023, the gateway launched the core infrastructure of the Once-Only Technical System (OOTS), a milestone in the implementation of the single digital gateway. This new EU-wide solution will make cross-border paperwork significantly more efficient and less costly for citizens, companies, and public administrations.

Regulation (EU) 2018/1724 Establishing a Single Digital Gateway to Provide Access to Information, to Procedures, and to Assistance and Problem-Solving Services

On 27 September 2018, the Council adopted a regulation on setting up a single digital gateway. The Single Digital Gateway addresses the current fragmentation and information gaps by completing, improving and linking up relevant EU and national-level online information, assistance services and procedures in a user-friendly way. The aim is to provide businesses and citizens with high quality, comprehensive information, effective assistance and problem-solving services and efficient compliance procedures regarding EU and national rules applicable to citizens and businesses when they want to do business and/or to travel to, buy from, work, study or reside in another Member State. The gateway is based on a user interface that would search the best service package for any query a user may have.

The Single Digital Gateway Regulation introduced (Article 14) the once-only principle for cross-border transactions, meaning that citizens and businesses will not have to provide data more than once to public administrations in the EU. This principle is applicable for all the procedures under Annex II.

eHealth and social security

MyHealth@EU

The eHealth Digital Service Infrastructure (eHDSI) facilitates the cross-border exchange of health data including patient summaries and ePrescription. It enables EU countries to securely, efficiently exchange health data. Citizens can easily identify these services by the "MyHealth @ EU" brand. The two electronic cross-border health services are: ePrescription/eDispensation, allowing citizens to obtain medication in other EU countries via online transfer of electronic prescriptions, and Patient Summaries, providing essential health information for doctors when patients are from another EU country. Future expansions will include medical images, lab results, and hospital discharge reports.

Other key initiatives

EU Strategy for Space Traffic Management

On 15 February 2022, the Commission adopted an EU strategy for space traffic management aimed at ensuring a safe and sustainable use of space while preserving the EU space industry's competitiveness.

Digital Euro Legislation

On June 28, 2023, the European Commission proposed legislative measures to establish a digital euro, aiming to complement cash without replacing it. It will ensure that people and businesses have an additional choice – on top of current private options – that allows them to pay digitally with a widely accepted, cheap, secure and resilient form of public money in the euro area. If the proposal to establish the legal framework for the digital euro is adopted by the European Parliament and Council, it will ultimately be for the European Central Bank to decide if and when to issue the digital euro.

Proposal for a Regulation of the European Parliament and of the Council on modernising judicial cooperation between EU countries – use of digital technology

The initiative launched by the Commission aims at modernising EU cross-border judicial cooperation in civil, commercial and criminal matters by making mandatory the use of digital technology to increase the efficiency and resilience of the communication between competent authorities. By using digital channels by default, all electronic communication in cross-border procedures involving individuals and businesses should be accepted by the Member States. Following the public consultation period from February to May 2021, the initiative has been adopted in December 2021.

Proposal for a Regulation of the European Parliament and of the Council on fighting cross-border crime – IT collaboration platform for joint investigation teams

The proposal on Joint Investigation Teams (JIT) IT collaboration platform complements the digitalisation of the justice strategy brought forward by the Commission. The objective of the initiative is to increase the efficiency and effectiveness of investigations and prosecutions done by JITs in cross-border cases, facilitated by digital communication, document/evidence storage and exchange tools. The regulation has been adopted in December 2021.

European eJustice Portal

The European eJustice Portal is a comprehensive online platform managed by the European Commission, offering a wide range of resources to facilitate access to justice across the EU. It provides information on national and EU laws, legal procedures, and rights, and supports cross-border judicial cooperation with tools for exchanging legal documents. The portal also offers access to online legal services and forms, information on legal aid and mediation, and various EU-wide legal databases and registers. This initiative enhances transparency, streamlines legal processes, and improves access to justice for citizens, businesses, and legal professionals within the EU.

EURES - The European Job Mobility Portal

EURES (European Employment Services) is the European Job Mobility Portal, an initiative by the European Commission aimed at facilitating the free movement of workers within the European Economic Area (EEA). It provides job seekers and employers with essential information and support for employment opportunities across Europe. The portal offers job vacancies, information on living and working conditions in different countries, and details on the labour market. Additionally, EURES provides career guidance, job matching services, and access to a network of EURES advisers who assist with job searches and recruitment processes. This platform enhances employment mobility, helping to address labour shortages and improve the efficiency of the European job market.

Digital public services for businesses

An SME Strategy for a sustainable and digital Europe

The communication outlining an SME Strategy for a sustainable and digital Europe as published on 10 March 2020, sets out the strategy of the European Commission for helping SMEs lead the transition to climate neutrality and digital transformation. The Strategy forms part of an Industry Policy Package led by a Communication on a 'New Industrial Strategy for Europe'. It puts forward several actions based on the following three pillars:
- Capacity-building and support for the transition to sustainability and digitalisation;
- Reducing regulatory burden and improving market access;
- Improving access to financing.

These actions will build upon on the existing policy framework and support programmes of the EU with regards to SMEs, such as the various SME support actions funded under the Horizon 2020 Programme and European Structural and Investment Funds.

Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on Services in the Internal Market

The objective of the Services Directive was to release the untapped growth potential of services markets in Europe by removing legal and administrative barriers to trade in the services sector.

The Directive required the Member States to simplify procedures and formalities that service providers needed to comply with. In particular, it required Member States to remove unjustified and disproportionate burdens and to substantially facilitate the establishment of a business and the cross-border provision of services. The Services Directive strengthened the rights of recipients of services, which could be for both consumers and SMEs. It also laid down a set of measures to promote a high quality of services and to enhance information and transparency relating to service providers and their services. Finally, the Services Directive obliged the Member States to cooperate with each other to ensure efficient supervision of providers and their services.

Action Plan for Better Implementation and Enforcement of Single Market Rules

As published on 10 March 2020, the Action Plan for better implementation and enforcement of single market rules aims to address the existing challenges with regardsto implementation and enforcement of single market rules. The Strategy emphasises the core role that the single market has to play in the industrial transformation of the European Union, outlining 22 actions organised under 6 subcategories as follows:

- Increasing knowledge and awareness of single market rules;
- Improving the transposition, implementation and application of EU rules;
- Making the best use of preventive mechanisms;
- Detecting non-compliance inside the single market and at the external borders;
- Strengthening enforcement on the ground;
- Improving handling of infringement cases.

Industrial Strategy for a globally competitive, green and digital Europe

This strategy, as outlined in March 2020, forms the foundations of a future industrial policy that aims to support the twin transitions, enhance Europe's strategic autonomy and increase the competitiveness of EU industries globally. The strategy was developed after identifying the three goals for the transformation of European industry, supporting SMEs and keeping Europe sustainable and competitive, as follows:

- A globally competitive and world-leading industry
- An industry that paves the way to climate-neutrality
- An industry shaping Europe's digital future.

On 5 May 2021, the Commission adopted the update on the 2020 Industrial Strategy. The updated strategy took into account the experiences of the COVID-19 crisis and its impact on the Single Market, taking into account aspects such as dependencies in key strategic areas and looking to drive the digital transformation in a more sustainable, digital, resilient and globally competitive economy.

ICT Standardisation Priorities for the Digital Single Market

In August 2021 was closed the public consultation for the future standardisation strategy, aimed at collecting feedback on the current strategy, address the challenges faced in the European standardisation system and discuss on ways to improve it. In February 2022, the Commission adopted the revised strategy. Furthermore, as part of the eGovernment Action Plan, a catalogue of services for ICT procurement was put together. The European Catalogue contributes to making procured solutions more interoperable and towards creating a more transparent public procurement market. The catalogue serves as a one-stop-shop for procurement guidelines, including on vendor lock-in, on the use of standards, and a lifecycle costing scheme.

Rolling Plan for ICT Standardisation

In 2021, the European Commission released the Rolling Plan for ICT Standardisation 2021, which includes chapters such as 'COVID-19', 'Safety, transparency and due process online', 'Circular economy' and 'U-space'. The requested actions in support of the recovery of Europe now take into consideration permanent and structural changes in our societal and economic life and address issues such as teleworking, eLearning, eCommerce, eGovernment and the potential development of a universally accepted eID which will allow for simpler, more trusted and securer access to cross-border digital public services.

Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act)

In December 2020, the European Commission publisheda proposal for a Regulation on contestable and fair markets in the digital sector, aimedat regulating the behaviour of digital platforms acting as gatekeepers between businessowners and their customers in the EU. In October 2022, the DMA was published in the Official Journal and entered into force on 1 November 2022. Before 3 July 2023, companies must provide the Commission with information about their number of users so that the Commission can designate "gatekeepers" before 6 September. Gatekeepers had until March 2024 to ensure that they follow the obligations of the DMA.

Several high-level groups for the Digital Markets Act were conducted to agree on the need to coordination enforcement and the adoption of a public statement on Artificial Intelligence. The statement is available here.

In addition, the Commission has designated several companies such as Booking as gatekeeper and launched several market investigations against Alphabet, Apple, Meta and X under the Digital Markets Act between March and May 2024. More information available here and here.

Foreign Direct Investment (FDI) Screening Regulation

In view of developments such as the adoption of the Multiannual Financial Framework for the years 2021 – 2027, the Foreign Direct Investment (FDI) Screening Regulation aims to amend the Regulation (EU) No 2019/452 establishing a framework for the screening of foreign direct investments into the Union. The amendment involves significant funding and updates the list of projects and programmes of EU interest covered by EU law on critical infrastructure, technologies, or inputs essential for security or public order (e.g. artificial intelligence, robotics, satellite navigation). The programmes listed in the draft delegated regulation include the Horizon Europe, Connecting Europe Facility and Digital Europe Programme.

eProcurement and eInvoicing

Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on Public Procurement and Repealing Directive 2004/18/EC

The Directive, which took effect on 26 February 2014, set out the legal framework for public procurement, including electronic procurement. It established the procedures which must be followed before awarding a contract to suppliers (i.e. providers of works, supplies, or services) when its value exceeded set thresholds, unless it qualified for a specific exclusion - e.g. on grounds of national security. The EU Member States were required to transpose the Directive into national law by 18 April 2016. The Directive introduced a set of new rules, including a new electronic self-declaration for bidders (ESPD), which paved the way for the digitisation of public procurement, which considerably increased the efficiency of the public procurement system.

Directive 2014/55/EU of the European Parliament and of the Council of 16 April2014 on Electronic Invoicing in Public Procurement

EU countries and the European Commission decided to introduce a European Standard for eInvoicing in response to the many eInvoice formats used across the EU. Once the eInvoicing Directive 2014/55/EU was transposed into the national laws of EU countries, the deadline for implementing the norm has passed, and electronic invoices are able to flow seamlessly across the EU.

Commission Implementing Regulation (EU) 2019/1780 of 23 September 2019 establishing standard forms for the publication of notices in the field of public procurement

The Regulation of 23 September 2019 establishes the use of eForms with common standard and terminology by public buyers to publish notices on Tenders Electronic Daily- an online portal for public procurement notices from across the EU. The adoption of eForms represents the core of the digital transformation of public procurement in the EU, helping reduce the administrative burden for buyers, increasing the ability of governments to make data-driven decisions about public spending, and making public procurement more transparent.

EU Catalogue of Standards for ICT Procurement

Under Interoperable Europe, the European Commission is creating a Catalogue of Standards of ICT Procurement. The European Catalogue will help ensure that procured solutions are interoperable and increase the transparency of the ICT procurement market. The Catalogue will offer a one-stop-shop for procurement guidelines, including vendor lock-in, the use of standards, and a lifecycle costing scheme that accounts for the often-neglected interoperability costs.

At present, the Catalogue is a draft version to demonstrate the concepts. The prototype proposes procurement needs in four domains: cloud computing, transport systems, eGovernment, and smart and efficient use of energy.

Digital inclusion and digital skills

Council Recommendations on Improving the Provision of Digital Skills in Education and Training

As part of the Digital Education Action Plan actions for the period 2021-2027, the European Commission has developed a proposal in April 2023, for a Council Recommendation on improving the provision of digital skills. Adoption by the Council must be confirmed. The primary goal of this initiative is to empower European citizens to develop basic and advanced digital skills through education and training.

Directive (EU) 2016/2102 of the European Parliament and of the Council of 2 December 2016 on the Accessibility of Websites and Mobile Applications of PublicSector Bodies

The objectives of the Web Accessibility Directive were two-fold; firstly, the directive aimed to ensure equal access to public sector information and services for people with disabilities, and secondly, the harmonisation of approaches to accessibility reduced technical barriers on the digital single market. In accordance with the directive, Member States must appoint a national body in charge of periodically monitoring the compliance with the provisions of the directive, and to report the outcome of such monitoring to the Commission.

The European Commission reviewed the Web Accessibility Directive in 2022. The Commission report is published on the EUR-Lex portal.

Recommendations on the enabling factors for digital education

Recommendations on the enabling factors for digital education aimed to set out the investments and policy reforms needed to ensure access to digital education for all, were proposed by the European Commission in April 2023.

Action Plan on Integration and Inclusion 2021-2027

Published on 24 November 2020, the Action Plan on Integration and Inclusion 2021- 2027 builds on the achievements of the 2016 action plan, focusing on promoting inclusion for all and the important contribution of migrants to the EU and focusing on the barriers that can hinder participation an inclusion of people with a migrant background.
Considering the individual characteristics that may present specific challenges to the people with migrant background, the action plan includes five actions to support the effective integration and inclusion in all sectoral areas:
1. Building strong partnerships for a more effective integration process;
2. Increased opportunities for EU funding under the 2021-2027 Multi-annual Financial Framework;
3. Fostering participation and encounters with the host society;
4. Enhance the use of new technologies and digital tools for integration and inclusion; and
5. Monitoring progress: towards an evidence-based integration and inclusion policy.

The implementation of the action plan will entail the creation of partnerships between migrants, host communities, social and economic partners, civil society, local and regional authorities as well as the private sector.

GÉANT

GÉANT is the pan-European research and education network that connects Europe's National Research and Education Networks (NRENs). Through its integrated catalogue of connectivity, collaboration, and identity services, GÉANT provides over 50 million users at 10 000 institutions across Europe with highly reliable, unconstrained access to computing, analysis, storage, applications and other resources, to ensure that Europe remains at the forefront of research.

6. Trust and Cybersecurity

Roadmap on Security and Defence Technologies

In February 2022, the Commission set out a roadmap on security and defence technologies for boosting research, technology development and innovation and reducing the EU's strategic dependencies in critical technologies and value chains for security and defence. This goal will notably be reached by:

- Identifying technologies critical for EU security and defence, boosting them through European (RTD&I) programmes;
- Ensuring that defence considerations are better considered in civilian European RTD&I programmes and industrial and trade policies, as appropriate, while possible civilian uses of technologies are also better considered in defence RTD&I programmes;
- Promoting from the outset an EU-wide strategic and coordinated approach for critical technologies for security and defence, to make the best use of EU and Member States' RTD&I programmes, achieve synergies between civilian and defence RTD&I communities and mitigate strategic dependencies from external sources;

Coordinating as much as possible with other like-minded partners, such as the United States and the North Atlantic Treaty Organization (NATO), under mutually beneficial conditions.

Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC

On 4 May 2016, the official texts of the General Data Protection Regulation (GDPR) were published to adopt a comprehensive reform of data protection rules in the EU. The provisions of the Regulation became directly applicable in all Member States on 25 May 2018.

The aim of GDPR was to update data protection rules in order to protect all EU citizens from privacy and data breaches in an increasingly data-driven world that was vastly different from the time in which the Directive 95/46/EC was established. In this regard, the GDPR Regulation introduced several significant changes when it came to data protection in the EU:

- Each private company working with data needed to have delegated Data Protection Officers;
- Companies not complying with the Regulation faced fines of up to EUR 10 million or 2% of the company's global annual turnover;
- Introduction of the 'privacy by design' principle;
- Data controllers were required to: (i) maintain certain documentation, (ii) conduct a data protection impact assessment for more risky processing (DPAs may compile lists of what is caught), and (iii) implement data protection by design and by default, e.g. data minimisation.

Furthermore, according to the Regulation data subjects must consent to the collection and use of their data and have the right for their information to be 'forgotten'.

Regulation 2018/1725 sets forth the rules applicable to the processing of personal data by European Union institutions, bodies, offices, and agencies. It is aligned with the General Data Protection Regulation and the Data Protection Law Enforcement Directive. It entered into application on 11 December 2018 and established a European data protection supervisor (EDPS). The EDPS is an independent EU body responsible for monitoring the application of data protection rules within European Institutions and for investigating complaints. The Commission reviewed the legislative framework around data protection in order to enforce the law in Q2 2022.

Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on Electronic Identification and Trust Services

for ElectronicTransactions in the Internal Market and Proposal for the revision of eIDAS - European Digital Identify

The Regulation (EU) No 910/2014 on electronic identification and trust services for electronic transactions in the internal market, the eIDAS Regulation, is a major step in building a Digital Single Market and in boosting trust, security and convenience online, for governments, businesses and consumers. Thanks to eIDAS, the EU now has a predictable legal framework providing legal certainty beyond national borders for electronic identification (eID) and for electronic trust services (such as electronic signatures, seals, time stamping, delivery services and website authentication).

In this regard, the eIDAS Regulation:
- Ensured that people and businesses can use their own national electronic identification schemes (eIDs) to access public services in other EU countries where eIDs are available.
- Created a European internal market for trust services by ensuring that they will work across borders and have the same legal status as traditional paper-based processes.

On 3 June 2021, the Commission proposed the framework for the revision of the eIDAS and the European Digital Identity. Under the new regulation, Member States will issue European Digital Identity Wallets that will enable users to access services online without using private identification methods or share unnecessary data. The proposal is accompanied by a Recommendation inviting Member States to cooperate within the framework to develop a digital toolbox. This toolbox should include a comprehensive technical architecture and reference framework, a set of common standards and technical references and a set of guidelines and descriptions of best practices covering at least all aspects of the functionalities and interoperability of the European Digital Identity Wallets. The final act was signed on 11 April 2024 and published in the EU's Official Journal on 30 April 2024. It entered into force on 20 May 2024.

Cybersecurity

Review of the Directive on Security of Networks and Information Systems (NIS2)

In December 2020, the Commission adopted the proposal for the revision of the Directive on Security of Network and Information Systems (NIS 2 Directive).

Despite the notable achievements of the NIS Directive, the digital transformation of our societies and economies, further boosted by the COVID-19 crisis, has identified new challenges and limitations in the current Directive, requiring tailored responses.

Indeed, the Commission proposal expands the scope of the current NIS Directive, aiming to reinforce the security requirements appointed, focusing on the security of supply chains, simplifying reporting obligations, introducing tougher supervisory measures and stricter enforcement requirements including harmonised sanctions across Member States. The proposal also includes a suggestion for information sharing and cooperation on cyber crisis management at national and at EU level.

In January 2023, the Directive (EU) 2022/2555 (known as NIS2) entered into force replacing Directive (EU) 2016/1148. ENISA supports the implementation of the NIS2 Directive, which aims to improve the status of cyber security in the EU in a number of ways:
- creating the necessary cyber crisis management structure (CyCLONe);
- increasing the level of harmonization regarding security requirements and reporting obligations;
- encouraging Members States to introduce new areas of interest such as supply chain, vulnerability management, core internet and cyber hygiene their national cybersecurity strategies;
- bringing novel ideas such as the peer reviews for enhancing collaboration and knowledge sharing amongst the Members States;
- covering a larger share of the economy and society by including more sectors which means that more entities are obliged to take measures to increase their level of cybersecurity.

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

The Directive on Security of Network and Information Systems (the NIS Directive) was adopted by the European Parliament on 6 July 2016 and entered into force in August 2016. The Directive ensured Member States' preparedness for cyber threats by requiring them to be appropriately equipped. They were required to establish a Computer Security Incident Response Team (CSIRT) Network, to promote swift and effective operational cooperation on specific cybersecurity incidents and sharing information about risks. In 2017, the Commission put forward a draft Implementing Regulation Pursuant Art 16(8) of the NIS Directive. This Regulation specified further the elements to be considered by digital service providers when identifying and taking measures to ensure a level of security of network and information systems, which they use in the context of offering services referred to in Annex III to Directive (EU) 2016/1148.

EU's Cybersecurity Strategy for the Digital Decade

Presented on 26 December 2020, the EU's Cybersecurity Strategy for the Digital Decade encompasses three areas of action to increase Europe's collective resilience against cyber threats and ensure that citizens and business can benefit from secure digital tools:
1. Resilience, technological sovereignty, and leadership;
2. Building operational capacity to prevent, deter and respond; and
3. Advancing a global and open cyberspace through increased cooperation.

The EU's Cybersecurity Strategy requires for existing EU-level measures aimed at protecting key services and infrastructures from cyber-attacks to be updated, through the proposed Directive on measures for high common level of cybersecurity across the Union and the Critical Entities Resilience (CER) Directive.

Cybersecurity research, investments in the entire digital technology supply chain and support to SMEs will be funded under the Digital Europe Programme, Horizon Europe, as well as the European Defence Fund. The Digital Europe Amended Cybersecurity Work Programme 2023-2024 was released on the 14th of December 2023.

European Cyber Resilience Act (CRA)

As part of the Europe fit for the digital age, the Commission stated in the Work Programme 2022, that a European cyber resilience act will be proposed to establish common cybersecurity standards for products. A proposal on this Act was published in Q3 2022 by the European Commission. On 12 March 2024, the European Parliament adopted the CRA, which aims to implement uniform cybersecurity standards for products with digital elements across the EU. The CRA includes requirements for cyber risk management, vulnerability management, and mandatory incident reporting within 24 hours of identifying a significant vulnerability. Manufacturers, importers, and distributors must comply with these regulations to ensure market access and avoid penalties for noncompliance.

7. Innovative technologies

Artificial Intelligence (AI)

White Paper on Artificial Intelligence: a European approach to excellence and trust

Published on 19 February 2020, the White Paper on Artificial Intelligence marks the first major publication as part of the European Union's goal of Shaping Europe's Digital Future. The White Paper outlines the European Commission's proposed approach to the regulation of artificial intelligence, with the aim of promoting Europe's capacity to innovate in this field while simultaneously supporting the development and uptake of ethical and trustworthy artificial intelligence throughout the European Union. The WhitePaper proposes the following:
- Outlining measures that will help to streamline research, increase financial investment into the development and deployment of artificial intelligence, and foster collaboration in this field between Member States.
- Strategising potential policy options for a future EU regulatory framework determining the types of legal requirements that would apply to relevant actors.

There is a key focus on a risk-based approach, with the European Union arguing that regulatory requirements should be deemed as mandatory when dealing with "high-risk" applications, such as healthcare. Additionally, the White Paper outlines proposed procedures for testing and certifying artificial intelligence applications, to ensure compliance with any new regulatory framework that is developed.

On 21 April 2021, the Commission's communication on Fostering a European approach to Artificial Intelligence offered a proposal for a regulatory framework and a revised coordinated plan, which aim to promote the development and address the potential risksof AI.

Artificial Intelligence (AI) Act and European AI Office

In December 2023, a political agreement was reached between the European Council approved and the European Parliament on the Artificial Intelligence Act (AI Act) to harmonise rules on artificial intelligence, making the world's first comprehensive regulation of ratification intelligence. This agreement was reached based on the proposition of the European Commission in April 2021 under the name of "EU regulatory framework on AI". The AI Act classifies AI systems into four risk categories: unacceptable, high, limited, and minimal risk. Unacceptable risk AI systems are banned, while high-risk Ai systems face stringent requirements, including human oversight and risk management. Limited-risk systems must ensure transparency, and minimal-risk systems have no restrictions.

The AI Act applies to all providers, importers, distributors and deployers of AI systems within the EU, including those based outside the EU if their systems are used in the EU. Enforcement will primarily be led at national level, with the European AI Office overseeing general-purpose AI models. The Act will be fully enforceable 24 months after its entry into force.

Previously, the European Commission unveiled in April 2021 a EU regulatory framework on AI, which aims at providing a European technology- neutral definition of AI systems within EU law.

The Internal Market Committee and the Civil Liberties Committee adopted a draft negotiating mandate on the first ever rules for Artificial Intelligence in May 2023. Through their amendments to the Commission's proposal, Members of the European Parliament (MEPs) aim to ensure that AI systems are overseen by people, safe, transparent, traceable, non-discriminatory, and environmentally friendly.

AI innovation package to support Artificial Intelligence startups and SMEs

The European Commission launched AI innovation package to support Artificial Intelligence startups and SMEs on 24 January 2024 following the political agreement reached in December 2023 on the EU AI Act. This initiative includes:
- AI Supercomputer Access: Amending the EuroHPC Regulation to establish AI Factories for supercomputer access, aiding startups and SMEs in AI model development and training.
- AI Office: Establishing an AI Office within the Commission to oversee AI policy and the EU AI Act's implementation.

- Financial and Talent Support: Providing financial support through Horizon Europe and the Digital Europe programme, and initiatives to enhance the AI talent pool.
- Common Data Spaces: Accelerating the creation of Common European Data Spaces for AI model training.
- GenAI4EU Initiative: Supporting AI applications across various industrial ecosystems and the public sector.

Additionally, two European Digital Infrastructure Consortiums (EDICs) will be established: ALT-EDIC for language technologies and CitiVERSE for enhancing smart community digital twins. The AI Office began operations in February 2024, to coordinate AI policy and promote AI innovation within the EU.

Distributed Ledger Technologies

Pan-European blockchain regulatory sandbox

The European Blockchain Partnership and the Commission are planning a pan-European blockchain regulatory sandbox, a space where regulators, blockchain experts and users can interact in a safe environment to test innovative solutions and identify obstacles that arise in deploying them. It is aimed for use cases in and outside the European Blockchain Services Infrastructure (EBSI) and in particular for data portability, business-to-business data spaces, smart contracts, and digital identity. The sandbox will be applied to many sectors such as health, environment, mobility, and energy and is expected to be launched in 2021/2022.

Big data

No particular initiatives in this field have been reported to date.

Cloud & edge computing

Joint Declaration on Cloud

Member States have signed a Joint declaration on cloud in October 2020, expressing their will to collaborate towards a European cloud. The aim of this initiative is to create a secure and competitive cloud that can provide the trustworthy data processing infrastructure and services that public administration, business, and citizens need.

In particular, Member States have agreed in the Declaration that their joint actions would be focused on:

- Combining private, national and EU investment in deploying competitive, green, and secure cloud infrastructures and services. This will mean pursuing the next steps together with industry and experts to shape the European Alliance on Industrial Data and Cloud.
- Defining a common European approach on federating cloud capacities, by working towards one set of joint technical solutions and policy norms to foster pan-European interoperable EU cloud services.
- Driving the take-up of more secure, interoperable, and energy-efficient data centres and cloud services in particular for small and medium enterprises, start-ups, and the public sector.

European Alliance on Industrial Data, Edge and Cloud

Building on the European data strategy, the European Alliance on Industrial Data, Edge and Cloud was launched in 2021 by the European Commission, allowing interested Member States, industries and experts to collaborate in designing the detailed business, investment and implementation plan to deploy the next generation cloud capacities for the public and private sector.

Moreover, it features the development of several work streams, related to key EU policy goals:

- Joint Investment in cross-border cloud infrastructures and services to build the next generation cloud supply;
- EU Cloud Rulebook for cloud services;
- A European marketplace for cloud services.

Internet of Things (IoT)

No particular initiatives in this field have been reported to date.

Quantum Computing

Regulation on Establishing the European High Performance Computing Joint Undertaking (EuroHPC JU)

The European High-Performance Computing Joint Undertaking (EuroHPC JU) was established in October 2018 as a legal and financial framework to pool EU and participating countries' resources to build a European world-class supercomputing and data infrastructure with exascale capabilities in the next years, and post-exascale facilities by 2027. In the near future, Europe's leading role in the data economy will increasingly depend on its capability to develop key HPC technologies. For this reason, the European Commission has drafted a Proposal for a Council Regulation on establishing a EuroHPC which is a continuation of the existing initiative established under Council Regulation (EU) 2018/1488. The proposed Regulation introduces modifications to adapt the Regulation to the new multiannual financial framework (MFF) programmes and to the priorities outlined in the European Strategy for Data and in the Communication Shaping Europe's Digital Future.

Gigabit and wireless high-speed networks

Framework on Harmonising Spectrum for Enhanced Connectivity

In February 2022, the Commission adopted four implementing decisions to ensure that the EU's radio spectrum policy meets the growing demand for broadband and for innovative digital applications:
- Commission Implementing Decision on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing electronic communications services in the Union
- Commission Implementing Decision on the harmonisation of radio spectrum for use by short-range devices within the 874-876 and 915-921 MHz frequency bands;
- Commission Implementing Decision as regards the update of harmonised technical conditions in the area of radio spectrum use for short-range devices.
- Commission Implementing Decision on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks.

Revision of the EU Rules on High-Speed Broadband (Directive 2014/61/EU)

A Revision of the EU rules on high-speed broadband (Directive 2014/61/EU) was adopted by the Commission in February 2023:
- Enable a quicker and more efficient rollout of very high-capacity networks, including fibre and 5G
- Ensure the rules are aligned with the European Electronic Communications Code
- Explore potential environmental safeguards.

In addition, the Commission reviewed the Broadband Cost Reduction Directive and proposed the Gigabit Infrastructure Act for the quick rollout of Gigabit connectivity. There is a rising demand for digital technology and more innovative tools, services, and solutions. They will depend on the availability of faster, more reliable, data-intense connections. The proposed rules support the 2030 Digital Decade target on connectivity, which aims to ensure everyone across the EU has access to fast Gigabit connectivity and fast mobile data by 2030.

A provisional agreement was reached between the Council and the European Parliament to accelerate the deployment of gigabit network infrastructure across Europe in February 2024.

EU Space-Based Global Secure Communications System

The legislative initiative on building an EU space-based global secure communications system, with the purpose of offering broadband connectivity where it is currently missing, was expected in Q2 2022.

In this regard, on 15 February 2022, the Commission adopted the proposal for a Regulation establishing the Union Secure Connectivity Programme for the period 2023-2027 following three policy objectives:

- Ensuring the provision of secure satellite communication for evolving public needs,
- Increasing Member States and the Union resilience by guaranteed access to secure communication,
- Avoiding critical dependencies on non-EU infrastructures as for governmental communication needs.

On 14 February 2023, the Plenary of the Parliament approved an agreement which includes the name of the infrastructure, as well as its related acronym: 'infrastructure for Resilience, Interconnection and Security by Satellite'- IRIS². It also clarified the EU total budget contribution to the programme. The Parliament notably MEPs ensured the incorporation into the regulation of provisions aiming at strengthening the environmental sustainability of the system, with measures to prevent space debris proliferation, light pollution and provide with carbon footprint compensation. The programme is implemented in cooperation with the European Space Agency.

GovTech

GovTech Incubator and programmes

As part of the Digital Europe Work Programme for 2021-2022, the European Commission launched a pilot project "Fostering digitalisation of public sector and green transition in Europe through the use of an innovative European GovTech platform", introducing the GovTech ecosystem to the European public sector. The pilot project includes the creation of an European GovTech Incubator, which will foster the deployment of a cross-border collaboration between actors of the GovTech. This new initiative is promoting the deployment of new human-centric digital public services, promote innovative digital governments reusable solutions (preferably open-source) and interoperability by default, increase the collaboration through piloting activities in a variable scale geometry and encourage the participation of European SMEs/startups.

In addition, to support governments in the EU embracing GovTech, a report has been released in 2022. The report provides an overview of the diversity of GovTech programmes and shares lessons learnt for setting up government-run GovTech programmes. While the focus of this report is on national GovTech programmes, its findings and conclusions can be applied to other levels of government as well.

GovTech in the Interoperable Europe Act

GovTech appears in the Interoperable Europe Act as a crucial driver for innovative public services. By fostering collaboration between the public sector and start-ups/SMEs to acquire innovative technological solutions, GovTech is changing the way public services are delivered. Gov Tech is included in the adopted Interoperable Europe Act in the Article 10, 11, 12 and 20. The GovTech ecosystem stays a key point for the future of innovation.

Others

Drone Strategy 2.0 for Europe

As announced in the Sustainable and Smart Mobility Strategy, the European Commission adopted the Drone Strategy 2.0 in November 2022. The strategy aims to provide a comprehensive policy package and address obstacles to the development of new drone applications and transport services and to the competitiveness of this industry. It also fosters the uptake of this innovative technology in Europe while establishing the right balance between safety, security, and other societal concerns, contributing to a new offer of sustainable services and transport.

European Chips Act

As part of the Europe fit for the digital age, the Commission stated in the work programme 2022, that a European Chips Act will be adopted with the purpose of promoting a state-of-the-art European chip ecosystem to boost EU innovative capacity, security of supply and develop new markets for ground-breaking European tech.

In this regard, on 8 February 2022, the Commission adopted a 'European chips act package' focused on the strategic objective of increasing the resilience of the EU's semiconductor

ecosystem and increasing its global market share. The Commission welcomes the political agreement reached today between the European Parliament and the EU Member States on the European Chips Act, proposed by the Commission on 8 February 2022, including on the budget. The multiannual work programme for the years 2023-2027 (managed by the Chips Joint Undertaking) was released in December 2022.

European Digital Innovation Hubs

European Digital Innovation Hubs (EDIHs) serve as comprehensive support centers for businesses and public entities seeking to address digital challenges and enhance competitiveness. These hubs offer a range of services:

- Technical Expertise and Testing: They provide access to technical know-how and testing facilities, enabling companies to experiment with digital solutions before making investments.
- Innovation Services: EDIHs offer guidance on financing, training, and skill development crucial for successful digital transformation.
- Environmental Sustainability: They assist companies in leveraging digital technologies to address environmental concerns, especially in areas like sustainability and circularity.

By combining regional presence with a pan-European network, EDIHs ensure localised support while facilitating the exchange of best practices and specialized services across regions. The European Commission's Digital Europe Programme (DIGITAL) supports EDIHs through funding, with national and regional governments playing a pivotal role in their selection process.

The EDIH Network aims to foster collaboration among hubs, SMEs, mid-caps, the public sector, and other stakeholders. The Digital Transformation Accelerator (DTA) manages the network's web presence and hosts tools such as the Digital Maturity Assessment tool, developed by the European Commission's Joint Research Centre, to measure the impact of EDIHs on the digital maturity of supported organisations. More information on the subject available here.

8. Digital Public Administration Funding Programmes

Recovery and Resilience Facility

The Recovery and Resilience Facility (the Facility) is the key instrument at the heart of NextGenerationEU, the temporary recovery instrument that allows the Commission to raise funds to help repair the immediate economic and social damage brought about by the coronavirus pandemic. The Facility is to make EUR 723.8 billion available to the Member States, through loans and grants that will support reforms and investments in the countries. The overall aim is to help the countries mitigate the economic and social impact of the crisis and make European economies and societies more sustainable, resilient, and better prepared for future challenges.

In order to benefit from the support of the Facility, Member States submitted their Recovery and Resilience Plans for approval to the European Commission. These Plans set out a package of reforms and public investment projects that the Member States will need to implement by 2026 to benefit from the support (and funding) of the Facility. The Commission assessed the recovery and resilience plans based on criteria set out in the Regulation establishing the Recovery and Resilience Facility.

InvestEU

The InvestEU programme builds on the successes of the Investment Plan for Europe, in order to give an additional boost to sustainable investment, innovation and job creation in Europe, always in line with EU policies and will contribute to the EU's economic recovery.
The programme will be structured around four policy areas:

- Sustainable infrastructure;
- Research, innovation and digitalisation;
- SMEs;
- Social investment and skill.

REACT-EU

The Recovery assistance for cohesion and the territories of Europe (REACT-EU) is a top- up to the 2014-2020 European Regional Development Fund and European Social Fund allocations, as a crisis-response and crisis-repair measure and constitutes a bridge to the long-term recovery plan. Hence, the overall budget of EUR 50.6 billion will be allocated to projects that foster crisis repair capacities in the context of the coronavirus crisis, as well as investments in operations contributing to the preparing a green, digital, and resilient recovery of the economy.
The allocation of funds takes into consideration the economic and social impact of the crisis on EU countries, reflecting their GDP drops and rise of unemployment, particularly among you people, as well as the countries' wealth.

Digital Europe Programme (DEP)

As part of the new Multiannual Financial Framework for the period 2021-2027, the European Commission has proposed a new funding programme: the Digital Europe Programme (DIGITAL), whose goal will be to set up the strategic digital capacities of the EU and to promote a far-reaching deployment of new technologies, to be used by the EU's citizens and businesses. With an overall budget of EUR 7.5 billion for the period 2021-2027, the Digital Europe Programme aims to define and bolster the digital transformation of Europe's society and economy.

The programme is heavily focused on investing and boosting Europe's use of emerging technologies such as supercomputing, artificial intelligence, the Internet of Things, and blockchain, among others. In addition, it will boost investments in cybersecurity and advanced digital skills so as to improve Europe's competitiveness in the global digital economy and increase its technological autonomy.

The Connecting Europe Facility 2021-2027

As part of the next long-term EU budget (MFF 2021-2027), the European Commission proposed to renew the Connecting Europe Facility (CEF), the funding programme supporting the development of transport, energy and digital infrastructure within trans- European networks. The Council and the European Parliament decided to allocate an overall budget of EUR 33.71 billion to better integrate the transport, energy, and digital sectors, and to help achieve EU climate objectives, while at the same time fostering job creation, economy growth and the deployment of emerging technologies.

The CEF Transport part of the programme, with an overall of budget of EUR 22.9 billion (the highest amount among the three pillars of CEF 2), will strongly promote the shift to decarbonisation and will work towards making transport connected, sustainable, inclusive, safe, and secure. Priority will also be given to further develop the trans- European transport networks (TEN-T), with a particular focus on missing links and cross- border projects.

The energy sector of the programme, with a dedicated budget of EUR 5.2 billion, will contribute to transitioning towards clean energy and complete the Energy Union, by further integrating the European energy market, improving the interoperability of energy networks across sectors and borders, fostering decarbonisation, and ensuring security of supply.

The digital of envelope, of EUR 1.8 billion, will aim at improving digital connectivity through the creation of very high-capacity broadband networks as a basis for better digital services.

Horizon Europe

As a continuation of Horizon 2020, Horizon Europe is the EU's main funding programme for research and innovation, with an overall budget of EUR 95.5 billion. The programme aims at facilitating collaboration among Member States when it comes to research and innovation, so as to create and better disperse knowledge and technologies. The programme will also contribute to the development of the European Research Area, a single market for research, innovation, and technology across the EU.

European Regional Development Fund (ERDF)

The European Regional Development Fund (ERDF) aims to strengthen economic, social and territorial cohesion in the European Union by correcting imbalances between its regions.

For the period 2021-2027, the fund will enable investments to make Europe and its regions:
- More competitive and smarter, through innovation and support to small and medium-sized businesses, as through their digitalisation;
- Greener and more resilient;
- More connected, through the enhancement of regional mobility;
- More social, by supporting effective and inclusive employment and education, among others;
- Closer to its citizens, by supporting locally-led development as well as sustainable urban development across the EU.

European Social Fund Plus (ESF+)

In the same spirit as the previous European Social Fund 2014-2020, the European Social Fund Plus (ESF+) aims at supporting Member States to tackle the crisis caused by the coronavirus pandemic, to achieve high employment levels and fair social protection and most importantly, to foster a skilled and resilient workforce that is ready for the transition to a green and digital economy. With a budget of EUR 99.26 billion, the ESF+ will focus its investments in three main policy areas: education and skills, employment and social inclusion, so as to finance the implementation of the principles of the European Pillar of Social Rights.

Structural Reform Support Programme (and Service)

The Structural Reform Support Programme was established with the objective of strengthening the overall capacity of Member States to prepare and implement growth enhancing institutional, structural and administrative reforms. The programme assists in the efficient and effective use of Union funds at the request of Member States. Since January 2020, DG REFORM coordinates the

Structural Reform Support Programme, previously carried out by the Structural Reform Support Service.

The new Structural Reform Support Programme for the period covering 2021-2027 has not been adopted yet. However, it has been decided that with its overall budget of €25 billion, the programme will focus on three main elements:
- The creation of a Reform Delivery Tool, so as to grant financial support to all Member States, for reforms identified in the context of the European Semester;
- The setting-up of a Technical Support Instrument, which will bring further technical support to reinforce the administrative capacities of Member States to carry out the reforms;
- The establishment of a Convergence Facility, to provide both financial and technical support to those Member States aspiring to join the eurozone.

European Innovation Council (EIC) Fund

The European Innovation Council established under the Horizon Europe programme provides funding for individual companies through grants and investments through the EIC Fund. This fund focuses on financing and supporting all stages of innovation, from R&D on the scientific underpinnings of breakthrough technologies, to validation and demonstration of breakthrough technologies and innovations to meet real world needs, to the development and scaling up of start-ups and small and medium-sized enterprises (SMEs).
Higher education institutions and research and technology organisations can also apply to the various open and challenge driven funding opportunities.

EU Funding for Broadband 2021-2027

To meet the ambitious goal set by the Commission's Digital Compass proposal that by 2030 all European households will be covered by a gigabit network and that all populated areas will be covered by 5G, strong funding instruments are needed.

The European Union has made available the following financial tools to support Member States and private investors:
- Recovery and Resilience Facility;
- European Regional Development Fund;
- European Agricultural Fund for Rural Development;
- Just Transition Fund;
- Connecting Europe Facility - Digital;
- Connecting Europe Broadband Fund;
- InvestEU Fund.

9. Cross border Digital Public Administration Services for Citizens and Businesses

Further to the information on national digital public services provided in the previous chapters, this final chapter presents an overview of the basic cross-border public services provided to citizens and businesses in other European countries. Your Europe is taken as reference, as it is the EU one-stop shop which aims to simplify the life of both citizens and businesses by avoiding unnecessary inconvenience and red tape in regard to 'life and travel', as well as 'doing business' abroad. In order to do so, Your Europe offers information on basic rights under EU law, but also on how these rights are implemented in each individual country (where information has been provided by the national authorities). Free email or telephone contact with EU assistance services, to get more personalised or detailed help and advice is also available.

Please note that, in most cases, the EU rights described in Your Europe apply to all EU member countries plus Iceland, Liechtenstein and Norway, and sometimes to Switzerland. Information on Your Europe is provided by the relevant departments of the European Commission and complemented by content provided by the authorities of every country it covers. As the website consists of two sections - one for citizens and one for businesses, both managed by DG Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) - below the main groups of services for each section are listed.

Life and Travel

For citizens, the following groups of services can be found on the website:
- Travel (e.g. Documents needed for travelling in Europe);
- Work and retirement (e.g. Unemployment and Benefits);
- Vehicles (e.g. Registration);
- Residence formalities (e.g. Elections abroad);
- Education and youth (e.g. Researchers);
- Health (e.g. Medical Treatment abroad);
- Family (e.g. Couples);
- Consumers (e.g. Shopping).

Doing Business

Regarding businesses, the groups of services on the website concern:
- Running a business (e.g. Developing a business);
- Taxation (e.g. Business tax);
- Selling in the EU (e.g. Public contracts);
- Human Resources (e.g. Employment contracts);
- Product requirements (e.g. Standards);
- Financing and Funding (e.g. Accounting);
- Dealing with Customers (e.g. Data protection).

The Digital Public Administration Factsheets

The factsheets present an overview of the state and progress of Digital Public Administration and Interoperability within European countries.

The factsheets are published on the Joinup platform, which is a joint initiative by the Directorate General for Digital Services (DG DIGIT) and the Directorate General for Communications Networks, Content & Technology (DG CONNECT).

The Digital Public Administration Factsheets are prepared for the European Commission by Wavestone.

An action supported by Interoperable Europe

The ISA² Programme has evolved into Interoperable Europe - the initiative of the European Commission for a reinforced interoperability policy.

The work of the European Commission and its partners in public administrations across Europe to enhance interoperability continues at full speed despite the end of the ISA² programme. Indeed, enhanced interoperability will be necessary to unlock the potential of data use and reuse for improved public services, to enable cross-border collaboration, and to support the sector-specific policy goals set by the Commission for the future.

Interoperable Europe will lead the process of achieving these goals and creating a reinforced interoperability policy that will work for everyone. The initiative is supported by the *Digital Europe Programme*.

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