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Implementation of multi-country projects

Accompanying the document

**Communication from the Commission to the European Parliament, the Council, the
European Economic and Social Committee and the Committee of the Regions**

Report on the state of the Digital Decade 2023

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In line with the reporting mechanism set out in the Articles 6 and 11 of the Digital Decade Policy Programme¹, this Commission Staff Working Document aims at presenting the Union's progress towards the implementation of multi-country projects (MCPs).

1. Introduction

The Digital Decade Policy Programme establishes a framework for multi-country projects (MCPs), i.e., large-scale projects facilitating the achievement of the general objectives and digital targets.

MCPs aim achieve one or more of the following specific goals:

- improving the cooperation between the Union and the Member States and among the Member States in achieving the general objectives;
- reinforcing the Union's technological excellence, leadership, innovation and industrial competitiveness in critical technologies, complementary technology combinations, and digital products, infrastructure and services that are essential for economic recovery and growth and for the security and safety of individuals;
- addressing strategic vulnerabilities and dependencies of the Union along the digital supply chains to enhance their resilience;
- increasing the availability, and promoting the best use, of safe digital solutions in areas of public interest and the private sector while observing the principles of technological neutrality;
- contributing to an inclusive and sustainable digital transformation of the economy and society that benefits all citizens and businesses, in particular SMEs, across the Union;
- promoting digital skills for citizens through education, training, and life-long learning, with a focus on fostering gender-balanced participation in education and career opportunities.

The Annex to the Digital Decade Policy Programme contains a **non-exhaustive list of high-priority areas of activities** for MCPs:

- (a) European common data infrastructure and services;
- (b) endowing the Union with the next generation of low-power trusted processors;
- (c) developing the pan-European deployment of 5G corridors;
- (d) acquiring supercomputers and quantum computers, connected with the European high performance computing (EuroHPC);
- (e) developing and deploying an ultra-secure quantum and space-based communication infrastructures;
- (f) deploying a network of security operations centres;

¹ Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 (Text with EEA relevance). PE/50/2022/REV/1. OJ L 323, 19.12.2022, p. 4–26.

- (g) connected public administration;
- (h) European blockchain services infrastructure;
- (i) European digital innovation hubs (EDIHs);
- (j) high-tech partnerships for digital skills through the ‘Pact for Skills’ initiative, launched by the Commission communication of 1 July 2020 entitled the ‘European Skills Agenda for sustainable competitiveness, social fairness and resilience’;
- (k) skills and training in cybersecurity;
- (l) other projects which meet all the requirements set out in Article 11 and which become necessary to the achievement of the general objectives of the Digital Decade Policy Programme 2030 over time due to emerging social, economic, or environmental developments.

Several EU funding programmes provide support for the MCPs, including the Recovery and Resilience Facility: 20 countries have included measures contributing to multi-country projects or cross border initiatives on topics related to the digital transition. More than 60 measures or sub-measures in total are relevant to multi-country projects across all approved Recovery and Resilience Plans. The multi-country projects with the highest take-up in Recovery and Resilience Plans are the next generation of low-power trusted processors and the European Digital Innovation Hubs, supported by twelve and eight Member States.

Multi-country projects (MCPs) may be implemented by recourse to several implementation mechanisms such as Joint Undertakings (JUs), European Research Infrastructure Consortia (ERICs), the Union’s agencies, independently by the Member States concerned, through the execution of Important Projects of Common European Interest (IPCEIs) or through other appropriate implementation mechanisms.

In addition to the well-established implementation mechanisms listed above, the Digital Decade Policy Programme introduces the **European Digital Infrastructure Consortia (EDICs)** as a new means to facilitate the establishment of MCPs. EDICs combine the advantages of a rapid set up, a flexible internal structure and the leading role of Member States in their set up and operations.

To identify new or existing MCPs that would benefit from being implemented through an EDIC, the Commission has launched an **initial call for expression of interest in EDICs**. The results of the call, which has been open from 9 December 2022 to 7 February 2023, have demonstrated a strong interest of the Member States in the new instrument, with 38 submitted proposals by individual Member States, of which 13 currently in the process of being further elaborated in a collaborative manner (cf. Table below). In the cases of particularly mature EDIC proposals, Member States have been informally invited by the Commission to submit a **voluntary and non-binding pre-notification**, including an indicative timeline for the submission of the formal EDIC application².

The Commission is currently in the process of assessing the content of the pre-notifications with the aim of providing guidance and support to applicant Member States in the identification

² To be stressed that the Commission’s invitation to Member States to submit the pre-notifications for prospective EDICs is an informal step that has the purpose of gathering information around the interest in specific EDICs and it is not intended to bind the Commission nor the Member States.

of potential legal obstacles to the setup of the EDIC, and to suggest improvements for their considerations in view of their formal applications.

The table below³ demonstrates that the selected EDIC proposals are contributing to at least one area of activity listed in the Annex to the Digital Decade Policy Programme and provides an **update on the progress of the EDIC proposals**. Participating Member States continue working on these proposals, therefore their focus and the scope of work might still evolve and be further defined.

Cardinal Point	Area of activity	EDIC proposal	Progress
A digitally skilled population and highly skilled digital professionals	Skills and training in cybersecurity	<i>European Cybersecurity Skills Academy EDIC</i> This EDIC would develop a Cybersecurity Skills Academy, an umbrella organisation under which different Member States entities would integrates various activities related to cybersecurity education and training for SMEs, start-ups, and the European public sector, as well as standardisation of procedures for cybersecurity competence recognition and professional certification.	Interested Member States have submitted the pre-notification.
Secure and performant sustainable digital infrastructures	Endowing the Union with the next generation of low-power trusted processors	<i>Vehicle of the Future EDIC</i> This EDIC would support the proliferation of open-source hardware/software model for semiconductor production, reduce risk of failures by coordinating the investment priorities among different industry sector, and support upskilling and reskilling actions.	An informal Member States Working Group has been launched
	European Common Data Infrastructure and Services	<i>European Federation for Cancer Images (EUCAIM) EDIC</i> This EDIC would contribute to the European policies and strategies aimed to promote the secondary use of health data for research and innovation activities, with a focus on patients with cancer. It would take important steps towards the European Health Data Space (EHDS), aligning with Europe’s Beating Cancer Plan. EUCAIM will deliver a union-wide data platform accessible to all Member States, with advanced solutions, giving the opportunity to unlock innovation in health, and improving efficiency by sharing resources and thus optimizing the use of financial resources.	This proposal is under examination
		<i>Alliance for Language Technologies EDIC (ALT-EDIC)</i> This EDIC seeks to establish an European-wide technology centre to develop a common infrastructure in the field of natural language processing and to develop large multi-language model (LLM) that will address the shortage of data training in European languages	Interested Member States have submitted the pre-notification.

³ This table contains updates on progress until 31 July 2023.

Cardinal Point	Area of activity	EDIC proposal	Progress
	Multiple areas of activity	<i>AgriFood EDIC</i> This scope of this EDIC is still to be defined. .	An informal Member States Working Group has been launched
Digital transformation of public services	Connected public administration	<i>Innovative Massive Public Administration interconnected Transformation Services (IMPACTS) EDIC</i> This EDIC proposals aims to develop a new generation of advanced cross-border services provision for European citizens through advanced ICTs and open principles and standards	Interested Member States have submitted the pre-notification.
		<i>Networked Local Digital Twins Towards CitiVerse EDIC</i> This EDIC proposals integrates future city related projects using disruptive and immersive technologies such as Ai, VR/RA (i.e.: a “CitiVerse” to allow citizens and other stakeholders to “navigate and interact” virtually.	Interested Member States have submitted the pre-notification.
	European Blockchain services infrastructure	<i>EDIC for European Blockchain Partnership and European Blockchain Service Infrastructure (EBSIC-EDIC)</i> This EDIC would establish, operate, and enhance an infrastructure for delivering EU-wide cross-border public services, serving citizens and businesses, and facilitating the implementation of EU Policies	Formal application submitted
	European Common Data Infrastructure and Services	<i>Genome EDIC</i> An EDIC for the 1+ Million Genomes initiative and its European Genomic Data Infrastructure seeks to establish a trust framework to enable the effective and secure cross-border access to repositories of personal genomic datasets among participating countries.	Interested Member States have submitted the pre-notification
Digital transformation of businesses	European Common Data Infrastructure and Services	<i>Mobility and Logistics Data EDIC</i> This EDIC seeks to facilitate the establishment of a common European mobility data infrastructure. The aim is to help bridge the gap between project-based experimentation and development and longer-term availability and sustainability of a common data infrastructure.	Interested Member States have submitted the pre-notification.
		<i>EDIC for Digital Commons</i> This EDIC would create a strong PPP for the development of sustainable open data and open-source ecosystems to both improve the competitiveness of digital commons to enable large-scale adoption and enhance the public contribution to strategic commons.	An informal Member States Working Group has been launched
		<i>Copyright Infrastructure EDIC</i> This EDIC would develop open and integrated rights data framework to release the potential of	Interested Member States have submitted the pre-notification

Cardinal Point	Area of activity	EDIC proposal	Progress
		EU's creative sectors, promote interoperability, provide trustworthy rights information, and restore level-playing field between major market players and EU's creative SMEs, inclusive approach catering for interests of right holders, stakeholders, incumbents, and intermediaries.	
	Multiple areas of activity	<i>European Startup Nations Alliance (ESNA) EDIC</i> ESNA vision is to contribute to bring Europe to the lead of global start-up ecosystem, building up and linking with national entrepreneurial ecosystems across Europe.	This proposal is under examination

2. Progress report

The following sections provide information about the progress made in each of the MCP areas of activity listed in the Annex to the Digital Decade Policy Programme.

2.1 A digitally skilled population and highly skilled digital professionals

2.1.1 High-tech partnerships for digital skills

Making Europe fit for the digital age and realising the digital transformation requires a digitally skilled European population. In the area of digital skills, the Digital Decade Policy Programme has set out that by 2030 at least 80 % of those aged 16-74 should have at least basic digital skills and that at least 20 million ICT specialists should be employed within the Union, while promoting the access of women to this field and increasing the number of ICT graduates.

Joint action maximises the impact of skills investment; concerted efforts can bring clarity to individuals and companies throughout the value chain, reduce costs and focus on priorities. Therefore, several initiatives are being developed by the Commission in coordination with the Member States and relevant public and private stakeholders. In particular,

- The **Pact for Skills**, one of the twelve flagship actions of the 'European Skills Agenda for sustainable competitiveness, social fairness and resilience' of 1 July 2020, aiming to support public and private organisations with upskilling and reskilling, so they can thrive through the green and digital transitions.

Under the Pact for Skills, the **New Skills Partnership for the Digital Ecosystem** supports the upskilling and reskilling of workers and attract more people to the digital industry. This partnership will work closely with other existing partnerships in other sectors, where digital skills play a crucial role. It will seek synergies and collaboration with other existing initiatives (such as **Digital Skills & Jobs Coalition** or the network of **European Digital Innovation Hubs**) to use existing best practices and guidance as an inspiration for the partnership.

The **Skills Partnership for the Digital Ecosystem** was launched in July 2022 and is currently finalising a work plan, as well as reaching out to extend the number of

participating stakeholders. Existing members of the partnership are already progressing on the implementation of their concrete commitments to reduce the digital skills gap in Europe.

- The **Digital Skills and Job Coalition** and the connected **Digital Skills Jobs Platform**, supported by DIGITAL, reunite Member States, companies, social partners, non-profit organisations, and education providers under the common goal of addressing the skill gap.
- **DIGITAL** supports **bachelor's and master's programmes as well as short-term training in key capacity areas**, such as artificial intelligence, data, High-Performance Computing (HPC), cybersecurity, semiconductor technologies, virtual worlds, cloud computing and other emerging technologies, targeted at businesses and in particular SMEs.

2.1.2. Skills and training in cybersecurity

The cybersecurity dimension of digital skills is gaining importance by the day, not only for large enterprises but also for SMEs and public services. In this respect, the **Cyber Security Skills Academy EDIC** is being set up in the context of an informal Working Group chaired by Greece and in close cooperation with the Commission. This EDIC would develop the Cybersecurity Skills Academy as an umbrella organisation under which different Member States entities would integrate various activities related to cybersecurity education and training for SMEs, start-ups, and the European public sector, as well as standardisation of procedures for cybersecurity competence recognition and professional certification. The pre-notification for this EDIC was submitted in June 2023. Further actions to support skills and training in cybersecurity are financed under DIGITAL.

2.2 Secure and performant sustainable digital infrastructures

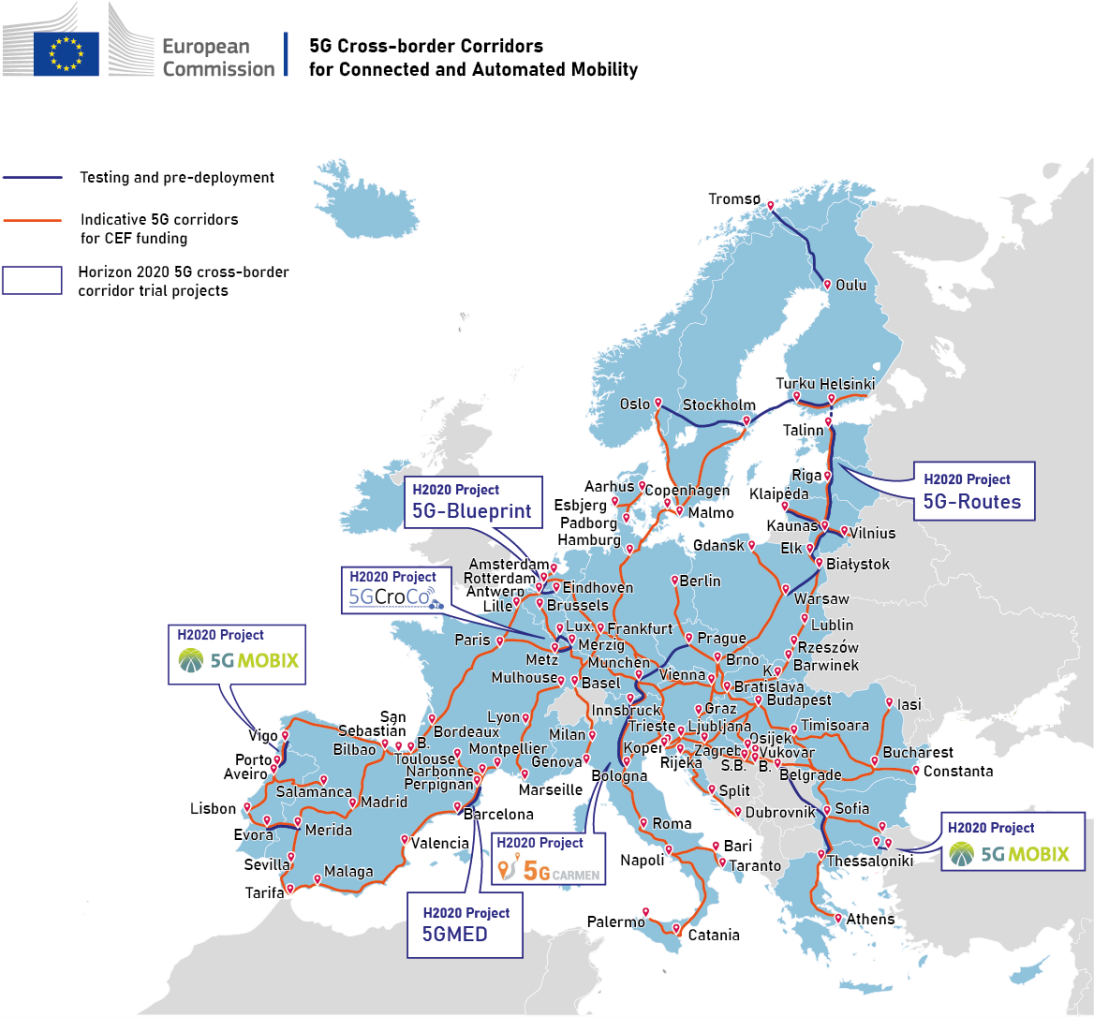
2.2.2 Developing the pan-European deployment of 5G corridors

The 5G Corridors initiative is another MCP area of activity where the Commission is collaborating with the Member States and Industry. The objective of this initiative is **to cover 26 000 km along the TEN-T networks⁴ with Connected and Automated Mobility (CAM)-enabling 5G infrastructure by 2030**. 5G-based Connected and Automated Mobility services along roads comprise a broad range of digital services in and around vehicles including safety-related, transport efficiency-related and other commercial services provided, enabled, or supported by 5G multi-service networks. In addition, this MCP would address market failure areas with public investment and stimulate further private investment in commercially viable areas.

The development of this MCP is connected to the coordination activities of the **Smart Networks and Services Joint Undertaking (SNS JU)**, co-led by Commission and Industry with the close involvement of the Member States. In particular, the SNS JU coordinates the development of project pipelines, common solutions, and best practices. The projects are funded through **CEF Digital**. The involvement of Member States towards the implementation

⁴ The corridors alignment is based on the Regulation (EU) 2021/1153 of the European Parliament and of the Council of 7 July 2021.

of the 5G Corridors initiative is linked to the drafting of the Work Programme through the CEF Digital Committee and to their contribution to the strategic orientations under the SNS JU.



2.2.3 Endowing the Union with the next generation of low-power trusted processors

Semiconductors are at the heart of innovation and the current industrial revolution. The recent chip shortages have exposed structural vulnerabilities across highly interdependent supply chains and have furthermore served to highlight Europe’s dependency on supply from a limited number of companies and geographies with severe consequences for many of its key industrial sectors. In terms of role in the various stages of the value chain, Europe has core strengths in R&D as well as in the supply of advanced material and especially of manufacturing equipment. However, in some key stages of the supply chain from design and IP to front-end and back-end manufacturing, **the EU needs to address gaps and dependencies on other regions**. In terms of manufacturing, Europe has observed in the last 20 years a gradually declining share of global capacity. Considering this background, the overall aim of the activities under this area is to **endow the EU with capabilities in design and industrial deployment of the next generation of trusted processors** and other electronic components needed to power EU’s critical digital

⁵ <https://digital-strategy.ec.europa.eu/en/policies/cross-border-corridors>

infrastructures, artificial intelligence-enabled systems, electric mobility, and communication networks.

The MCP on Processors and semiconductor technologies is being developed mainly in connection with a new **Important Project of Common European Interest on Microelectronics and Communication Technologies (IPCEI ME/CT)** approved by the Commission on 8 June 2023. The project was jointly prepared and notified by fourteen Member States and involves 68 projects from 56 companies, that form part of the wider IPCEI ME/CT ecosystem involving over 30 associated participants. The project's overall objective is to enable the digital and green transformation by: (i) creating innovative microelectronics and communication solutions, and (ii) developing energy-efficient and resource-saving electronics systems and manufacturing methods. The project will contribute to the technological advancement of many sectors, including communications (5G and 6G), autonomous driving, artificial intelligence, and quantum computing. It will also support companies active in the energy generation, distribution and use in their green transition. The fourteen Member States will provide up to **EUR 8.1 billion** in funding in the coming years, which is expected to unlock additional **EUR 13.7 billion** in private investments.

The complementing vehicle for R&D in this sector is the **Key Digital Technologies (KDT) Joint Undertaking**, which started in 2021. Following the foreseen adoption of the Chips Act in September 2023, the KDT JU would be renamed as **Chips Joint Undertaking**. This Joint Undertaking would reinforce the Union's strategic autonomy in electronic components and systems to support future needs of vertical industries and the economy at large; establish Union scientific excellence and innovation leadership in emerging components and systems technologies; ensure that components and systems technologies address Europe's societal and environmental challenges. After the adoption of the Chips Act, the Chips Joint Undertaking would also achieve large-scale technological capacity building (including pilot lines and a design platform) and support related research and innovation activities throughout the Union's semiconductor value chain to enable development and deployment of cutting-edge and next-generation semiconductor and quantum technologies. The 27 EU Member States, Iceland, Norway, Israel, and Türkiye contribute financially to participants from their countries that come together in multi-country R&D and capacity building projects. The same countries, together with the Commission, decide on the projects to be supported following open calls for proposals.

Other supporting activities under this area include:

- **Sectorial AI Testing and Experimentation Facilities (TEFs)** supported by DIGITAL;
- The **European Processor Initiative (EPI) project**, supported by the EuroHPC JU, will develop processors technology targeting HPC applications.

Finally, due to the relevance of the automotive industry for the Union's economy and the impact that the chip shortage has had on this, some Member States led by Italy are exploring the possibility to establish an EDIC that would target semiconductor industry needs in the automotive industry (**Vehicle of the Future EDIC**).

2.2.4 Acquiring supercomputers and quantum computers, connected with the European high-performance computing (EuroHPC)

The MCPs and supporting activities under this area are set to develop, deploy, extend, and maintain in the EU a world-leading federated, secure, and hyper-connected supercomputing, quantum computing, service, and data infrastructure.

The **EuroHPC Joint Undertaking (JU)** is the mechanism allowing for the realisation of MCP initiatives in the area of supercomputing and quantum computing. The EuroHPC will enable Member States to coordinate their supercomputing strategies and to pool their investments together towards acquiring supercomputers and/or quantum computers as well as to deliver concrete services across Europe to a wide range of academic, industrial, SME and public users with applications that impact both our everyday life and the global challenges affecting the planet as a whole.

The acquisition and ownership of supercomputers and quantum computers will require **high levels of investments from both the public and the private sector**. The list below provides an estimation of the identified costs:

- Petascale Supercomputer – level of investment per machine: EUR 30 - 50 million.
- Pre-exascale and/or Exascale supercomputers – level of investment per machine: EUR 150 - 500 million.
- Quantum computers (as standalone machines or as accelerators of supercomputers) – level of investment per machine: EUR 50 - 250 million.

Further investments will be needed to ensure secure and reliable connectivity with the EuroHPC extreme-bandwidth communication network, in addition to those needed to support HPC national competence centres and skills and those required for the development of the large application platforms that require supercomputing specifically in health applications (cancer, new drugs, etc.), disaster prediction and management, or in developing digital twins of the human and its organs, of the Earth, etc.

The EuroHPC JU has already procured eight supercomputers, located across Europe. Six supercomputers are now operational: LUMI in Finland, LEONARDO in Italy, Vega in Slovenia, MeluXina in Luxembourg, Discoverer in Bulgaria, and Karolina in the Czech Republic. Two more supercomputers are also underway: MareNostrum in Spain and Deucalion in Portugal.

These projects count on high a level of multi-country participation: LUMI in Finland with ten countries and total investment exceeding EUR 200 million; Leonardo in Italy with six countries and a total cost of EUR 240 million; and the Mare Nostrum 5 in Spain with three countries and a total cost of EUR 223 million.

Further to this, **five additional sites for supercomputers** - Germany, Greece, Hungary, Ireland, and Poland - have already been announced by the EuroHPC JU in June 2022, with one of them to become Europe's first exascale supercomputer: JUPITER, which will be hosted in the Julich Supercomputing Centre in Germany.

In October 2022 the EuroHPC JU also announced **six sites to host quantum computers** (Czechia, Germany, Spain, France, and Poland and in Italy), which will be integrated with existing supercomputers with at total co-investment of EUR 100 million, 50% of which to be

pooled by 17 participating states. The LUMI-Q Consortium in Czechia is the largest, bringing together 14 partners from nine participating states.

These systems will increase by at least a factor of four the available computing power of the EU that will be available to users from academia, industry, and the European public sector. The EuroHPC JU will deploy a fully hyperconnected and federated infrastructure, providing end-to-end connectivity, performance, security, and resilience which will underpin the development of a federated ecosystem.

The success of these multi-country projects relies on a strong long-term political and financial commitment of public and private partners towards a clear and ambitious pan-European strategy driven by the Union, defining concrete goals and impact in key European policies under one single governance and legal instrument that has the capacity to mobilise and pool the necessary critical mass of investments (national, EU and private) on the whole spectrum of the HPC ecosystem.

2.2.5 Developing and deploying an ultra-secure quantum and space-based communication infrastructures

Since the signature of the **Euro Quantum Communication Infrastructure (EuroQCI) Declaration** in June 2019, the Commission has been working with Member States and with the European Space Agency (ESA) towards the deployment of a **secure quantum communication infrastructure** - the **European Quantum Communication Infrastructure (EuroQCI) Initiative** - spanning the whole EU, including its overseas territories.

The EuroQCI will consist of a terrestrial component building on new and/or existing fibre communication networks linking strategic sites at national and cross-border level, complemented by a space component to cross-link and cover the whole EU. As of March 2023, **EuroQCI is part of IRIS², the new Union's Secure Space-based Connectivity Programme⁶.**

For the terrestrial segment, the Commission has funded two industry consortia to conduct system design studies defining the EuroQCI's architecture and paving the way for its deployment, which concluded in 2022. In parallel, ESA has funded studies under its SAGA (Security And cryptoGrAphic mission) programme to design the first generation of satellites and related ground segments that will make up the EuroQCI's space segment.

In January 2023, **26 national projects**, supported by DIGITAL, have begun, with the aim of delivering the design and deployment of the national quantum communication networks that will form the basis of the EuroQCI's terrestrial segment. DIGITAL is also funding a coordination and support action, and a set of industrial projects to develop and mature the key technological building blocks that the EuroQCI will need, with the broader goal of expanding Europe's quantum communication ecosystem.

Later in 2023, a testing and certification facility for technologies necessary for quantum key distribution, the first service to be offered by the EuroQCI, is set to be procured under DIGITAL.

A total of EUR 170 million from DIGITAL will fund all these projects collectively.

⁶ [Regulation \(EU\) 2023/588](#) establishing the European Union's secure connectivity programme for the 2023–2027 period

Going forward, in 2024, a **CEF Digital call**, with a total budget of EUR 90 million, is planned to open for projects working on **cross-border links between national networks and on interconnections with the EuroQCI's space component**.

For the space segment, the Commission is currently working with ESA on the specification of a first-generation constellation of EuroQCI satellites. This will build on the first prototype satellite Eagle1, developed by ESA and an industrial consortium and planned to be launched in 2025.

Additional funding for the EuroQCI is provided by Horizon Europe, as well as ESA and national sources, including via the Recovery and Resilience Facility. In the future, Commission funding for the EuroQCI is planned come from the **IRIS² budget** and be covered by its work programmes.

With the integration of EuroQCI into the structures of IRIS2 in March 2023, the working groups under the EU Space Programme Committee will advise the Commission on the initiative's development and deployment, ensuring that all stakeholders can shape it and that it continues to make progress as a key element of the Secure Connectivity Programme.

2.2.6 Deploying a network of security operations centres (SOCs)

The Commission, in coordination with the European Cybersecurity Competence Centre (ECCC) has launched a call for expression of interest⁷ to select entities in Member States which will host and operate **cross-border cyber threat detection platforms**, each bringing together relevant public entities from several Member States, as well as private entities. Announced in the 2020 European Cybersecurity Strategy, and more detailed recently in the Joint Communication on European Cyber Defence Policy, **this is the first phase in the creation of a cross-border infrastructure of European Security Operations Centres (SOC)**, powered by Artificial Intelligence (AI) and other cutting-edge technologies.

The network of Cross-border Security Operations Centers (SOCs) aims at **enhancing cyber threat detection in the EU by pooling information from various sources, public and private**.

Cross-border Security Operations Centres would procure cyber threat detection tools and services together with the **European Cybersecurity Competence Centre (ECCC)**, which will initially contribute with EUR 30 million under DIGITAL. The programme will also fund up to EUR 72.5 million in grants for cyber threat detection, following a recently opened call for proposals. It is envisaged that the SOC's will be operational by early 2024.

2.3 Digital transformation of businesses

2.3.1 European common data infrastructure and services

The multi-country projects launched under this area of activity aim at overcoming **key market and competitiveness challenges in cloud, edge computing and data**. By bringing more choice and diversity into the market for interoperable, secure, and sustainable cloud, edge and

⁷ [Cybersecurity: EU launches first phase of deployment of the European infrastructure of cross-border security operations centres | Shaping Europe's digital future \(europa.eu\)](#)

data offerings to users, these projects are set to ultimately curtail market consolidation in line with the European Strategy for data. The set-up of Common European Data Spaces is set to foster **smart data access and the sharing and reuse of data across sectors** with the ultimate goal of enhancing end users' innovation and competitiveness.

Several implementation mechanisms contribute to the Union's progress in this area of activity. In particular,

- An **Important Project of Common European Interest on Next Generation Cloud Infrastructures and Services (IPCEI-CIS)**, co-coordinated by Germany and France, aims to develop and deploy a common, sustainable and multi-purpose pan-European industrial interconnected virtual data processing infrastructure and its associated added value novel cloud services embedding advanced, real-time, very low latency edge capabilities to serve business and end users' needs close to where data are generated. The IPCEI-CIS was pre-notified to the Commission on 14 April 2022. The Commission is currently assessing it against the criteria for the analysis of the compatibility with the internal market of State aid. Should the Commission authorise the execution of this IPCEI, the next step will be the start of the IPCEI-CIS enterprise projects. The dissemination and exploitation efforts of the expected IPCEI solutions among all Member States and their associated business ecosystems would benefit from an extra support from a Cloud IPCEI Exploitation Office under the management of the European Commission. Such a Cloud IPCEI Exploitation Office is foreseen to be financed by DIGITAL and expected to be operational in the course of 2024.
- **Simpl**, the smart open-source middleware that will enable cloud-to-edge federations and support all major data initiatives funded by the European Commission, such as Common European Data Spaces. Simpl is funded through DIGITAL. The tender for a framework contract to deliver Simpl is currently under evaluation. The tendering of the first specific contract is foreseen for the second half of 2023, and the first results in 2024, starting with a minimum viable platform.
- **Common European Data Spaces** are currently being set up in the 14 strategic sectors or domains of Green Deal (including Smart Communities), Agriculture, Mobility, Health, Skills, Manufacturing, Public Administrations, Financial, Tourism, Language, Cultural Heritage, Energy, Media and EOSC (Research). The establishment of these **Common European Data Spaces** in strategic sectors and domains of public interest will gradually create a true single **European data market** that allows easy access to and sharing and use of data for the development of innovative products and services, including AI tools and technologies. Public and private sector organisations will be part of the common European data spaces, including data providers, users, and intermediaries, such as innovation companies, research institutes and public administrations.

Several **EDIC proposals** aimed at complementing and expanding the actions under this area have been put forward by a vast majority of Member States during the Call of Expression Interest and are currently being developed by the respective Informal Member States Working Groups with the final goal of drafting and submitting the formal applications to be reviewed by the Commission. In particular,

- The **EDIC for Mobility and Logistics Data** which seeks to facilitate the establishment of a common European mobility data infrastructure ensuring safe access, sharing and reuse of data. The proposed long-term objective of the EDIC is to progressively become the core of the European Mobility and Logistics Data ecosystem.
- The **Genome EDIC** for establishing a trust framework to enable the effective and secure cross-border access to repositories of personal genomic datasets among participating countries.
- The **Alliance for Language Technologies EDIC (ALT-EDIC)** seeks to establish an European-wide Center of Excellence on language technologies to develop a common infrastructure in the field of natural language processing and to develop large multi-language model (LLM) that will address the shortage of data training in European languages;
- The **Digital Commons EDIC** aims to create a strong public-private partnership for the development of sustainable open data and open-source ecosystems to both improve the competitiveness of digital commons to enable large-scale adoption and enhance the public contribution to strategic commons;
- The **Copyright Infrastructure EDIC** would develop open and integrated rights data framework to release the potential of EU's creative sectors, promote interoperability, provide trustworthy rights information, and restore level-playing field between major market players and EU's creative SMEs, inclusive approach catering for interests of right holders, stakeholders, incumbents, and intermediaries.

2.3.2 European digital innovation hubs (EDIHs)

Increased digitalisation is a key tool for addressing some of the major challenges that European businesses face. To this end, a **network of European Digital Innovation Hubs (EDIH)**, envisaged under the DIGITAL Europe Programme, has been established by the Member States to provide tailor-made digitalisation support to SMEs and public sector organisations (PSOs) in all regions and sectors of the EU. The EDIH network is currently comprised of 151 EDIHs that are co-funded by the European Commission's Digital Europe Programme and 78 EDIHs with Sea of Excellence. All European Member States plus Iceland, Norway, and Liechtenstein are set to host European Digital Innovation Hubs on their territory. The network of **EDIHs combines the benefits of a regional presence with the opportunities available to a pan-European network**. 85% of the European regions host organisations forming the EDIH network and EDIHs services are available in nearly 90% of the European regions. This regional presence leaves them well-placed to provide the services local companies need, through the local language and innovation ecosystem. The European coverage of the network facilitates the exchange of best practices across hubs in different countries as well as the provision of specialised services across regions when the required skills are not locally available.

The funding received by the EDIHs will be fully passed on in the form of digitalisation services to their customers, who will either receive those services for free or at a reduced rate. Services include “test before investing”, expert advice, skills and training, ecosystem building and support with access to finance. The hubs are being funded jointly by the Commission and Member States with EUR 1.5 billion over a period of 7 years.

The selection procedures for the setup of the initial network of hubs has now been fully completed and **151 hubs were selected to receive the first three years of funding from DIGITAL**. The grants for most of these hubs have been signed and the projects have started. As a result of the selection procedure for the hubs, an additional 76 hubs were awarded a “Seal of Excellence”; as they were of good quality, even though they could not be funded under DIGITAL. These “Seal of Excellence” hubs will also be funded by the Member States. So that, **by the end of the year, the network should comprise over 200 hubs and cover nearly all regions of Europe, Iceland, Lichtenstein, and Norway**. [Furthermore, in 2024 it is planned to open a call for participation to the network for the countries associated to the Digital Europe programme](#). To monitor the impact of hubs project, several Key Performance Indicators and targets have been defined. An important target relates to the increase in the digital maturity of the entities receiving digitalisation services from the hubs. To measure this target, the Commission has developed Digital Maturity Assessment (DMA) questionnaires for SMEs and Public Sector Organisation (PSOs) and an online tool which the hubs can use to collect the digital maturity data from their beneficiaries.

2.4 Digitalisation of public services

2.4.1 Connected public administration

The activities under this area support the implementation of: (1) A **European Digital Identity Framework Implementing the eIDAS Regulation**, under which all Member States should provide for interoperable eIDs and ensure the recognition of eIDs issued in other Member States, offering Europeans a convenient and safe access to and use of digital services which protect personal data and privacy; (2) The **European Once-Only Technical System** allowing public administrations at the local, regional and national levels to exchange data and evidence across borders, in full compliance with legal requirements and personal rights.

The Commission is supporting the implementation of the European Digital Identity (EUDI) wallet via the **DIGITAL call ‘Accelerating best use of technologies’** which aims at promoting the development and deployment of the EUDI wallet around priority cross-border use-cases including the Mobile Driving Licence (mDL), eHealth, Payments, and Education/Professional Qualifications, as well as other use-cases.

Furthermore, EDIC proposals have been submitted by Member States and are currently being developed by the participating Member States:

- The **Innovative Massive Public Administration InterConnected Transformation Services (IMPACTS) EDIC** proposal focuses on cross-border services provision for European citizens through advanced ICTs and open principles and standards.
- The **Networked Local Digital Twins Towards CitVerse EDIC** proposals seek to develop immersive technologies such as AI and Virtual Reality allowing citizens and stakeholders to “navigate and interact” with the urban space.
- Finally, the proposal to establish an EDIC for the coordination of the activities of the European Blockchain Service infrastructure (the **EDIC for the European Blockchain Partnership and European Blockchain Service Infrastructure (EBSIC-EDIC)**) would further enable cross-border exchanges between public authorities, public and businesses (see next chapter).

2.4.2 European blockchain services infrastructure

Activities under this area are developed in the context of the European Blockchain Partnership (EBP) in collaboration with the Commission. The **European Blockchain Services Infrastructure (EBSI) MCP** to leverage blockchain to create cross-border services for public administrations, businesses, citizens, and their ecosystems to verify information and make services trustworthy.

All Member States, Norway, Liechtenstein, and Ukraine, this later as observer, are today involved in the European Blockchain Partnership (EBP) working in cooperation with the European Commission on EBSI. The involvement of Member States and associated countries is key for the large-scale deployment of the infrastructure and its exploitation across borders.

EBSI first projects have been funded by DIGITAL, involving more countries and other actors contributions will significantly accelerate the operations and exploitation of EBSI. In addition, other projects will reinforce the link between EBSI and the EUDI wallet. EBSI would be an infrastructure contributing to the implementation of the proposed EUDI regulation and its wallet.

An EBSI early adopter programme has been initiated in 2022 leading to various pilots and demonstrations. The initiative is now reinforced and it is mobilising an increasing number of stakeholders.

EBSI use cases support for instance the digital transformation of education and social security using verifiable credentials that makes digital documents easy to verify across border and impossible to fraud. EBSI use cases also concern the traceability of data and documents.

Some EBP countries are now preparing to establish a European Digital Infrastructure Consortium (EDIC) for which a proposal has been submitted in June 2023.

The **EDIC for the European Blockchain Partnership and European Blockchain Service Infrastructure (EBSIC-EDIC)** would provide for reinforcing the operationalization of the infrastructure and its governance, for stimulating the exploitation of EBSI, including for creating an environment for stimulating more innovative services and skills development actions. It would be a way to pool more resources, including through new partnership, with industry players, and pay per use models that should ensure long-term business sustainability for the EBSI.