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ANNEX 1

ANNEX

to the

Commission Implementing Decision

amending the Commission Implementing Decision C (2023) 1862 final on the financing of the Digital Europe Programme and the adoption of the work programme for 2023 - 2024

ANNEX I
DIGITAL EUROPE

WORK PROGRAMME 2023-2024

INTRODUCTION

The second Work Programme (WP) of the Digital Europe Programme 2023-2024 responds to a two-fold challenge. On the one hand, it aims to ensure the continuation, evolution and sustainability of actions that started within the first WP 2021-2022, taking into consideration the overall aim of the Digital Europe Programme of capacity building. On the other hand, it has to be adjusted to new developments. It no longer covers The European Quantum Communication Infrastructure (EuroQCI) Initiative[1] actions that are, with the corresponding budget, moving to the Secure Connectivity initiative[2], while simultaneously introducing actions that follow the priorities and legal obligations of the EU. It also includes the funding for the Chips Fund, foreseen in the new European Chips Act[3].

The EU's goals in the area of digital transformation are defined in the communication: "2030 Digital Compass: The European way for the Digital Decade"[4] and in the "Path to the Digital Decade"[5] policy programme that sets up a governance framework and lists digital targets for 2030 based on four cardinal points: digital skills, digital infrastructures, digitalisation of businesses and of public services. The EU is engaged on the pathway towards digital economies and societies with the fair twin (green and digital) transition accelerating the shift towards digitalisation and the use of digital tools for work and life purposes.

While the COVID-19 crisis highlighted the critical role of digital technologies and infrastructures in our lives and demonstrated how our societies and economies rely on digital solutions, Russia's war of aggression against Ukraine has further exposed the vulnerabilities in our digital supply chains and the importance of investing in cybersecurity and drastically improving EU's digital capacities. The programme aims to encourage a wide participation of small and medium-sized enterprises (SMEs) from all geographical areas, including the EU outermost regions and other economically disadvantaged regions[6] and various work strands serve this purpose.

Such is the case of the network of European Digital Innovation Hubs (EDIH) covered in the European Digital Innovation Hubs Work Programme 2021-2023, that will continue to support in the following years the SMEs in their twin transitions. The EDIHs services are available in all EU Member States as well as in Iceland, Liechtenstein and Norway while other associated countries are in the process of setting them up. Each hub is close to the local ecosystem of SMEs and small mid-caps, speaks their language and provides a wide range of specialised and targeted digital transformation services adjusted to the needs and strengths of the region where they operate, be it in urban or rural areas.

Moreover, the sectorial Testing an Experimentations Facilities (TEFs) deployed through the first WP will support companies developing artificial intelligence (AI) and robotics to bring their innovation to the market, with specific attention to SMEs. The infrastructures and support services provided

[1] The European Quantum Communication Infrastructure (EuroQCI) Initiative | Shaping Europe's digital future (europa.eu)

[2] Space: EU initiatives for a satellite-based connectivity system and an EU approach on management of space traffic, https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/space-eu-initiatives-satellite-based-connectivity-system-and-eu-approach-management-space-traffic_en

[3] Regulation (EU) 2023/1781 of the European Parliament and of the Council of 13 September 2023 establishing a framework of measures for strengthening Europe's semiconductor ecosystem and amending Regulation (EU) 2021/694 (Chips Act), https://eur-lex.europa.eu/eli/reg/2023/1781/oj

[4] Europe's Digital Decade: digital targets for 2030, https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

[5] 'Path to the Digital Decade': the EU's plan to achieve a digital Europe by 2030 - Consilium (europa.eu)

[6] In line with Recital 14 and 17 of the Regulation (EU) 2021/694.

through the TEFs to all European innovators, will fill an important gap, especially for SMEs, in bringing their technology to the market, namely the capacity to test at scale and in real conditions the technology.

Under the European High Performance Computing Joint Undertaking (EuroHPC JU), national High-Performance Computing (HPC) Competence Centres support SMEs, by providing access to the latest HPC technologies, tools, applications and services, and by offering expertise, skills, training, networking and outreach.

The Digital Europe Programme supports businesses and SMEs also through investments in the area of digital skills. 70% of businesses say that the lack of staff with adequate digital skills is an obstacle to investment. Under this WP, the Digital Europe Programme will continue to invest in upskilling and reskilling to provide a workforce for advanced digital technologies such as AI, advanced computing, as well as in cybersecurity and data infrastructure. In particular, a new action is addressing the shortage of potential employees with specific knowledge in semiconductors with a holistic approach to increase the attractiveness of the field while at the same time kick-start new initiatives to attract both technicians and graduates and bridge the gap between education and training and market demand. This document sets out the WP for part of the areas foreseen under the Regulation (EU) 2021/694 of the European Parliament and of the Council (Digital Europe Programme Regulation)[7] to be implemented in 2023 and 2024. Separate work programmes cover the remaining areas, namely European Digital Innovation Hubs, Cybersecurity, High Performance Computing managed by EuroHPC JU[8] and the first WP of the newly established Chips JU[9].

It follows consultations with the Member States. It uses as a reference point Annex 1 of Regulation (EU) 2021/694.

The funding will be available for the EU Member States as well as countries associated with the Digital Europe Programme (unless otherwise specified in the topic description, tender specifications and call for proposals). The application of Article 12(5) or Article 12(6) is indicated where appropriate and in consistency with the WP 2021-2022.

THE DIGITAL EUROPE PROGRAMME OBJECTIVES

The Digital Europe Programme will reinforce EU's critical digital capacities by focusing on the key areas of AI, cybersecurity, advanced computing, data infrastructure, governance and processing, the deployment of these technologies and their best use for critical sectors like energy, climate change and environment, manufacturing, agriculture and healthcare.

The Digital Europe Programme also targets upskilling and reskilling for these advanced digital technologies. It supports industry, SMEs, and public administration in their digital transformation with a reinforced network of European Digital Innovation Hubs (EDIH).

Actions in this WP will support technologies that are strategically important for Europe's future and in particular will achieve the following objectives:

[7] Regulation (EU) 2021/694 of the European Parliament and of the Council of 29 April 2021 establishing the Digital Europe Programme and repealing Decision (EU) 2015/2240, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R0694&qid=1623079930214

[8] The DIGITAL Europe Programme – Work Programmes, https://digital-strategy.ec.europa.eu/en/activities/work-programmes-digital

[9] Council Regulation (EU) 2023/1782 of 25 July 2023 amending Regulation (EU) 2021/2085 establishing the Joint Undertakings under Horizon Europe, as regards the Chips Joint Undertaking, https://eur-lex.europa.eu/eli/reg/2023/1782/oj

- Address **climate and environment protection challenges,** considering the EU Adaptation Strategy [10], through supporting, among others, next phase in the evolution of the Destination Earth components, providing additional services to more users and ensuring technical interoperability with new Digital Twins, establishing a green deal data space and a Digital Product Passport that enables the transition to circular economy.

- Ensure the deployment of sectorial **common data spaces**, based on the secure and energy-efficient federated **cloud-to-edge infrastructure** that are accessible to businesses and the public sector across the EU. Furthermore, the Digital Europe Programme will support new high-impact activities such as the establishment of an Exploitation Office to maximize the broad dissemination of results stemming from the pre-notified Cloud IPCEI (forthcoming Important Project of Common European Interest on Next Generation Cloud and Edge Infrastructure and Services), the development of a cloud-based collaborative platform for the management of industrial programmes in the aeronautics and security sector as well as reference deployment of **European cloud-edge services.**

- Accelerate and strengthen the **adoption of AI technologies in Europe**. For this purpose, the WP will develop a strong ecosystem to underpin faster adoption and wide usage of AI by businesses, including SMEs. This will be complemented by supporting the preparation and compliance with the forthcoming **AI Act[11],** the world's first comprehensive AI law, by an innovation accelerator, an EU database on stand-alone high-risk AI systems and innovation regulatory and testing mechanims (regulatory sandboxes and Union testing facilities). The WP will give a special focus on AI in healthcare sector (through a Platform for advanced virtual human twin, pathways for **AI in healthcare** and AI in support of Quantum-Enhanced Metabolic Magnetic Resonance Imaging Systems). It will also continue the work on the sectorial **Testing and Experimentation Facilities** funded under the WP 2021-2022. Taking advantage of the latest advances in AI and in particular generative AI, it will build an EU wide digital infrastructure for the **AI** foundation **models for Language technologies** by means of an alliance for language technologies and an open-source language foundation model**.** Finally, it will focus on **local communities** through developing the different layers of VR/AR worlds for communities and moving towards an ecosystem of networked Local Digital Twins across the EU.

- Strengthen preparedness of the key sectors and response actions across the EU to **cyber threats**.

- Further support the excellence of EU education and training institutions in digital areas to improve the capacity to nurture and attract digital talent through specialised **education programmes in advanced digital technologies**, and, for example, in areas of cybersecurity and semiconductors. The WP will also support actions that will improve insight into the **gender gap in the ICT professions** in the EU and intervene in earlier cycles of education with the longer-term objective to encourage young students and in particular women to pursue digital studies and careers as well as consolidate and upkeep the operation of the **digital skills platform.**

- Further invest in the uptake of **blockchain** in Europe and in building of efficient and **interoperable digital public services**, as well as in building **confidence in digital transformation**. New investments will be made for developing reference framework

[10] EU Adaptation Strategy (europa.eu)

[11] Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union legislative acts COM/2021/206 final

addressing urgent needs in **energy consumption**, and support to multi-country projects, including the upcoming **European Digital Infrastructure Consortia (EDICs)**.

GREEN DIGITAL EUROPE

The green and digital twin transition is a core political priority of the European Commission. The digital transformation contributes to the green transition and the objectives of the European Green Deal to reach climate neutrality and resilience by 2050 and reduce greenhouse gas emissions by at least 55% by 2030, compared to 1990. Digital solutions will lower carbon footprint, for instance, by providing citizens digital access to essential services, removing the need for physical presence, and promoting paperless communication or by integrating AI that can, for instance, enable via smart appliances more efficient energy consumption. At the same time, the energy consumption of digital technologies should not exceed the energy they save. For this reason, the do no significant harm principle applies also to all activities of the digital transition. Several actions in this WP are expected to make a concrete contribution to climate mainstreaming based on the methodology for climate mainstreaming, the Climate Mainstreaming Architecture in the 2021-2027 Multiannual Financial Framework.[12]

Some actions are expected to contribute directly to climate mitigation (e.g. measures that focus on the causes of climate change and limit the scope of its long-term effects) or climate adaptation (e.g. measures to help ensure preparedness for and find solutions to the adverse effects of climate change, and to prevent or minimise the damage climate change can cause or to take advantage of opportunities that may arise).

Such is the case for the **Destination Earth initiative**, which will develop a very high precision digital model of the Earth to enable visualising, monitoring and forecasting natural and human activity on the planet. This will ensure that we are better prepared to respond to major natural disasters, adapt to climate change and can predict its socioeconomic impact. Destination Earth is a main contributor to the **Green Deal Data Space,** the data ecosystems of the strategies and action plans for the European Green Deal, which will offer access to a variety of data related to the environment and the EU's climate objectives. This will for example include detailed data on geospatial systems, localised water, soil and air pollution, but also detailed geo-localised systems, energy supply and consumption.

Other actions are also expected to contribute to this horizontal priority, namely the Digital Product Passport, the reference deployment of cloud-to-edge based service solutions, the EU Energy Saving Reference Framework, the Agricultural Data Space and the Energy Data Space.

Several actions will pave the way for tools and actions that may support the ecological transformation. The Data Space for Skills, one of the deliverables of the European Year of Skills for instance, may provide access to high-quality data related to skills for emerging green digital solutions. Data on cities and communities from different sectors may lead to actions alleviating climate change. Data analytics in manufacturing can contribute to a reduction in energy consumption and a better direct optimisation of the supply chain. The Tourism Data Space may contribute to reduce over-tourism by enhancing crowd management capabilities. AI can enable smart and low-carbon solutions encompassing a range of interconnected technologies, such as smart appliances that can enable demand response in the electricity sector or tools to optimise mobility in cities.

Many other actions in this WP contribute with positive externalities despite climate not being the main objective. Such is the case for the Data Space for Cultural Heritage, which by digitising cultural heritage assists in 3D allows supports the digitisation and availability of cultural heritage assets in 3D, this way contributing to their sustainability, non-destructive analysis of assets, visualisation of damages and information for restoration and conservation preservation, as well as to making them remotely

[12] Climate Mainstreaming Architecture in the 2021-2017 Multiannual Financial Framework (2022): https://commission.europa.eu/system/files/2022-06/swd_2022_225_climate_mainstreaming_architecture_2021-2027.pdf

accessible to the public, for education, tourism or leisure activities. Actions supporting the digitalisation of justice are expected to contribute to lowering the carbon footprint by fostering paperless communication in civil and cross border proceedings.

The climate dimension is also taken into consideration in the selection of projects for funding. Under the evaluation criterion 'Impact', the extent to which the projects relate to environmental sustainability and the European Green Deal goals will be assessed.

THIRD COUNTRY PARTICIPATION

According to Article 18 of of the Regulation (EU) 2021/694, participation in the actions is open to **eligible** third countries, i.e., only EEA countries and third countries having signed an association agreement to the programme, in accordance with the association agreement they have signed at the time of signature of the grant agreement, even though the text of the actions only refers to the Member States.

The conditions for **international cooperation** with third countries, international organisations and bodies established in third countries, are specified in Article 11 of the Regulation (EU) 2021/694. Cooperation and association agreements may be subject to adequate security, intellectual property (IP) protection and reciprocity guarantees.

The objectives of the Digital Europe programme can only be achieved by taking into account duly justified security interests of the Union, notably in terms of cybersecurity or protection of data against unauthorised disclosure. This would also cover, inter alia, the security of supply chains, critical infrastructures, public order and the protection of the Union's critical technology.

Art. 12 of the Regulation (EU) 2021/694 establishes some **security limitations and relevant criteria for the application of such limitations** as regards to participation of non-EU entities, i.e. entities not established in the EU, or established in the EU but not controlled by a Member State or national from of a Member State, and international cooperation.

The concern is that sensitive European data that can relate to security interests of the Union could potentially end up in the hands of third- country authorities (national intelligence and security agencies in particular) even without the knowledge of the individuals, businesses or public administrations in the EU to which the data relate and without them being able to intervene to restrcit access to the data on security grounds or to exercise their fundamental rights (e.g., right to respect for private life, right to data protection, right to an effective legal remedy). This may be due to the application of national surveillance legislation of third countries and their jurisdiction over the service providers established in a specific third country that provide their services in the Union, and where such jurisdiction may also extend to their subsidiaries established in the Union. While data access requests could also be directed to EU-controlled companies established in the Union but falling under the relevant foreign jurisdiction, e.g., when they also have an establishment in the foreign jurisdiction, those companies that have their headquarters in the relevant foreign jurisdiction may be subject to a conflict of interest and conflict of jurisdictions (e.g. if the law of the country of establishment of the headquarters requires EU-based subsidiary to engage in transfer or processing data in a manner inconsistent with the EU law. This problem does not arise for companies whose headquarters are in the EU territory. There is also a hightend risk of uncontrolled access to data by foreign intelligence and security agencies, thus exposing the Union to security risks.

For these reasons and in consistency with the WP for 2021-2022, the Economic Security Strategy adopted on 20 June 2023 and the Communication on the implementation of the EU Toolbox on 5G

cybersecurity[13] a set of topics in this WP will be subject to the provisions of Article 12(6) of the Regulation (EU) 2021/694.

All topics in Section 3 on cybersecurity will be subject to the provisions of Article 12(5) of the Regulation (EU) 2021/694 due to the serious concerns for the risks posed by certain suppliers of mobile network communication equipment to the security of the Union. Specific conditions for the association or partial association of third countries to the Programme are laid down in Article 10 of the Regulation (EU) 2021/694[14].

Please note that even for the actions where Articles 12(5) or 12(6) are not applicable, proposals and tenders to be submitted by applicants will include a security self-assessment that identifies any security issues and details how those issues are to be addressed in order to comply with Union and national law. Where appropriate, the Commission or the body entrusted with the implementation of the Programme will carry out a security review of proposals for funding submitted by applicants that raise security issues. The Commission or the body entrusted with the implementation of the Programme may additionally carry out security checks. Funding for actions which do not comply with the security requirements referred to in Article 12 of the Regulation (EU) 2021/694 may be suspended, terminated, or reduced at any time, in accordance with the Financial Regulation. In line with the overall objective of the programme to deploy digital capacities in the Union, while being open to third countries associated to the Digital Europe programme, the primary intended use of the infrastructures deployed under the programme should be in the Union and in countries associated to the Digital Europe programme.

INDICATIVE BUDGET AND IMPLEMENTATION

The Digital Europe Programme is implemented by means of multiannual work programmes. There will be two new independent work programmes in 2023-2024, while the another one concerning the network of European Digital Innovation Hubs (under direct management by the European Commission) is covering the 2021-2023 period.

This WP covers activities related to Destination Earth, Data, AI, Cloud, the Cybersecurity incident response and preparedness support, Advanced Digital skills and Deployment activities for the best use of these technologies. The other work programmes cover: 1) High Performance Computing (implemented under indirect management by the EuroHPC JU); 2) all the remaining activities in Cybersecurity (implemented, under indirect management by the Cybersecurity Industrial, Technology and Research Competence Centre (ECCC) and in direct management by the Commission on behalf of ECCC); 3) A first WP of the newly established Chips JU covers activities for pilot lines and the virtual design platform, components of the Chips for Europe Initiative.[15] Synergies and complementarities of the activities in the various work programmes will be ensured.

Actions in this WP will be implemented mostly under direct management by the European Commission and a supportive Executive Agency. The exceptions to this are the Investment Platform for Strategic Digital Technologies and Chips Fund (see Section 7) which will be implemented by the European Investment Fund in indirect management; the Destination Earth Initiative (see Section 1.1) which will be implemented in indirect management by the European Space Agency (ESA), the European Centre for Medium-Range Weather Forecasts (ECMWF) and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the Cybersecurity incident response and

[13] https://digital-strategy.ec.europa.eu/en/library/communication-commission-implementation-5g-cybersecurity-toolbox

[14] EEA EFTA countries are fully associated to the Digital Europe Programme and benefit from a status equivalent to that of the Member States.

[15] Regulation (EU) 2023/1781 of the European Parliament and of the Council of 13 September 2023 establishing a framework of measures for strengthening Europe's semiconductor ecosystem and amending Regulation (EU) 2021/694 (Chips Act), https://eur-lex.europa.eu/eli/reg/2023/1781/oj

preparedness support that will be entrusted for implementation to the European Union Agency for Cybersecurity (ENISA), and the joint investigation team collaboration platform (see 5.2.4.5) to be implemented by eu-LISA.

The budget for the actions covered by this WP is EUR 983 million, allocated according to the objectives explained above, as follows:

- EUR 90 million for actions supporting the Destination Earth initiative including the core platform, data lake and related digital twins;
- EUR 377 million for actions supporting actions for AI adoption, compliance mechanism and deployment, as well as the deployment of Common Data Spaces including sectorial data spaces and the supporting Cloud-to-Edge infrastructure and services;
- EUR 35 million for incidence response support and Preparedness of Key sectors in the area of cybersecurity;
- EUR 121 million for actions on advanced digital skills in key capacity areas through specialised education programmes and other actions;
- EUR 202 million for actions related to deployment of digital technologies, such as the European Blockchain Services Infrastructure, activities in the area of sectorial IT solutions for justice and consumers, building confidence in digital transformation and deployment of solutions for public services, support to multi-country projects, including EDICs as well as support to Trans-European Services for Telematics between Administrations (TESTA);
- EUR 46 million for supporting Interoperable Europe actions that aim to ensure the development of interoperable trans-European digital public services;
- EUR 10 million for Investment Platform for Strategic Digital Technologies;
- EUR 67 million for Chips Fund
- EUR 35 million for Other actions, including Programme Support Actions, and support of the Digital Services Act and Digital Markets Act enforcement.

Table 1: Breakdown of global expenditure per year, budget line and type of action

Year	Budget line	Amounts to be implemented in direct management (in million EUR)		Amounts to be implemented in indirect management (in million EUR)	Total available budget per year (in million EUR)
		Calls for proposals - grants	Calls for tender - procurement		
2023	Specific Objective 1 (02 04 02 10)	-	-	-	-
	Specific Objective 2 (02 04 03)	86.1	64.6	60	210.7
	Specific Objective 3 (02 04 01 10 02)	-	-	27.8	27.8

	Specific Objective 4 (02 04 04)	60.3	6.4	2.2	68.9
	Specific Objective 5 – Deployment (02 04 05 01)	31.7	28.6	-	60.3
	Specific Objective 5 – Interoperability (02 04 05 02)	-	24.5	-	24.5
	Specific Objective 6- Semiconductors Chips Fund Invest EU (02 04 06 10)	-	-	36	36
2024	Specific Objective 1 (02 04 02 10)	-	-	22	22
	Specific Objective 2 (02 04 03)	191.5	74.5	8	274
	Specific Objective 3 (02 04 01 10 02)	-	5.7	15	20,7
	Specific Objective 4 (02 04 04)	57	12.4	-	69.4
	Specific Objective 5 – Deployment (02 04 05 01)	59	48.1	3.6	110.7
	Specific Objective 5 – Interoperability (02 04 05 02)	5	22.2	-	27.2
	Specific Objective 6- Semiconductors Chips Fund Invest EU (02 04 06 10)	-	-	31	31

LINKS TO OTHER PROGRAMMES AND CO-INVESTMENTS

Investments under Digital Europe Programme are complementary to investments under a number of EU funding instruments, either managed directly or under shared management with the Member States. These include for example investments into key digital technologies, including quantum technologies, as part of the second pillar (Global Challenges and European Industrial Competitiveness) of Horizon Europe. Connecting Europe Facility (CEF2) digital investments focus on delivering safe, secure, and sustainable high-performance infrastructure, in particular, Gigabit and 5G networks across the EU. Creative Europe programme investments contribute to the recovery of culture and media, reinforcing their efforts to become more inclusive, more digital. Digital investments under the EU4Health programme will aim at reinforcing health data, digital tools and services, enhance access to healthcare and support its digital transformation. The Justice Programme offers funding opportunities in the e-justice field supporting transnational projects and projects with clear EU dimension that improve the effectiveness of justice systems and improve access to justice. At the Member State level, investments are evisaged in the area of digital with the support of Cohesion policy funding, in particular the European Regional Development Fund (ERDF) and the European Social Fund Plus (ESF+). These aims at addressing the digital divide both socially and geographically, e.g. by supporting digitalisation of firms, by improving access to e-government, e-health, and digital skills, so that no one in any EU region, be it rural, urban or outermost, is left behind. Complementarity is also expected between Digital Europe Programme and the Common Agricultural Policy (CAP): Investments into digitalisation in agriculture and rural areas under National CAP Strategic Plans will contribute horizontally to all CAP objectives and aim to – among others modernise sector, increase sustainability and economic performance, and enhance quality of life in rural areas, including knowledge and

innovation, and investment in broadband infrastructures. Member States' Recovery and Resilience plans should address those challenges identified in the relevant country-specific recommendations (CSRs) or in other relevant documents adopted by the Commission under the European Semester, as well as support the green and digital transitions. Private capital is foreseen to be leveraged for investments into digital infrastructures, technologies, and skills under InvestEU as well. Digital Europe Programme complements this mix by funding strategic deployment in support of the EU digital targets for 2030, bringing digital technology to businesses, citizens and public administrations.

Most actions foreseen in the Digital Europe Programme require co-investments from the public and/or private sectors. The modes of these co-investments are described in the relevant parts of the various work programmes.

As far as possible funding support from other EU instruments to actions in this WP is concerned, alternating or cumulative funding may be considered, provided that such funding is in line with the fund-specific regulations of the funding instruments in question, and in line with the objectives of the relevant programmes. Relevant provisions of the Financial Regulation need to be respected[16], in no circumstances the same costs shall be financed twice by the EU budget (prohibition of double funding). Funding from cohesion policy programmes and from national budgets can fall under EU State aid rules when the beneficiaries are undertakings or supported activities are of an economic nature. In such cases, the funding must be compatible with EU State aid rules.

An alternating/sequenced funding occurs when each instrument finances a different part of the operation/action, or finances successive parts. It requires a split of an operation/action in two different parts. Separate grant agreements are required, applying the rules of the funding instruments respectively. Coordination is required to avoid double funding, ensuring separation of parts/activities. Expenditure used for a reimbursement request for one instrument shall not be declared for support from another Fund or Union instrument. Activities financed under separate instruments have to be clearly differentiated.

Cumulative funding means that an action receives support from more than one fund, programme or instrument (including both shared and directly managed funds). Two grant agreements are required, applying the rules of each of the funding instrument respectively. Upfront co-ordination is required to avoid double funding by coordinating the funding rates which in combination cannot go over 100% of the eligible costs. A number of steps starting from preparation, through linking of actions, grant signatures all the way to reporting and payments need to be followed. The Commission Communication on Synergies between Horizon Europe and the ERDF programmes[17] elaborates on new opportunities to maximise synergies between Horizon Europe and the European Regional Development Fund, including on cumulative funding. An example on how such cumulative funding is applied to Digital Europe Programme and cohesion policy funds is outlined in the Annex 2 of the Communication.

Member States shall ensure the effective and efficient functioning of such synergies, through a consistent and harmonised approach of all involved authorities and close coordination between all public actors is needed.

Below is an outline of actions for which cumulative funding could be considered. However, support from multiple funding sources is in all cases subject to decisions of the authorities managing the funding instruments and further fund specific requirements may apply.

Table 2: First set of calls with a common deadline in 2023

[16] In particular the Article (191) Principle of non-cumulative award and prohibition of double funding.

[17] Synergies between Horizon Europe and ERDF programmes (2022) https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/synergies-guidance-out-2022-07-06_en

Area	Topics in the Work Programme	Digital Europe Funding rate
Cloud to edge infrastructure	Highly Secure Collaborative Platform for Aeronautics and Security Industry	50%
Data	Federated European Infrastructure for Intensive Care Units' data	50%
	Genome of Europe	50%
	Digital Product Passport	50%
AI	Developing CitiVerse	50%
Advanced Digital Skills	Reinforcing Skills in semiconductors	50%
Confidence in Digital Transformation	Network of Safer internet Centres (SICs)	50%
	European Digital Media Observatory (EDMO) - national and multinational hubs	75% for SMEs and 50% for all other beneficiaries
Accelerating the Best Use of Technologies	EU Energy Saving Reference Framework	50%

Table 3: Second set of calls with a common deadline in 2023

Area	Topics in the Work Programme	Digital Europe Funding rate
Data	Data Space for Cultural Heritage	50%
	Data Space for Tourism	50%
Advanced Digital Skills	Specialised Education Programmes in Key Capacity Areas	50%
	Cybersecurity Skills Academy	50%

Table 4: Third set of calls with a common deadline in 2024

Area	Topics in the Work Programme	Digital Europe Funding rate
Cloud to edge infrastructure and services	Reference deployments of European cloud-edge services (industrial IoT Edge and Telco Edge developments	50%
Data	Competence Centre for 3D - Deployment	50%
	European Green Deal Data Space	50%
	Data Space for Skills (deployment)	50%
	Energy Data Space	50%
	Data Space for Manufacturing (deployment)	50%
	Agricultural Data Space	50%
	1+ Million Genomes: sustainability and uptake	100%
	Supporting patients' access to their health data in the context of healthcare services for citizens across the EU	50%
	Demonstrating the in-service use of the European Electronic Health Record Exchange Format (EEHRxF) in healthcare settings	50%
	Common European mobility data space	50%
AI	Support for Health Data Access Bodies to foster efficient pathways for AI in healthcare	100%
	EU AI Innovation Accelerator preparatory action	50%
	AI regulatory sandboxes: EU-level coordination and support	100%
	Pilot action for the establishment of future Union Testing Facilities in AI	100%
	AI in support of Quantum-Enhanced Metabolic Magnetic Resonance Imaging Systems	75% for SMEs and 50% for all

		other beneficiaries
	Alliance for Language Technologies -simple grant and Coordination and support action	50% for simple grant and 100% for CSA
	Making available a high performing open-source European foundation model for fine-tuning	75% for SMEs and 50% for all other beneficiaries
Advanced Digital Skills	Girls and Women in Digital	100%
	Digital Skills and Jobs Platform (CSA)	100%
Deployment of Public Services and Interoperability	European Digital Identity and Trust Ecosystem (Standards and Sample Implementation)	50%
	Innovative and Connected Public Administrations	100%

Table 5: Fourth set of calls with a common deadline in 2024

Area	Topics in the Work Programme	Digital Europe Funding rate
AI	Towards networked Local Digital Twins in the EU	50%
Advanced Digital Skills	Specialised Education Programmes in Key Capacity Areas	50%
Deployment of Public Services and Interoperability	Support to the implementation of Multi-Country Projects (MCPs)	50%
Confidence in Digital Transformation	European Digital Media Observatory (EDMO) - national and multinational hubs	75% for SMEs and 50% for all other beneficiaries

MULTI COUNTRY PROJECTS AND THE EUROPEAN DIGITAL INFRASTRUCTURE CONSORTIA

As part of the Path to Digital Decade policy programme (DDPP)[18], the Commission has introduced the concept of Multi-Country Projects (MCPs). MCPs are large-scale deployment and capacity-building projects for the digital transformation of the Union, facilitating the achievement of the Digital Decade objectives and targets. They channel coordinated investments between the EU, Member States and

[18] 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), https://eur-lex.europa.eu/eli/dec/2022/2481/oj

private stakeholders to, i.a. enable digital infrastructure projects that one single Member State could not deploy on its own. They help reinforce the Union's technology excellence and industrial competitiveness in critical technologies, as well as support an interconnected, interoperable and secure Digital Single Market and address strategic vulnerabilities and dependencies of the Union along the digital supply chain. This means that setting up an MCP fits the objectives of the Digital Europe programme, which provides funding to support the deployment of infrastructures and where the use of such infrastructures and the results generated are intended primarily for the Union and in countries associated to the Digital Europe programme. The Digital Europe programme funding will provide additional incentives for Member States and private sector to work together to build pan-European digital infrastructures.

The initial non-exhaustive list of areas for MCPs as contained in the Decision (EU) 2022/2481 establishing the Digital Decade Policy Programme 2030 (hereafter: DDPP Decision) is listed in the Appendix 4 of this WP.

A number of areas of MCPs, e.g., blockchain, genomics, dataspaces, or TEFs are in the scope of the Digital Europe programme and are receiving funding under the Digital Europe WP 2021-22. These are also included in this WP.

MCPs can be implemented by a number of dedicated mechanisms such as joint undertakings (JU), Important Projects of Common European Interest (IPCEI), the European Research Infrastructure Consortia (ERIC) or the European Digital Infrastructure Consortia (EDICs) – see below. Some MCPs rely on implementation as spelled out in the Digital Europe WP, without using any of the dedicated implementation mechanisms listed in the DDPP Decision.

Table 6: Multi Country Projects relevant for this Work Programme

MCPs relevant for this Work Programme	Topics in this Digital Europe Work Programme
European Common data infrastructure and services	2.1.1 Cloud IPCEI Exploitation Office 2.2.1 Data Spaces 2.2.3 Support for data for EU 2.4. Alliance for Language Technologies 5.5. Support to the implementation of Multi-Country Projects (MCPs)
Genomics	2.2.1.10.2 Genome of Europe 2.2.1.10.3 1+ Million Genomes: sustainability and uptake
Processors and semiconductors chips	2.3.1.1 Coordination of AI sectorial Testing and Experimentation Facilities 7.2. Chips Fund
Connected public administration	2.3.2 Developing Citiverse 2.3.3 Towards networked Local Digital Twins in the EU 5.2.1.1 European Digital Government Ecosystem 5.2.2. Interoperable Europe - Interoperability for the public sector

European Blockchain Services Infrastructure	5.1 Blockchain
High-tech partnerships for digital skills and specialized education	4. Advanced Digital Skills

The DDPP Decision provides for the possibility to establish a European Digital Infrastructure Consortium (EDIC), a new instrument that can be used, among other things, to facilitate the set-up and enable the speedy implementation of MCPs. The legal framework on EDICs is closely modelled on the existing and successful mechanism in the area of research activities, namely the European Research Infrastructure Consortia (ERIC), focusing however on digital products, infrastructure and services that can facilitate the achievement of the digital targets set out in Article 4 of the DDPP Decision and introducing further limited changes to increase flexibility in the implementation, such as enabling private parties to participate in the EDIC as members, and making sure projects remain open to all interested Member States.

Only the Member States may submit an application to form an EDIC. In order to facilitate the setting up of EDICs, the Commission addressed the Member States (MS) with an initial call for expression of interest to understand the MS' plans for MCPs and EDICs. The initial call for expression of interest was conducted in the period of December to February 2023. So far one formal application for an EDIC has been made and six other groups of Member States have communicated to the Commission their intention to submit their formal application for an EDIC. For the actual setup of an EDIC, Member States will follow the procedure outlined in the DDPP Decision, as follows:

- The Member States applying for the setting-up of an EDIC shall submit an application to the Commission. The Commission shall assess the application, taking into account the general objectives of the DDPP, the proposed Statutes, the goals , and practical considerations related to the multi-country project to be implemented by an EDIC. The Commission shall, taking into account the results of the assessment, adopt an implementing act setting up the EDIC, or reject the application.

The use of EDICs should be suitable to make deployment actions sustainable and to attract further funding for large-scale MCPs. Once an EDIC is formally established, it can apply to a formal Call for proposals (like any other proposer) according to the rules contained in the relevant Call document.

EU State aid rules apply to the public funding granted from Member State resources if that funding is for an economic activity or benefits this activity, and if all other cumulative conditions for the presence of State aid, set out in Article 107 (1) TFEU, are met.

CALLS STRUCTURE AND PLANNING

Calls for proposals

The global budgetary envelope reserved for grants under this WP is EUR 492,5 million out of which EUR 178 million is for 2023 and EUR 314,5 million in 2024.

The topics included in this WP which are implemented by grants will be called according to the following indicative plan:

First set of calls

Table 7: List of topics in the first set of calls with a common deadline in 2023 under this Work Programme indicatively includes:

Area	Topics in the Work Programme	Indicative budget in million EUR
Cloud to edge infrastructure	Cloud IPCEI Exploitation Office	25
	Highly Secure Collaborative Platform for Aeronautics and Security Industry	
Data	Federated European Infrastructure for Intensive Care Units' data	31
	Genome of Europe	
	Digital Product Passport	
AI	Coordination of AI Sectorial Testing and Experimentation Facilities	18
	Developing CitiVerse	
Advanced Digital Skills	Reinforcing Skills in semiconductors	16
	Boosting digital skills of young pupils, in particular girls	
Confidence in Digital Transformation	Network of Safer internet Centres	32
	IT System Supporting the Removal of Online Child Sexual Abuse Material	
	European Digital Media Observatory (EDMO) national and multinational hubs (SICs)	
	EU Energy Saving Reference Framework	
Other activities in support to the programme		2
TOTAL for the first set of calls		124

Second set of calls

Table 8: List of topics in the second set of calls with a common deadline in 2023 under this Work Programme indicatively includes:

Area	Topics in the Work Programme	Indicative budget in million EUR
Data	Data Space for Cultural Heritage	12
	Data Space for Tourism	
Advanced Digital Skills	Specialised Education Programmes in Key Capacity Areas	42
	Cybersecurity Skills Academy	
TOTAL for the second set of calls		54

Third set of calls

Table 9: List of topics in the third set of calls with a common deadline in 2024 under this Work Programme indicatively includes:

Area	Topics in the Work Programme	Indicative budget in million EUR
Cloud to edge infrastructure	Reference deployments of European cloud-edge services (industrial IoT Edge and Telco Edge developments)	30
Data	Competence Centre for 3D - Deployment	74
	European Green Deal Data Space	
	Data Space for Skills (deployment)	
	Energy Data Space	
	Data Space for Manufacturing (deployment)	
	Agricultural Data Space	

	1+ Million Genomes: sustainability and uptake	
	Supporting patients' access to their health data in the context of healthcare services for citizens across the EU	
	Demonstrating the in-service use of the European Electronic Health Record Exchange Format (EEHRxF) in healthcare settings	
	Common European mobility data space	
AI	Support for Health Data Access Bodies to foster efficient pathways for AI in healthcare	67.5
	AI in support of Quantum-Enhanced Metabolic Magnetic Resonance Imaging Systems	
	EU AI Innovation Accelerator preparatory action	
	AI regulatory sandboxes: EU-level fand support	
	Pilot action for the establishment of future Union Testing Facilities in AI	
	Alliance for Language Technologies	
	Making available a high performing open-source European foundation model for fine-tuning	
Advanced Digital Skills	Girls and Women in Digital	4
	Digital Skills and Jobs Platform (CSA)	
Deployment of Public Services and Interoperability	European Digital Identity and Trust Ecosystem (Standards and Sample Implementation)	21
	Innovative and Connected Public Administrations	
TOTAL for the third set of calls		196,5

Fourth set of calls

Table 10: List of topics in the fourth set of calls with a common deadline in 2024 under this Work Programme indicatively includes:

Area	Topics in the Work Programme	Indicative budget in million EUR
AI	Towards networked Local Digital Twins in the EU	20
Advanced Digital Skills	Specialised Education Programmes in Key Capacity Areas	55
Deployment of Public Services and Interoperability	Support to the implementation of Multi-Country Projects (MCPs)	25
Confidence in Digital Transformation	European Digital Media Observatory	8
TOTAL for the fourth set of calls		108

Calls for tender

In addition to the calls for proposal, a set of actions will be implemented by procurement either using Framework contracts or open calls for tenders. The global budgetary envelope reserved for procurement under this WP is EUR 284 million, out of which EUR 124 million is for 2023 and EUR 160 million for 2024.

Indirect management

The topics under Destination Earth will be implemented in indirect management, using annual instalments to continue implementation of existing contribution agreements with the European Space Agency (ESA), the European Centre for Medium-Range Weather Forecasts (ECMWF), and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).

The implementation of the Incident Response Support and Preparedness of Key sectors in the area of cybersecurity will be entrusted to ENISA and complemented by collaboration between the Commission, CERT-EU and ENISA on up-to-date and strategic-level situation analysis, risk scenarios and overviews of the threat landscape.

The development of the Joint Investigation Teams Collaboration Platform (JITs CP) will be implemented by eu-LISA, as per Regulation (EU) 2023/969[19].

Moreover, the Investment Platform for Strategic Digital Technologies and the Chips Fund (see section 7) will also be implemented in indirect management under the InvestEU programme, more specifically, by the European Investment Fund (EIF) under the terms of the Regulation (EU) 2021/523 of the European Parliament and of the Council (InvestEU Regulation)[20] and the InvestEU Guarantee Agreement with the EIB Group.

The global budgetary envelope reserved for indirect management under this WP is 206 million EUR, out of which EUR 126 million is for 2023 and EUR 80 million for 2024.

[19] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32023R0969

[20] Regulation (EU) 2021/523 of the European Parliament and of the Council of 24 March 2021 establishing the InvestEU Programme and amending Regulation (EU) 2015/1017 (OJ L 107, 26.3.2021, p. 30–89).

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1 High Performance Computing (HPC)

Specific Objective 1 on High Performance Computing will continue to be implemented by the European High-Performance Computing Joint Undertaking (EuroHPC JU) in continuation of their mission as previously described in the first WP.

Namely, the mission of the Joint Undertaking is: to develop, deploy, extend and maintain in the Union a world-leading federated, secure and hyper-connected supercomputing, quantum computing, service and data infrastructure ecosystem; to support the development and uptake of demand-oriented and user-driven innovative and competitive supercomputing systems based on a supply chain that will ensure components, technologies and knowledge limiting the risk of disruptions and the development of a wide range of applications optimised for these systems; and, to widen the use of that supercomputing infrastructure to a large number of public and private users, and support the twin transition and the development of key skills for European science and industry.

Dedicated work programmes for activities are prepared separately from this WP, as specified in the EuroHPC legislation and in Article 4(2) of the Regulation (EU) 2021/694.

Indicative budget

The Digital Europe budget for actions implemented under this WP is EUR 90 million.

1.1 Destination Earth

The main components of the Destination Earth (DestinE) system, developed under the WP 2021/22, are:

1. Core Service Platform: a user-friendly entry point for DestinE users. The platform will provide evidence-based decision-making tools, applications and services, based on an open, flexible, and secure cloud-based computing system. It will coordinate data, cloud and HPC infrastructures and provide access to an increasing number of Digital Twins as they become gradually available via related European Commission and/or national efforts. The platform will make available relevant AI tools, extreme-scale data analytics and Earth-system monitoring, simulation and prediction capabilities. At the same time, it will provide dedicated resources to DestinE users, allowing them to customise the platform, integrate their own data and develop their own applications. The procurement of the platform and the associated DestinE service operations is the responsibility of the European Space Agency (ESA).
2. The Data Lake is the consolidation of pre-existing European data holdings from Copernicus, the data holdings of the three DestinE implementing entities (ESA, EUMETSAT and ECMWF) and other sources, like the Internet of Things (IoT) and socio-economic data. It will also integrate the new data that will originate from the Digital Twins, creating a coherent and self-standing DestinE data space. DestinE is part of the Green Deal data space and as such, part of the overall data spaces constellation, enabling a cross-fertilisation among the various fields and domains for the various data spaces. It will provide access to the data needed for the Digital Twins and the Core Service Platform operations and it will host user data, shared with the DestinE user community while supporting near-data processing to maximize performance and service scalability. The Data Lake will be operated by the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).
3. The Digital Twins – digital replicas of the highly complex Earth systems – are based on a seamless fusion of real-time observations and high-resolution predictive modelling in the thematic areas,

starting from the Weather-induced and Geophysical Extremes and climate change adaptation. The long-term goal is to integrate additional digital twins for a comprehensive digital twin of the Earth. The digital twins of DestinE will provide users with tailored access to high-quality knowledge for user-specific scenario development for decision support. The first two Digital Twins (Climate change adaptation, Extreme Events and Geohazards) are developed by the European Centre for Medium-Range Weather Forecasts (ECMWF).

Under this WP, the DestinE initiative will continue being implemented through the Contribution agreements with the three implementing entities (ESA, ECMWF, EUMETSAT). A federated access to the EuroHPC Joint Undertaking infrastructure is planned for the period covered by the WP 2023/24, as the respective EuroHPC JU systems become gradually available.

The description below therefore covers the overall period of the WP 2023/24.

Objective

The objective is to continue implementing the DestinE initiative in seamless continuity with the work undertaken under the WP 2021/22, as provided for under the Contribution Agreements signed with the implementing entities (ESA, ECMWF and EUMETSAT). The aim under WP 23/24 is to continue the service provision, upgrade the whole system framework, provide additional services to more users, expand into further priority areas and topics of interest as well as start integrating new Digital Twins. In the meantime, any relevant input from the DestinE Strategic Advisory Board will be considered, as appropriate.

Scope

Under the WP 2023/24, the DestinE initiative will be further implemented putting emphasis on the system activity to reinforce all aspects of the deployed solutions, from data flow to integration and federation of external services as well as to the deployment of an additional range of services, tools and applications (new, enhanced versions of all main components' services). These include:

- Further development and evolution of the Core Service Platform and its full integration with the Data Lake and the Digital Twins. An additional range of services, tools and applications will become available. The activities for interoperability and technical alignment with new Digital Twins (e.g. the Digital Twin Ocean) will start. Service provision will expand to more user groups.
- Expansion of the Data Lake by including additional data holdings and data sources from new areas and fields and optimisation of the Data Lake Federation, including network and connectivity aspects. A Data Lake service portfolio will be made available to the Digital Twins and the Core Service Platform.
- Upgrade and consolidation of the first two Digital Twins (weather-induced and geophysical extremes and climate change adaptation) and performance optimisation of the Digital Twin Engine, including the building of interactive elements and transversal features, allowing the service and support of interdisciplinary Digital Twins. Integration into both Digital Twins of cutting edge AI technology, in particular for constraining uncertainty of generated predictions and for increasing computational efficiency, and towards developing a Generative AI foundation model for Destination Earth. This particular activity will contribute to increasing the European expertise to operate large scale AI applications on the EuroHPC supercomputers. Benefiting from Destination Earth's scope spanning many scientific domains, the development of a Generative AI model will also enable synergies and reuse of components, such as tooling and models, in other domains, thus supporting the development of other AI communities.Piloting the interoperability between DestinE and the Digital Twin Ocean (DTO)[21] a main initiative under the EU Mission

[21] EDITO-Infra (HORIZON-MISS-2021-OCEAN-IBA-01)

Restore our Ocean and Waters by 2030[22] and possible, other, Digital Twins, depending on their level of maturity and DestinE compliance.

The WP 2023/24 continues the focus on the user interactivity aspects and on the user interaction with the Destination Earth simulation capabilities (e.g., on-demand Digital Twin production piloted from the core platform, enhanced analysis capabilities as part of the Digital Twin Engine). In addition, it focuses on user feedback collection, and the definition and implementation of related complementary operational services.

New use cases and user services identification will take place, supported by the respective requirements elicitation and implementation planning.

Additional activities that may be carried out include:

- Piloting activities related to the federation of Member State relevant infrastructures and the integration of Member State initiatives on Digital Twins and development of a selection of international partnerships and synergies.
- Application of a jointly agreed Quality Mapping framework (or similar).
- Integration of Destination Earth with SIMPL[23].

Synergies with relevant Horizon Europe areas are already in place, as a number of respective Horizon Europe actions are already running, facilitating the development of new Digital Twins, while new topics are planned for that purpose in the next Horizon Europe Work Programme. Also, there are already well articulated synergies defined with the Copernicus programme and horizontal teams among the respective Commission Services have already been formed for that purpose. The entrusted entities of DestinE and Copernicus, and the respective teams of DG CNECT and DG DEFIS, systematically work together in order to ensure programmatic, technical and operational alignment (notably in terms of service portfolios, data access and integrated data management), as well as to avoid overlaps and double effort as Copernicus will serve as a major data source of DestinE.

Finally, the Commission collaborates with ESA, with support from the other implementing entities ECWMF and EUMETSAT, to ensure maximum alignment between the ESA Digital Twin Earth Programme adopted by ESA in November 2022 and DestinE.

Deliverables

Core Platform (ESA):

- Deployment of the Version 2 of the Core Platform Services
- On-demand Digital Twin production from the core platform and integration of Digital Twin commanding interfaces for on-demand and interactive simulations
- Additional range of services, tools and applications to become available

Data Lake (EUMETSAT):

- Deployment of the Version 2 of the Data Lake Services
- Additional data holdings and data sources from new areas and fields to become part of the federation

[22] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/restore-our-ocean-and-waters_en

[23] Simpl: cloud-to-edge federations and data spaces made simple, https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

- Optimisation of the Data Lake federation, including network and connectivity aspects, including the complete entry in operation of optimised file transfers

Digital Twin Engine and the first two Digital Twins (ECMWF):

- Deployment of the Version 2 of the Digital Twin engine and the first Digital Twins' Services:
- Enhanced analysis capabilities as part of the Digital Twin Engine: On-demand and interactive workflows deployment, performance optimisation, near-real time simulations
- Integration AI-based solution to constrain uncertainty of generated predictions and to increase computational efficiency,
- Activity towards development of a DestinE AI foundation model for weather/climate
- DT Engine integrating HPC capabilities and optimizing HPC resource allocation
- Version 2 of the Extremes Digital Twin: The system will start integrating the required capabilities for geophysical hazards (earthquakes, volcanic eruptions and tsunamis, geomagnetic storms) and evolve the initial applications towards longer time scales and an enhanced use of ensemble methods for uncertainty quantification. The supporting software infrastructures will be scaled up and implemented across platforms.
- Version 2 of Climate Change Adaptation Digital Twin: The system will start integrating advanced systems for initialisation (data assimilation), ensemble generation and the definition of short-term forcing (ENSO, volcanic eruptions) at unprecedented resolutions will be implemented, including multi-decadal prediction systems and enhanced operational prediction capabilities.
- The links and synergies to the existing products and services of the Copernicus Emergency Management Service and the Copernicus Climate Change Service will be further explored.
- For both, the weather-induced and the climate change adaptation twin, regions and communities involved in the Mission on Adaptation to Climate Change could provide, in coordination with the three DestinE implementing entities, additional use cases, data and testbeds for the development and implementation of these twins.

Type of action	Contribution Agreement
Indicative budget	EUR 90 million[24]
Indicative time	2024
Indicative duration of the action	24 months
Implementation	Indirect management with ESA, ECMWF, EUMETSAT
Type of beneficiaries	The implementing entities (ESA, ECMWF and EUMETSAT).
Eligibility criteria	In line with the general conditions laid down in Article 18(1) of the Regulation (EU) 2021/694, participation in the implementation of the DestinE is open to the legal entities established in the Member States and Associated Countries as well as to international organisations of European interest and other legal

[24] For information, the overall budget for Phase II of Destination Earth is 150 million EUR.

	entities created under Union law. These eligibility criteria shall apply to candidates and tenderers for procurement contracts to be concluded by the implementing entities for the implementation of their respective tasks.

2 Cloud, Data and Artificial Intelligence

Specific Objective 2 of the Digital Europe Programme aims to reinforce the EU's core Artificial Intelligence (AI) capacities as a crucial driver for the digital transformation of the public and private sectors. The EU Data Strategy[25] outlined the importance of building a thriving ecosystem of private actors to generate economic and societal value from data, while preserving high privacy, security, safety and ethical standards. It announced that the Commission will invest in a High Impact Project that will fund infrastructures, data-sharing tools, architectures and governance mechanisms for thriving data-sharing, Artificial Intelligence ecosystems and the next generation of cloud and edge services. Specific Objective 2 has three main work strands:

- Continuation of activities in the area of **cloud-to-edge infrastructure and services** with new topics foreseen. (Section 2.1)
- The deployment of a Data for EU strand with a focus on deploying sectorial **common data spaces**, based on the above federated cloud-to-edge infrastructure and services that are accessible to businesses and the public sector across the EU that were initiated in the first WP. Alongside the continuation of these actions, this WP foresees further actions in the area of Support for data in the EU, namely Open Data Portal, and new action to reinforce the green agenda such as Digital Product Passport. (Section 2.2)
- AI deployment and support, with the continuation of work on **AI reference testing and experimentation facilities** with a focus on coordination of AI sectorial facilities that were established in the first WP (i.e. health, smart communities, manufacturing, and agriculture) (Section 2.3), as well as Support to AI act and new actions for deployment of innovative AI solutions in health and care and in local communities.

The budget for the topics included in this chapter is EUR 377 million, distributed as follows:

- EUR 96 million for topics supporting the deployment of the cloud-to-edge infrastructure and services;
- EUR 151 million for topics deploying the sectorial data spaces and the related support activities including actions on Digital Product Passport;
- EUR 130 million for topics implementing the AI including sectorial Testing and Experimentation Facilities, support to AI Act compliance, and AI for health and care and local communities.

2.1 Cloud-to-edge Infrastructure and Services

The 2021-2022 WP aimed at equipping Europe with world-class interconnected (i.e., federated), trusted, interoperable and sustainable cloud-to-edge capabilities (infrastructures, platforms, marketplaces, services and testing and experimentation facilities for edge AI). These targeted infrastructures and services will also serve common data spaces and enable a swift uptake of emerging technologies such as artificial intelligence, Blockchain, Internet of Things, High Performance Computing and big data. This ambition materialised around three topics: 1- a large-scale modular and interoperable open-source smart European cloud-to-edge middleware platform. 2- large-scale pilot projects aiming at the deployment at scale of innovative, sustainable, secure and cross-border cloud-to-edge based services applied in a set of well-chosen application sectors. 3- deploy and operate an EU online marketplace for cloud and edge services. From the onset, this last topic was intended to

[25] Communication from the Commission, A European strategy for data; COM/2020/66 final

launch a financially self-sustainable marketplace and the Commission will therefore not further finance it.

This WP also sees new topics that will complement the portfolio launched in the 2021/2022 WP.

- First, the Cloud IPCEI Exploitation Office will support the overall exploitation, dissemination, monitoring, sustainability integration and governance of the activities of the pre-notified Important Project of Common European Interest on Next Generation Cloud and Edge Infrastructure and Services (IPCEI-CIS) via a Cloud IPCEI Exploitation Office to the benefits of all interested Member States.
- Second, addressing a narrow but strategic gap in European technological autonomy, the development of a highly secure collaborative platform for the aeronautics and security industry.
- Third, reference deployments of European cloud-edge services fostering integration of different edge solutions from the telecom and industrial sectors, providing European digital infrastructures that satisfy the needs of citizens, businesses, and public administrations.

Cloud computing service providers fall within the scope of Directive (EU) 2016/1148 of the European Parliament and of the Council concerning measures for a high common level of security of network and information systems across the Union (NIS Directive)[26]. The revised NIS Directive (Directive (EU) 2022/2555 of the European Parliament and of the Council (NIS 2 Directive)[27] of 14 December 2022 includes among others also data centre service providers in the directive's scope. The NIS 2 Directive highlights the necessity for entities in its scope to address the cybersecurity risks stemming from an entity's supply chain and its relationship with its suppliers, given the prevalence of incidents where entities have fallen victim to cyber-attacks compromising the security of their network and information systems by exploiting vulnerabilities affecting third party products and services. Consequently, the participation in these calls is subject to Article 12(6) Regulation (EU) 2021/694 as further detailed in Appendix 3. This will contribute to mitigating the threats to network and information systems used to provide essential services in key sectors and ensure the continuity of such services when facing cybersecurity incidents, thus contributing to the Union's economy and society to function effectively.

In addition, all eligible entities should include in their proposal on actions subject to Article 12(6) evidence on how they will prevent international transfer or governmental access to data held in the Union where such transfer or access would create a conflict with Union law or the national law of the relevant Member State, and how they will deal with confidentiality of the information and include evidence of their security expertise. All selected entities implementing such actions shall have the obligation to prevent access by non-eligible third countries or by non-eligible third country entities to classified and non-classified sensitive information. When applicable, the persons involved in the actions subject to Article 12(6) will have national security clearance issued by a Member State.

2.1.1 Cloud IPCEI Exploitation Office

Objective

This action will support the overall coordination, monitoring, dissemination and long-term exploitation of the activities within the pre-notified Important Project of Common European Interest on Next Generation Cloud and Edge Infrastructure and Services (IPCEI-CIS) via the set-up of a Cloud

[26] Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (OJ L 194, 19.7.2016, p. 1–30).

[27] Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive) (OJ L 333, 27.12.2022, p. 80–152).

IPCEI Exploitation Office.[28] The Office's objective is to disseminate the results of this IPCEI and contribute to the exploitation and re-use of its solutions including by those interested Member States, companies and Research and Technology Organisations (RTOs) that will not be participating in the IPCEI-CIS.

The pre-notified IPCEI-CIS aims at developing and industrially deploying, for the first time, a fundamentally new, innovative, secure and sustainable data processing production process spanning across the European Union. It will develop and deploy breakthrough technological cloud and edge computing capabilities and very high added value data processing industrial services.

Member States envisage to support the IPCEI-CIS with State aid and to this end will notify their individual projects under the IPCEI State-Aid Communication to the Europeans Commission's Directorate General of Competition. The IPCEI Exploitation Office will not interfere with the individual responsibility of the Member States or companies to implement the Commission decision on the IPCEI-CIS but will regularly report on and monitor the progress set out in the Commission's decision on State-aid.

The pre-notified IPCEI-CIS will contribute to existing European initiatives, in particular to the European Green Deal[29], the European Industrial Strategy[30], the Digital Compass[31] and directly to the implementation of the High Impact Project of the European Strategy for Data.[32]

Scope

This action consists in providing at least the following core strategic and support activities via the set-up of a Cloud IPCEI Exploitation Office that will maximize the benefits and exploitation of the developed IPCEI solutions towards all interested Member States, companies and RTOs:

Management and Operations Activities:

- Monitoring and reporting. This should include: (i) the IPCEI project deliverables - including the new solutions developed and industrially deployed - their impacts and timing, (ii) the key performance indicators associated to each of the IPCEI-CIS project spill-over activities; (iii) the sustainability performance and security features of the integrated IPCEI project and (iv) macro-project[33] outcomes.
- Where necessary, risk mitigation activities to guarantee effective and timely delivery and reuse of all the IPCEI-CIS project deliverables.
- The necessary ICT tools to the functioning and use of the pre-notified IPCEI-CIS activities and solutions, notably to (i) allow both IPCEI participants and non-participants to secure and effectively collaborate and (ii) ensure external communication activities.
- Support the applications process and alignment of the assessment process of potential new participants.

Sustainability Activities:

[28] Action is subject to completion of the notifications process and assessment of the IPCEI compliance with the State Aid rules. Pre-notification by 12 Member States has taken place in April 2022.

[29] A European Green Deal, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

[30] European industrial strategy, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

[31] Europe's Digital Decade: digital targets for 2030 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

[32] European data strategy, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-data-strategy_en

[33] Macro-projects under the IPCEI-CIS aim to provide a deeper level of European integration to commonly achieve the objectives of the integrated project, by delivering common results, products or services.

- Support the development of the medium-term sustainability strategy, governance and decision-making process of the pre-notified IPCEI in close collaboration with the governmental Authorities participating in the IPCEI-CIS and the European Commission.
- Develop joint approaches to ensure that project results stemming from the IPCEI-CIS (such as open-source software technologies) will be maintained and regularly updated.

Dissemination and Exploitation Activities:

- Support the pre-notified IPCEI-CIS main dissemination and exploitation activities to reach scale beyond the IPCEI participants including in preparatory activities, organization, logistics and content materials for each of its key events and meetings.
- Foster transparency of the pre-notified IPCEI-CIS activities and wide uptake of the new innovative cloud-to-edge solutions to be first industrially deployed by for example preparing IPCEI-CIS communication materials, including social media content, to regularly and at large scale communicate about the status and content of the IPCEI-CIS activities, projects and new deployed solutions that all interested stakeholders have regular access to up to data information.

The consortium could be structured around public or/and private organisations, used to conduct complex and large coordination and management work with public authorities and private organisations, to monitoring of technical deployments (notably security and sustainability aspects), and that are capable to demonstrate a good technical and policy understanding of the domain at European level.

Deliverables

The Cloud IPCEI Exploitation Office should provide at minima:

- Yearly activity management plans for the pre-notified IPCEI-CIS, including key project deliverables, milestones, risk mitigation measures and a description of roles and responsibilities in form of a RACI[34] matrix. This should build on targeted and granular data collection among IPCEI individual and macro-projects in the context of the upcoming requirements under the Digital Compass and the Recovery and Resilience Facility.
- A dedicated Cloud IPCEI Exploitation Office website for dissemination purposes with wide reach and a collaborative platform accessible to both IPCEI and non IPCEI participants.
- A medium-term sustainability roadmap and governance strategy for the pre-notified IPCEI.
- Key events, meetings and summary reports of the General Assemblies, Board meetings and industrial sessions to be made accessible in the Cloud IPCEI Exploitation Office website.
- Build a dissemination and exploitation strategy, yearly social media campaigns and the corresponding content to support an active visibility and transparency of the pre-notified IPCEI-CIS activities and technological solutions first industrial deployed and their uptake across all interested stakeholders.

Type of action	Coordination and support action grant
Indicative budget	EUR 3 million
Indicative call planning	First set of calls
Indicative duration of the action	36 months
Implementation	European Commission

[34] RACI stands for Role, Accountability, Consulted and Informed.

Type of beneficiaries	Public or/and private organisations
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

In consistency with WP 21-22, this topic will be subject to Article 12(6) of Regulation (EU) 2021/694 because the Cloud Exploitation Office will, inter alia, manage security requirements of the new cloud and edge solutions that will be developed under the IPCEI on Next Generation Cloud Infrastructure and Services. Such information constitutes non-public sensitive information about how the deployment of future critical cloud and edge infrastructures and services will be made across the Union from a technical security standpoint, notably in sensitive sectors such as defence, critical infrastructures, or cybersecurity.

2.1.2 Highly Secure Collaborative Platform for Aeronautics and Security Industry

Objective

The objective is to develop a commercially viable highly secure cloud-based collaborative platform for the management of sensitive multi-country industrial initiatives in the aeronautics and security sector, including civil security.

This platform will allow the development of highly sensitive industrial projects, from design to production. In particular, the platform should be able to support the development of products and services financed under future calls of the European Defence Fund.

The need for a new platform derives from the very specific requirements from the aeronautics and security sector. Over the years, the European industry in general has embraced several paradigm changes resulting from new ICT capabilities: collaborative platforms, co-design, concurrent engineering, decentralised and multi-supplier collaboration, the virtualisation of software and hardware, etc. But the aeronautics and security sector has only embraced such changes with caution, if at all. This is due inter alia to different national standards for the classification of data, complex user-access requirements or justified localisation obligations for data infrastructures, typically on the grounds of public security. Such situation has become untenable and seriously undermines the sector's competitiveness against other world's regions, not the least against an international context that implies the multiplication of multi-country and multi-stakeholders' projects.

Scope

The highly secure collaborative platform should:

- Allow the aeronautics and security sector to reach a similar level of decentralised/distributed working along its supply chains as other sectors already enjoy today (e.g. the automotive sector).
- Be cloud-based (i.e. operated from a highly-secure cloud infrastructure), as opposed to require on-premises[35] software deployment.
- Provide for a broad range of secure and user-friendly collaborative tools including general purpose collaboration tools (messaging, wikis, file sharing, videoconferencing, chat) as well as more advanced tools (computer-assisted design, product lifecycle management, data analysis etc.).
- Provide for a stack as deep as needed to cater for the specificities of the aeronautics and security sector, including where applicable at IaaS and PaaS levels.

[35] On-premise refers to data infrastructures that the user has to operate itself.

- Cater for state-of-the-art security, interoperability, reversibility, sovereignty and sustainability standards.
- Allow for the concurrent management of different industrial programmes without the need to duplicate the platform (for each programme/country/contractor/etc).
- Be anchored in the security requirements specific to the aeronautics and security sector.
- Cater at minima for the specific needs of information classified at the level of RESTRICTED and equivalents (cf. equivalence table in Council Decision 2013/488/EU and Commission Decision (EU, Euratom) 2015/444), and allow ad-hoc segregation to handle specific national needs or requirements. To the extent possible, the collaborative platform should provide sufficient safeguards so that physical segregation of data is no longer required.
- Incorporate, where appropriate, the outcome of a possible process for defining an EU-level single set of rules and accreditation for data sharing in the aeronautic and security sector.
- Allow for the evolution over-time of the platform, given the very long industrial cycles specific to the aeronautic and security sector (50+ years).
- Allow for multi-cloud tenancy.
- Be tested in quasi-real situations, for example by using it in a real co-design situation which, in reality, does not imply particular confidentiality but where hard user access controls are simulated.

The following items fall outside of the scope:

- the provision of the hardware infrastructure to deploy and operate the platform.

The consortium should be structured around private stakeholders (typically: software vendor, data infrastructure providers, aeronautic and security stakeholders, cybersecurity stakeholders). However, to maximise its impact, public authorities, in particular Ministries responsible for national security, home affairs and/or defence, should as well integrate the consortium. Higher education entities, and research and technology organisations with demonstrated cooperation with the above-mentioned public/private stakeholders could also join the consortium where they can make a distinct contribution to the development of the envisaged platform.

Deliverables

- A commercially viable highly secure cloud-based collaborative platform for the management of industrial programmes in the aeronautics and security sector.
- The governance implications that the operations of such a platform would have on the sector, notably how such platform can operate, be deployed, be accessed, and how projects can be managed through their lifecycle.
- A significant contribution to the discussions for an EU-level single set of rules and accreditation for data sharing in the aeronautic and security sector.

Type of action	Simple grant
Indicative budget	EUR 22 million
Indicative call planning	First set of calls
Indicative duration of the action	36 months
Implementation	European Commission

Type of beneficiaries	Private companies, public authorities, higher education entities and research and technology organisations
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This topic will be subject to Article 12(6) of Regulation (EU) 2021/694 because a project in the aeronautics and security sector is intrinsically linked to questions of security.

2.1.3 Cloud Federation / Smart Middleware for a European cloud federation and for the European data spaces (Simpl)

Objectives

Under the WP 2021/2022, this topic served to procure an open-source large-scale, modular, secure, energy-efficient and interoperable European cloud-to-edge smart middleware platform, now called *Simpl-Open* under the overarching brand of *Simpl*[36]. The budget allocated under that first WP secured the development of *Simpl-Open* until at least 2025.

In 2024, the objective is to complement *Simpl-Open* with two ancillary products: *Simpl-Labs* and several instances of *Simpl-Live.*

Scope

Under *Simpl-Labs*, the Commission will procure and make available to stakeholders interested in Data Spaces and Cloud Federation a suite of tools and services to:

- experiment with a reference deployment of *Simpl-Open* to test its latest functionality before possibly adopting it, or parts of it, for their own needs;
- assess how much their own Data Space or Cloud Federation is compliant with *Simpl-Open* and assess its level of interoperability with other Data Spaces and Cloud Federations in their diversity.

Under *Simpl-Live*, the Commission will support all Data Spaces and Cloud Federations funded under Digital Europe Programme in the deployment of their respective instances of *Simpl-Open*. This will include for instance the deployment of *Simpl-Open* in the Data Spaces (e.g. the Language, the Manufacturing, the Energy etc) as well as in the European Open Science Cloud and in Destination Earth.

Deliverables

- For *Simpl-Labs*, a publicly available platform and the associated services for stakeholders to experiment *Simpl-Open* and test their own Data Space and Cloud Federation.
- For *Simpl-Live*, the implementations and operational support of *Simpl-Open integrations* within the respective Data Spaces and Cloud Federations.

In all cases, the work will feed back into the development of *Simpl-Open* itself so that the achievements can benefit the community at large.

Type of action	Procurement

[36] Simpl: cloud-to-edge federations and data spaces made simple https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

Indicative budget	EUR 41 million
Indicative time	End 2024
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries	Not applicable
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

The procurement(s) under this topic will be conducted using the framework contracts signed in the context of Work Programme 2021-2022 for the first phase of this topic for which participation was restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694. The reason for the restriction is that cloud computing service providers fall within the scope of Directive (EU) 2016/1148 of the European Parliament and of the Council concerning measures for a high common level of security of network and information systems across the Union (NIS Directive)[37]. The revised NIS Directive (Directive (EU) 2022/2555 of the European Parliament and of the Council (NIS 2 Directive)[38] of 14 December 2022 includes among others also data centre service providers in the directive's scope. The NIS 2 Directive highlights the necessity for entities in its scope to address the cybersecurity risks stemming from an entity's supply chain and its relationship with its suppliers, given the prevalence of incidents where entities have fallen victim to cyber-attacks compromising the security of their network and information systems by exploiting vulnerabilities affecting third party products and services.

2.1.4 Reference deployments of European cloud-edge services (industrial IoT Edge and Telco Edge developments)

Objective

Edge computing is the essential technology to cope with the requirement for highly distributed and decentralised data processing identified in the European Data Strategy. Edge computing will process and extract value from the ongoing data deluge triggered by the widespread deployment of connected objects and sensors, such as connected cars, home appliances or manufacturing robots. Because it is an emerging market, edge computing represents a significant opportunity for European leadership, in economic, competitiveness, sustainability and data sovereignty terms.

Specifically, Telco Edge deployment, i.e. the deployment led by telecom operators of joint 5G and edge deployments, has the potential to be a driving force behind the growth of ultra-low latency data processing enabled by edge computing.

Telco edge deployment – combined with industrial IoT edge solutions where appropriate – will ensure access to data services with low latency (few milliseconds) across the entire European continent, providing European digital infrastructures that meet the needs of citizens, businesses, and public administrations.

The objective of this action is to setup one pilot demonstrating **Telco Edge deployment** and benefits obtained in key application areas and sectors. Furthermore, this topic intends to incentivise the balanced deployment of climate-neutral highly secure edge nodes across the EU (as per the Digital

[37] Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (OJ L 194, 19.7.2016, p. 1–30).

[38] Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive) (OJ L 333, 27.12.2022, p. 80–152).

Decade objectives), by focusing on integration and interoperability of Telco Edge and IoT Edge technologies (including open technical specifications and standards), and by targeting concrete use cases from a broad stakeholder base (including telecom operators, telecom equipment manufacturers, cloud service providers, and industrial IoT equipment providers). Wherever possible, this action should build on the results of the IPCEI on Cloud Infrastructures and Services (IPCEI-CIS). This action should foster integration of different edge solutions coming from the telecom and industrial sectors and ensure their effective interoperability, in view of overcoming siloed business strategies.

Scope

Proposals for a pilot project should target the deployment, take-up and up-scaling of Telco Edge Cloud, including their hardware and software frameworks, focusing on far Edge and near Edge installations (for example as part of 5G deployments) under real life conditions, and demonstrating smooth interoperability with on-device and on-premises Edge. Actions should showcase cross-border and balanced deployment across the EU and address key applications and sectors crucial for Europe's competitiveness and strategic autonomy, such as industrial IoT.

Such systems will create value by demonstrating a tight technology integration that includes everything from the most constrained devices at the Edge, to the interaction with highly performant cloud, demonstrating seamless integration and seamless interoperability of Telco Edge developments with Industrial Edge solutions. Ultimately, the aim is to incentivize the realisation of an adequate European Edge nodes deployment density. In particular, the pilot project should avoid siloed approaches to edge computing technology developments.

The pilot project should be co-designed and co-created in close cooperation between all the stakeholders involved, representing the complete value chain of Edge and Cloud computing both from the telco edge (including industrial edge) on the supply side, and addressing innovative and concrete services and solutions on the demand side.

The pilot project should address, when necessary, the standardization efforts needed to drive a transparent interoperability among these diverse edge computing environments and clouds. The pilot project should as well, where possible, re-use components of Simpl, and in any case, ensure that its outputs feed into its associated Open-Source community.

The selected project should act as a showcase for the whole of the Union, providing examples of Edge nodes deployment at adequate densities, and show how it could be taken up in multiple application sectors by clearly demonstrating its added-value and its impact.

Deliverables

- Deployments and Implementation of Edge solutions evenly distributed across the European territory and demonstration of its use in key applications and sectors.
- A robust strategic industrial cooperation in diverse Edge computing architectures and standards, critical to establishing a mature European supply chain.
- Demonstration of seamless interoperability, uptake and scaling-up of diverse edge computing solutions.

Type of action	Simple grant
Indicative budget	EUR 30 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months

Implementation	European Commission
Type of beneficiaries	Private organisations with a proven expertise in Industrial IoT Edge or Telco Edge developments.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reason. The action will support a pilot project for the deployment, take-up and up-scaling of Telco Edge Cloud. Given the sensitive confluence of cloud, edge and telecom infrastructures that includes the development of 5G technologies, this poses increased security risks due to the multiplication of (potentially unsecure) entry points in an edge network, which might be at risk of malicious action by individuals, groups or regimes that would attempt to compromise, distort or disclose data in the data infrastructures, thus compromising the availability of the service and the integrity of the information/data used for/within that service. Moreover, the participation of non-EU entities entails the risk of this sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.2 Data for EU

To facilitate the development of the data market and the general capitalisation of data, the Commission is investing in **common European data spaces** in strategic economic areas and areas of public interest, such as health, the Green Deal and transport. The data spaces bring together data, data infrastructures and governance structures in order to facilitate secure data pooling and data sharing, a pre-condition for wider availability of data across the economy and society. The data spaces aim to integrate data, data infrastructures, and governance structures with the purpose of facilitating secure pooling and sharing of data. This is essential for making data more widely accessible across the economy and society. The goal is to ensure fair access to data while adhering to EU regulations and values, enabling cross-border services and fostering collaboration among diverse stakeholders. It is important for the data spaces to be scalable and encourage broad participation, while also striving to be interoperable with national solutions whenever feasible and available.

To enhance economies of scale, develop ecosystems across sectors and secure the European data value chain, data spaces should use, in so far as possible and when available, the smart cloud-to-edge middleware platform Simpl[39].

Under the WP 2021-2022, the basis was laid for the development of 12 data spaces in line with the European data strategy. The work on the data spaces is accompanied by a review of the policy and

[39] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple-updated-august-2023

legislative framework for data access and use, with the Data Governance Act[40] and the Data Act,[41] as well as the Implementing Act on High-value datasets[42] under the Open data directive[43] adopted on 22 December 2022.

To ensure the continuation of the work, this WP will provide funding for:

- further development of individual data spaces,
- the development of the common platform for European open data covering datasets from EU, national, local, regional and geo portals,
- a new action on Digital Product Passport.

Services based on data available through data spaces will become more and more essential for the proper functioning of critical infrastructures. Any interruption on the access to data would cause disruptions and affect security or public safety.

Given that the data spaces will also provide a major source of data for AI-based applications and development, their integrity and security is essential also for the secure and proper functioning of systems aiming to process and exploit such data, including data analytics and AI systems.

It is expected in general that data spaces will be subject to a number of risks that should be addressed. Notably, the risk of malicious action by individuals, groups or regimes that would attempt to compromise, distort or disclose data in the data infrastructures, thus compromising the availability of the service and the integrity of the information/data used for/within that service. The addition of unsecure elements by unauthorised users can undermine the security features of other elements. Moreover, data spaces will be combined, aggregated, recomposed and in many cases software-defined working on top of common or overlapping infrastructures. If such data spaces do not provide the same level of reassurance from the outset, the combined data will always lead to the lowest common denominator for security, which will weaken the trust that organisations have in those data spaces. Furthermore, the exploitation and use of the data will often require access to several data spaces, and the interlinking of access infrastructure will make the whole dataspace ecosystem even more reliant on a common high level of security.

In this context, the security risks should not be assessed separately sector by sector (or data space by data space) but at a more general and systemic level. Some data spaces will be using common infrastructures and tools, which means that security risks for one data space would also affect the others. In addition, the utility that can be extracted from data (but also the risk related to abuse) increases exponentially when data from different sources and sectors are combined.

As a consequence, some of the data spaces will be subject to the provisions of the Article 12(6) of the Regulation (EU) 2021/694 on the specific grounds of public order and inner stability, protection of data privacy and fight against fraudulent and deceptive practices. The reasoning is twofold:

- First, there is a need to have trustworthy operators developing and running these data spaces so they can be protected from malicious attacks and be trusted by private and public stakeholders to entrust their data.

[40] Regulation (EU) 2022/868 of the European Parliament and of the Council of 30 May 2022 on European data governance and amending Regulation (EU) 2018/1724 (Data Governance Act), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R0868

[41] European Parliament and the Council of the EU reached the political agreement reached on 28 June 2023 on the Data Act: Proposal for a Regulation on harmonised rules on fair access to and use of data, https://digital-strategy.ec.europa.eu/en/library/data-act-proposal-regulation-harmonised-rules-fair-access-and-use-data

[42] https://digital-strategy.ec.europa.eu/en/news/commission-defines-high-value-datasets-be-made-available-re-use

[43] 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 (recast), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L1024

- Second, these topics will create an ecosystem of trust aiming to facilitate the reuse and take up of the data covered, and thus economic growth. Having different and separate security conditions for the abovementioned data spaces, and/or dividing each thematic data space into more and less sensitive sections, with different operators and levels of interconnection, would damage the ecosystem of trust as well as the desired take up with its positive economic consequences, implying higher transaction and interoperability costs and discourage, in particular, SMEs.

2.2.1 Data Spaces

2.2.1.1 Data Space for Cultural Heritage

This action will continue the deployment of an operational data space for cultural heritage. The objective is to make more high-quality content available, particularly in 3D, foster reuse of digitised cultural resources and provide more opportunities for the community to offer enriched services, thanks to the use of advanced technologies.

It will build on the work launched under the previous WP, which consists of two work strands:

First work strand

The first work strand will provide funding to the continuation of the deployment of the data space for cultural heritage through procurement, for easy, efficient and trusted access to European digital cultural data. It will promote its use and reuse in areas such as the cultural and creative sectors, tourism, education and scientific research, and develop capacity for cultural heritage institutions and professionals as well as those interested in reuse.

Scope

Under this work strand, the technical infrastructure of the data space will be further developed, integrating shared technologies, tools and services from supporting projects and of the data spaces technical framework, building on the Europeana digital service infrastructure and, in so far as possible, the smart cloud-to-edge middleware platform Simpl[44]. Work will progress towards a multilingual, fully fledged data space, with more decentralised data sharing mechanisms, and a governance set up that will secure easy, cross-border access to cultural heritage datasets, in alignment with the specifications on common features of data spaces set out by the Data Spaces Support Centre. The deployment of the data space for cultural heritage will also continue to develop opportunities and incentives for use and reuse and to provide capacity building mechanisms and frameworks, leading to the digital transformation of the cultural sector.

Deliverables

- Further development and operation of the data space infrastructure
- Increased availability of high-quality data through effective aggregation processes
- Capacity building to support the digital transformation of the Cultural Heritage sector
- Fostering use and reuse of available data
- Multilingual digital services to larger and more diverse audiences

Complementarity will be sought with the new European Collaborative Cloud for Cultural Heritage to be developed under the Horizon Europe programme and the EIT Culture and Creativity, by establishing links to actions of these initiatives as appropriate. Additional complementarities may be sought with

[44] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

the actions in the new Work Plan for Culture 2023-2026. Synergies with the New European Bauhaus initiative are also encouraged.

Second work strand

The second work strand consists of grants supporting cultural heritage institutions in making use of technologies and linking up to the data space. It focuses on seizing the opportunities of advanced technologies for increasing the quality, sustainability, use and reuse of the data, as well as building digital capacity in the cultural sector by collaborating with existing and relevant European, national and regional initiatives and platforms.

Complementarity will be sought with the new European Collaborative Cloud for Cultural Heritage to be developed under the Horizon Europe programme and the EIT Culture and Creativity, by establishing links to actions of these initiatives as appropriate. Additional complementarities may be sought with the actions in the new Work Plan for Culture 2023-2026. Synergies with the New European Bauhaus initiative are also encouraged. The awarded projects will increase the offer of 3D and extended reality (XR) content in the common European data space for cultural heritage and will help advance the digital transformation of the cultural heritage institutions, as well as the reuse of such content in other domains, such us tourism or education.

Scope

- Setting or extending the necessary frameworks and tools for the availability of advanced 3D and XR data in the data space for cultural heritage, including know-how references and knowledge sharing;
- Collaborating with existing and relevant European national and regional initiatives and/or platforms for 3D digitisation of museum artefacts, monuments and sites, and XR application in cultural heritage. A particular attention will be given to cultural heritage monuments and objects at risk of war damage, natural disasters, etc.;
- Enriching the offer of 3D and XR data in the data space;
- Offering online experiences for the public based on 3D and XR;
- Fostering the re-use of cultural heritage XR and 3D data in important domains such as education, social sciences and humanities, tourism and the wider cultural and creative sector.

Deliverables

- Frameworks, tools, technologies, storage and processing capacities for making advanced 3D and XR data available in the data space.
- High quality 3D and XR content and documentation made available in the data space.
- New high-value datasets available for re-use, in particular 3D datasets, including for conducting scientific research, preservation and restoration purposes, re-use by the cultural and creative sector and other domains such as education.
- Training and capacity building for cultural heritage institutions in making use of 3D and XR technologies.

First work strand:

Type of action	Procurement
Indicative budget	EUR 15 million
Indicative time	Extension of the current procurement contract

Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

Second work strand:

Type of action	Simple grant
Indicative budget	EUR 4 million
Indicative call planning	Second set of calls
Indicative duration of the action	24 months
Implementation	Executive agency HaDEA
Type of beneficiaries	Cultural heritage organisations, 3D and XR technology providers, academic and research partners, stakeholders in creative sectors, education, tourism, interested in re-use

2.2.1.1.1 Competence Centre for 3D - deployment

Objective

The online Competence Centre for 3D will support cultural heritage institutions (CHIs) in embracing 3D, advanced technologies and virtual worlds. The objective is to provide strong foundations in the form of knowledge, standards, best practices, skills, methodologies and open tools for CHIs to accelerate their digital transformation to advanced technologies, such as artificial intelligence (AI), three dimensions (3D), extended reality (XR) and virtual worlds, as well as promoting and allowing the reuse of such content in other domains, such as tourism or education.

The Competence Centre will bring together CHIs from the whole EU under one single umbrella, building on existing strategies and projects, particularly:

- The common European data space for cultural heritage,
- The Competence centre for the conservation of cultural heritage,[45]
- Any other relevant project about 3D, virtual worlds and the digital transformation of CHIs.

As a secondary objective, this Competence Centre will also reach out to Ukrainian CHIs to help them preparing to recover and rebuild after the war by identifying stolen, missing or damaged cultural heritage objects and monuments, and eventually allow reconstruction thanks to advanced digitisation, 3D and other advanced digital technologies. It will also collaborate with the Europeana Initiative to prepare one or more Ukrainian aggregators to contribute to the common European data space for cultural heritage.

Scope

This action will develop and deploy an online Competence Centre for 3D, as a rich and targeted reference place for 3D, XR, AI, virtual worlds and other advanced technologies, taken up by CHIs in their digital transformation. It will aim at supporting CHIs to benefit from the opportunities brought by such technologies, being an effective place to learn and refer about the digital transformation of CHIs, allowing 3D reuse of cultural heritage including for immersive experiences and sharing best

[45] https://www.4ch-project.eu/

practices on technical, legal and online publishing requirements, as well as increasing cooperation in the sector. As such it will be:

- Contributing to the creation and development of standards in the field, including semantic interoperability, in coordination with the data space for cultural heritage.
- Bringing together multidisciplinary expertise from the EU and act as a champion for the reuse and digital preservation of European cultural heritage at risk.
- Promoting the digital transformation of CHIs and the use of advance technologies following the objectives.
- Linking with national authorities in EU member states (plus Ukraine), CHIs and experts to facilitate establishing national 3D competence centres and allowing the availability of the whole knowledge base.

The active participation of data providers and users from the project's inception is highly recommended since it will ensure that the Competence Centre is designed and structured to meet their needs, making the data space more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the project's runtime.

Deliverables

During the action, the project shall deliver:

- Services, open tools, methodologies, best practices, etc. in a knowledge centre accessible by CHIs from the whole European Union, and demonstrate its significant impact on the European CHI ecosystem;
- successive iterations of the services, tools, methodologies and best practices, demonstrating that the knowledge centre can efficiently help CHIs as soon as possible during the indicative duration of the action;
- common standards in the domain of digital cultural heritage, and particularly in 3D and virtual worlds;
- at least five new high-quality 3D objects and virtual worlds scenarios, as defined in the common European data space for cultural heritage, as well as enriching at least 20 existing ones, all made available in the common European data space for cultural heritage;
- a long-term data sustainability plan of the Competence Centre incorporating open access and open licensing information and standards. All data and information deployed by the action shall remain accessible at least five years after the end of the project.
- Interoperability (both technical and licenses), availability and medium and long-term sustainability of the produced 3D models, data and deliverables needs to be ensured.

Type of action	Simple grant
Indicative budget	EUR 3 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries	Cultural heritage institutions, 3D and XR technology providers, academic and research partners,

	stakeholders in creative sectors, education, tourism, interested in re-use

2.2.1.2 Data Space for Tourism

Objective

The objective is to develop a trusted and secure common European data space for tourism, which will provide the ecosystem with access to information, with an impact on productivity, greening and sustainability, innovative business models and upskilling. It will give the possibility of aligning offers to tourists' expectations, adapting service proposals to new tourist groups, predicting a high influx of tourists, and thus allow planning of resources more efficiently, and creating new business opportunities.

The data space for tourism will be closely connected to other sectoral data spaces, such as the data space for cultural heritage. The work will build on the outcome of the two preparatory actions selected in the previous WP.

Scope

Develop and deploy the data space and its infrastructure on the basis of the blueprint elaborated under the preparatory action of the previous WP. Further engage the ecosystem's community and ensure the interconnection with European, national and local initiatives, in both urban and rural settings, as well as with other sectoral data spaces.

Develop pilot use cases for different data types and fields of activities related to tourism, for example in the area of accommodation supply and demand data, combining data from public and private providers in view of the upcoming Short Term Rental legislative initiative[46] on a voluntary basis.

The awarded project(s) will use, in so far as possible, the smart cloud-to-edge middleware platform Simpl,[47] and work in partnership with the Data Spaces Support Centre deployed under the first WP[48] in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of Digital Europe Programme. The projects should have sufficient activities to lead to sustainability at the end of the action. The joint work will target the definition of:

- the data space reference architecture, building blocks and common toolboxes;
- the common standards, including semantic standards and interoperability protocols, both domain-specific and cross-cutting;
- The data governance models, business models and strategies for running data spaces.

Deliverables

- Infrastructure for the Tourism Data Space.
- Connections between relevant local and national data ecosystems and initiatives at EU level.
- Establish connections with other sectoral data spaces.
- Guidance/training documents to involve stakeholders in sharing data.
- Exploitation of available data for better interconnection, exchange of information and re-use.

[46] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on data collection and sharing relating to short-term accommodation rental services and amending Regulation (EU) 2018/1724 (2022/0358 (COD)) https://single-market-economy.ec.europa.eu/system/files/2022-11/COM_2022_571_1_EN_ACT_part1_v7.pdf

[47] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

[48] Project implementing the topic 2.2.2.1 from the Commission Decision C (2021) 7914 final, adopting the Main Digital Europe Work Programme for 2021-2022.

- Once the data space is operational, regular updates on usage data and troubleshooting.

Type of action	Simple grant
Indicative budget	EUR 8 million
Indicative call planning	Second set of calls
Indicative duration of the action	36 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Public and private entities such as (but not limited to) public administrations and/or governmental bodies, economic actors/SMEs, relevant associations, alliances and NGOs, academia/universities/research organisations, etc.).

2.2.1.3 Language Data Space

Objective

Following the initialisation of the Language Data Space (LDS) in the previous WP, which covers the establishment of the institutional Centre of Excellence for Language Technologies (CELT) and the deployment of the LDS platform and marketplace, the objective is now to sustain the development of its ecosystem. This entails (i) collecting, creating, sharing and re-using multilingual and multimodal language data and models, (ii) transferring and integrating the eLangTech portal (previously known as the CEF Automated Translation Core Service Platform or eTranslation portal) into the LDS, and (iii) fostering the creation of AI language technology services which are necessary for the support and promotion of the established ecosystem.

The migration of eLangTech to the LDS will ensure, on the one side, continuation, maintenance and upgrade of the eLangTech tools and services and, on the other, their operational synchronisation, together with higher uptake in the public and private sector and enhanced visibility of the LDS.

Language coverage will focus on the official languages of all EU Member States and affiliated countries, and may extend to other socially and economically relevant languages, to support the European Union's equality, inclusion and accessibility efforts as well as its international market competitiveness and commercial growth.

The objective is also to support the initiative taking into account the potential creation of a European Digital Infrastructure Consortium (EDIC).

Scope

Aligned with the previous WP, support to the Language Data Space will be provided through three work strands.

The first work strand will involve making new language datasets available, with a focus on inter-institutional ones, i.e., data from the Publications Office of the EU, collections of multilingual, aligned and labelled translation memories, and speech transcriptions from public conferences. This will increase the availability of updated European test and training language datasets to foster the creation, evaluation and deployment of multimodal language data models and services.

The second work strand will imply merging the eLangTech portal[49] into the LDS. In addition to the online access, the eLangTech tools and services will be delivered through APIs and containers into the

[49] Cf. https://language-tools.ec.europa.eu/.

LDS. Similarly, generic and domain-specific eLangTech language models will be made available on the LDS platform. As a result, the eLangTech portal and the catalogue of European language technologies services already integrated within the LDS, will gain visibility and reach a broader users' base for wider deployment and re-use, both in the private and public sector throughout EU Member States and Digital Europe Programme-affiliated countries.

The third work strand will focus on enhancing the quality and extending the range of the eLangTech portal, i.e., automated translation and speech technologies, anonymisation and other Natural Language Processing (NLP) tools and use cases, etc., while covering a broader set of socially and economically relevant languages.

The awarded tender project(s) will use in so far as possible the smart cloud-to-edge middleware platform Simpl[50], and work in partnership with the Data Spaces Support Centre deployed under the first WP[51] in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of the Digital Europe Programme. The tender projects should have sufficient activities to lead to sustainability at the end of the action. The joint work will target the definition of:

- the data space reference architecture, building blocks and common toolboxes;
- the common standards, including semantic standards and interoperability protocols, both domain-specific and crosscutting;
- the data governance models, business models and strategies for running data spaces.

Deliverables

First work strand:

- Providing a revised list of new datasets to be made available;
- Coordinating the collection, processing (e.g., adjustment of metadata, data formatting and standardisation, etc.), maintenance and legal clearance (data protection by default and by design, licensing schemes, LDS governance scheme, etc.) of the above-identified language datasets;
- Publishing the above-identified language datasets in the LDS in compliance with the LDS technical architecture and infrastructure, including metadata standards, the blueprint, etc.

Second work strand:

- Integrating the eLangTech portal into the LDS through online services, APIs and containers;
- Making eLangTech language models available in the LDS, taking account of both technical (LDS architecture and infrastructure building blocks) and legal aspects (data protection by default and by design, licensing schemes, LDS governance scheme, etc.) necessary for the publication in the LDS;
- Through the LDS, promote and ease the take-up of these language models amongst the Digital Europe Programme stakeholders.

Third work strand:

- Improving the quality of existing tools and services available through the eLangTech portal;
- Making new state-of-the-art AI-based language processing tools and services available in the LDS;
- Covering a wider range of socially and economically relevant languages, both the in the tools and services;

[50] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

[51] Project implementing the topic 2.2.2.1 from the Commission Decision C(2021) 7914 final, adopting the Main Digital Europe Work Programme for 2021-2022

- Providing user support for the tools and services of the eLangTech portal via the LDS.

Type of action	Procurement
Indicative budget	EUR 5 million
Indicative time	2023
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

2.2.1.4 European Green Deal Data Space

Objective

The objective of this action is to deploy an operational Green Deal Data Space (GDDS). The Action is expected to take into account all the latest developments in the data strategy and green deal landscape including the results of the Coordination and Support Action on "Preparatory actions for the Green Deal data space", funded under the WP 2021/22[52]It should also take into account the results from the Horizon Europe projects funded under HORIZON-CL6-2021-GOVERNANCE-01-17: Common European Green Deal data space to provide more accessible and exploitable environmental observation data in support of the European Green Deal priority actions.

The action will deploy a technical infrastructure and governance mechanism for the GDDS and related use cases. It will enable reusing and sharing data from existing relevant data ecosystems and dataspaces, which will feed new services and applications that contribute to reaching the objectives of the Green Deal.

Scope

The awarded proposal from this action is expected to focus on data space applications and use cases that contribute to the Green Deal overall, and specifically to the policy objectives set out in four initial focus areas: biodiversity, zero pollution, climate adaptation/mitigation, circular economy. The action will further help supporting and monitoring the implementation of the Council Recommendation on ensuring a fair transition towards climate-neutrality of 16 June 2022, including the primary objective to ensure an effective, fair and effective green and digital transition[53].

Applications and use cases impacting simultaneously many other relevant areas and clearly demonstrating links with relevant sectoral data spaces (e.g. energy, mobility, etc.) are strongly encouraged.

Particularly, synergies and joint-use cases with the following Digital Europe Programme actions are welcome:

- The operational data ecosystem for the development and operations of 'Digital Twins' of the Earth under the 'Destination Earth' topic (DestinE)
- The Digital product passports in the key value chains of electronics (consumer and/or industrial), batteries and at least another two of the priority products identified in the Circular Economy Action Plan

[52] https://www.greatproject.eu/

[53] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022H0627(04)

- The data space for smart communities, validated and refined through cross-sector data pilots, and paving the way for the adoption of Local Digital Twins

The awarded proposal will use, in so far as possible and when available, the smart cloud-to-edge middleware platform Simpl[54]. It will also work in close partnership with the Data Spaces Support Centre[55] in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of Digital Europe Programme, in particular in view of a data spaces reference architecture; common building blocks, toolboxes and standards; and data governance models.

The active participation of data providers and users from the project's inception is highly recommended since it will ensure that the data space is designed and structured to meet their needs, making the data space more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the project's runtime.

Deliverables

Awarded proposal(s) are expected to deliver a fully operational Green Deal data space, including:

- A GDDS governance mechanism;
- A GDDS technical infrastructure for integrating applications and use-cases supporting the initial four focus areas (zero pollution, biodiversity, climate adaptation/mitigation, circular economy) and beyond, while also seamlessly connecting previously fragmented green data infrastructures and operational data ecosystems, whether public or private;
- High-value, reusable datasets relevant for the European Green Deal;
- Stakeholder mapping and engagement, especially concerning the operational phase of the GDDS after the end of the action;
- Policy recommendations about regulatory interventions required to enable data flows and scale-up impactful use-cases identified by the action, and to enshrine the institutional roles of stakeholders inside the GDDS, their rights and obligations.

Type of action	Simple grants
Indicative Budget	EUR 8 million
Indicative call planning	Third set of calls
Indicative duration of the action	24-36 months
Implementation	European Commission
Type of beneficiaries	Public and private entities such as (but not limited to) public administrations and/or governmental bodies, economic actors/SMEs, relevant associations, alliances and NGOs, academia/universities/research organisations, etc.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. The action will contribute to the deployment of the Green Deal Data Space, which will interface with pivotal systems such as energy grids, water supply networks, raw materials and satellite data among

[54] https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

[55] See https://dssc.eu/

other essential utilities, These systems might be at risk of malicious action by individuals, groups or regimes that would attempt to compromise, distort or disclose data in the data infrastructures, thus compromising the availability of the service and the integrity of the information/data used for/within that service. Moreover, the participation of non-EU entities entails the risk of this sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.2.1.5 Data Space for Skills (deployment)

Objective

The objective is to develop and deploy a secure and trusted data space for skills. Data is at the core of skills, education, training and employment, offering enormous potential for innovative applications. Databases of job offers, qualifications, learning opportunities, lists of curricula and certifications, inventory of topics studied at all levels of education and training, as well as skills classifications, can help better define human resource, business, employment as well as education and training policy strategies and add value for learners.

The data space for skills is a European Common Data Space for sharing and accessing skills data for various purposes, from analytical and statistical purposes to policy development or re-use in innovative applications in line with European values, with a particular emphasis on ethics, diversity and privacy.

Scope

The awarded proposal will integrate, test and deploy the data space for skills, based on existing technical building blocks and on the concept and design elaborated in the framework of the preparatory action on data space for skills. It will also provide continuous maintenance operations of the data space, monitor the usage of the data space and offer a helpdesk.

The awarded proposal will use, in so far as possible and when available, the smart cloud-to-edge middleware platform Simpl[56]. It will also work in close partnership with the Data Spaces Support Centre[57] in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of Digital Europe Programme, in particular in view of a data spaces reference architecture; common building blocks, toolboxes and standards, semantic interoperability; and data governance models. Right from the outset, the awarded proposal is expected to work towards achieving financial sustainability by the conclusion of the awarded proposal and consider relevant actions in this respect. Complementarity will be sought with other existing tools such as Europass, ESCO, European Digital Credentials for Learning, European Learning Model, EURES, the EU Digital Identity Wallet or Skills-OVATE, by establishing links to actions of these initiatives as appropriate.

The awarded proposal will closely collaborate with and integrate the work from a project funded in the call DIGITAL-2022-CLOUD-AI-03 which aims at delivering open building blocks for a data space supporting growth and education and take into consideration the work and recommendations of the preparatory action for the data space for skills launched under Digital Europe WP 2021-2022 (DIGITAL-2021-PREPACTS-DS-01-SKILLS)[58].

[56] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

[57] https://www.skillsdataspace.eu/

[58] https://www.skillsdataspace.eu/

The active participation of data providers and users from the project's inception is highly recommended since it will ensure that the data space is designed and structured to meet their needs, making the data space more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the project's runtime.

Deliverables

- Technical infrastructure for the deployment of the data space for skills;
- Data governance documentation, comprising a set of rules of legislative, administrative and contractual nature covering access rights, processing, using and sharing data in a trustful and transparent manner;
- Code of conduct and contract template;
- Guidance/training documents for the stakeholders willing to join the data space;
- Once the data space is deployed: quarterly and on an ad hoc basis reporting on usage, problems detected, and solutions provided;
- A report about the connection of the data space with EU initiatives on skills and qualifications data, such as for example initiatives linked to the Digital Skills & Jobs Coalition.

Type of action	Simple grant
Indicative budget	EUR 3 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Schools, higher education institutions, vocational education and training institutions, other education and training providers, businesses, Human Resources (HR) organisations and employment agencies, IT developers, other private and public actors (particularly in job search and recruitment services as well as data sharing), trade and industry associations, alliances and social partners

2.2.1.6 Energy Data Space

Objective

The objective is to deploy a reliable and secure common European data space for energy announced in the European Strategy for Data[59] and the EU Action plan on digitalising the energy system.[60] This data space will broaden access to data needed to develop innovative energy services that will help to balance and optimise the electricity grids and improve the energy efficiency of the built environment. It will play a key role in increasing the integration of intermittent renewable energy sources and thus advancing towards the goals set by the 'Fit for 55' package and the RePowerEU plan.

[59] https://digital-strategy.ec.europa.eu/en/policies/strategy-data

[60] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Digitalising the energy system - EU action plan, COM(2022) 552 final.

The energy data space will be closely linked to other sector-specific data spaces (e.g. mobility and smart communities) and will thus enable actors from various sectors such as building automation and electro-mobility to actively participate in the energy market, deliver energy services, and promote sector integration (the linking of the various energy carriers - electricity, heat, cold, gas, solid and liquid fuels - with each other and with the end-use sectors, such as buildings, transport or industry). This will allow them to contribute to the efficient use of energy, boost the use of renewables, and support the integration, collaboration and information exchange between different sectors as well as create new business opportunities.

Scope

Proposal(s) should foresee the deployment of the first version of a common European energy data space and its infrastructure on the basis of the blueprint elaborated under ongoing preparatory actions (see below). Any additional existing deployments (federated data sources or data hubs) in the Member States or at European level, should be considered and integrated as far as possible.

Specifically, proposals under this action should address:

- Deployment of a first version of a common European energy data space at scale (in at least 10 Member States) and identification and piloting of at least five use cases (e.g., distributed energy resources (DER) management, provision of flexibility services for electricity grids (e.g., grid balancing, congestion management, voltage control) based on digitally-enabled energy assets, smart and bi-directional electric vehicle (EV) charging (which could include dynamic energy optimization of large EV fleets, etc.) addressing at least two of the three policy priorities (high level use cases described in the EU Action plan on digitalising the energy system).
- Use a commonly agreed reference architecture, replicable and scalable building blocks, e.g., data models and formats, data exchange APIs, data provenance and traceability, metadata and service discovery, identity management / identification and authentication, data access and usage control arrangements, business agreements, operational agreements, governance agreements. In particular regarding data interoperability arrangements, the data space should be based on agreed minimal interoperability mechanisms that will align energy relevant key stakeholders on a set of minimal sufficient capabilities needed to achieve interoperability of data, systems and services between the key players of the energy value chains at all levels (European, national and local). Interoperability with other data spaces (e.g. mobility or smart communities' data space), on the appropriate level, shall be considered from the outset, whenever possible.
- Consider a complete set of common open standards, including semantic standards such as SAREF, ontology and data interoperability, both domain-specific and cross-cutting.
- Define suitable business models with the objective to ensure financial sustainability of the energy data space beyond the end of the project.
- Implement a governance system for overseeing the operations of the energy data space according to the defined business models.

The deployment of the energy data space will build on previous actions, in so far as possible, supported under the Horizon Europe programme and should leverage existing national or regional efforts.

The selected proposal(s) will use, in so far as possible and when available, the smart cloud-to-edge middleware platform Simpl.[61] They will also work in close partnership with the Data Spaces Support Centre in order to ensure alignment with the rest of the ecosystem of data spaces implemented with

[61] Simpl: cloud-to-edge federations and data spaces made simple (updated August 2023) | Shaping Europe's digital future (europa.eu)

the support of Digital Europe Programme, in particular in view of a data spaces reference architecture, common building blocks, toolboxes and standards; and data governance models. Right from the outset, the awarded proposal(s) is/are expected to work towards achieving financial sustainability by the conclusion of the action and consider relevant actions in this respect.

Relevant stakeholders to implement this action are all entities which have an active role in managing energy system operations and in energy markets, e.g. an increasing share of SME/midcaps of providers of energy services to consumers (data users) as well as all entities which conclude data agreement(s) in view of providing flexibility services.

The active participation of data providers and users from the project's inception is highly recommended since it will ensure that the data space is designed and structured to meet their needs, making the data space more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the project's runtime.

Deliverables

- (Technical) infrastructures for the common European Energy Data Space covering all the building blocks mentioned above and addressing the identified use cases.
- Suitable business models that ensure the maintenance and upscaling of the common European energy data space beyond the lifetime of the project and the accessibility of the federated date.
- Governance system for the common European energy data space.
- Biannual reports on connections between relevant local and national data ecosystems and initiatives at EU level, as well as with other sectoral data spaces.
- Guidance/training documents to involve stakeholders in sharing data.
- Once the data space is operational, regular reports on usage data and maintenance.

Type of action	Simple grant
Indicative budget	EUR 8 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries	Energy operators (including grid operators (TSOs and DSOs), technology providers, energy service providers (including aggregation and storage), ICT companies, system integrators, platforms providers, authorities, EV (charging) stakeholders, building (management) stakeholders (operating buildings e.g. managing and optimising their energy consumption, production and storage, etc.), data management stakeholders, cloud-edge stakeholders, telcos.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. The action will contribute to the deployment of the Energy Data Space, in which energy service providers will be allowed to exchange data on the management for example of the electricity grid or on the management of energy resources, which might be at risk of malicious action by individuals, groups or

regimes that would attempt to compromise, distort or disclose data in the data infrastructures, thus compromising the availability of the service and the integrity of the information/data used for/within that service. Moreover, the participation of non-EU entities entails the risk of this sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.2.1.7 Data Space for Manufacturing (deployment)

Objective

The goal of this action is to significantly scale up the deployment and use of the data space(s) for manufacturing by reaching a critical mass of manufacturing industries sharing industrial data and improving company operations. In addition, the action aims to support data-driven transition to a greener and circular economy, also by enabling new business models, for example, those based on a Manufacturing-As-A-Service approach and extended Reality for industrial virtual worlds. The action will also contribute to the implementation of measures that accelerate the twin green and digital transition of manufacturing industries, such as the proposed Net Zero Industry Act[62] as part of the Green Deal Industrial Plan[63].

Scope

Proposal(s) for this action need to target one of the following two use cases:

- Data-driven models for supply chain management and the role of data sharing in risk mitigation and response. Awarded proposal(s) will perform agile supply chain management and execution by continuously monitoring and exchanging status data on e.g. purchase orders, sales orders, inventory levels, order progress, demand and other forecasts, raw materials, chemicals and energy use and supply, etc. across segments of the value chain.
- Manufacturing data spaces using data to drive the transition to a greener and circular economy with enhanced business opportunities for industrial data value added services. End users are machine users, machine vendors, maintenance service providers, and remanufacturers.

The data spaces will specifically enable the compliance with standards and norms, including environmental requirements, product passports, and tax regimes.

The awarded proposal(s) should implement a secure, fair and trustworthy way of making data usable between actors in the value chain on the basis of voluntary agreements, in view of completing, deepening and expanding data sharing with other organisations. The implementation will need to be Data Act-compliant.

In addition, the proposal(s) for this action need to address the following mandatory activities:

- Bringing together relevant stakeholders to conclude data agreement(s) with reference to design, reuse, recycling, and environmental impact and indicators for continuous monitoring and exchange of data on product performance and reuse, material content and origin, feedback to design, product recycling, product remanufacturing, etc. Carrying out further activities to effectively track and report resource use (e.g. CO2) from a manufacturer's perspective. Actions

[62] COM(2023) 161 final

[63] COM(2023) 62 final

should preferably target data sharing for circularity in line with the Circular Economy Action plan (COM(2020) 98 final).

The action shall build on the results and recommendations of the preparatory actions under the previous WP. As the manufacturing sector is diverse and complex, the action specifically focuses on data spaces addressing management of supply chains.

Furthermore, there should be cooperation with the European Digital Innovation Hubs for broad uptake by industry as well as the Testing and Experimentation Facility for Manufacturing to define European test and training data sets and to provide support in their establishment.

The awarded proposal(s) will use, where possible and when available, the smart cloud-to-edge middleware platform Simpl.[64] They will also work in close partnership with the Data Spaces Support Centre in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of Digital Europe Programme, in particular in view of a data spaces reference architecture; common building blocks, toolboxes and standards; and data governance models. Right from the outset, the awarded proposal(s) is/are expected to work towards achieving financial sustainability by the conclusion of the action.

To measure outcomes, the proposals in this action will identify specific KPIs in the following areas:

- Business: increase of organisations participating in the Data Space, their geographical distribution and return on investment
- Technical: volume, quality and value of data exchanged; analysis of data actually used by several actors in the value chain
- Deployment: share of supplier/customer interaction having undergone automation, share of SMEs among data providers and data users.

The active participation of data providers and users from the projects' inception is highly recommended since it will ensure that the data space is designed and structured to meet their needs, making the data space more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the projects' runtime.

Deliverables

The awarded proposal(s) will set up and deploy data space(s) for manufacturing at scale, which will stay available after the runtime of the project, delivering industrial data sharing among manufacturing companies and service providers. The solutions must be characterized by a high degree of user-orientation in terms of trustworthiness, data sovereignty of the companies and manageability.

More specifically, awarded proposal(s) will need to deliver:

- Technical infrastructure for the deployment of the Common European Manufacturing Data Space(s).
- Data governance documentation, comprising a set of rules of legislative, administrative and contractual nature covering access rights, processing, using and sharing data in a trustful and transparent manner.
- Code of conduct and contract template.
- Guidance/training documents for the stakeholders willing to join the data space(s).
- Once the data space(s) is/are deployed: quarterly and on an ad hoc basis reporting on usage, problems detected, and solutions provided.

[64] See Simpl: cloud-to-edge federations and data spaces made simple (updated August 2023) | Shaping Europe's digital future (europa.eu)

Type of action	Simple grants
Indicative budget	EUR 13 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	All entities, with a focus on manufacturing SMEs and mid-caps, machine-tool industry, IT companies and integrators and related industry associations. The consortium will include at least suppliers and users as well as service providers, any other organisation (such as data brokers, data stewards, data integrators) participating in data interoperability activities and organisations
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. The action aims at scaling up the deployment to reach critical mass of the Manufacturing Data Space The action will also develop use cases and models on the base of sensitive data on manufacturing and distribution. This will also include industry sectors critical for national security, such as rare earth supply chain, which might be at risk of malicious action by individuals, groups or regimes that would attempt to compromise, distort or disclose data in the data infrastructures. The participation of non-EU entities entails the risk of this sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.2.1.8 Agricultural Data Space (Deployment)

Objective

The objective is to deploy a secure and trusted data space to enable the agriculture sector to transparently share and access data, allowing for an increase in its economic and environmental performance. The sharing of private and public data will provide a basis for applications and new services that will contribute to achieving the objectives of the EU Data Strategy, the Green Deal and the Common Agricultural Policy.

The objective is also to support the initiative taking into account the potential creation of a European Digital Infrastructure Consortium (EDIC).

Scope

The scope includes establishing and implementing an operational data space dedicated to sharing agricultural data. This endeavour encompasses deploying the data space, alongside instituting governance and business models for its operation. Engagement with the community is pivotal, ensuring alignment with European, national, and local initiatives, as well as with other sectoral data spaces. This initiative will also need to continuously monitor the data space in view of gauging its

effectiveness and relevance. The awarded proposal(s) will use, in so far as possible and when available, the smart cloud-to-edge middleware platform Simpl.[65] It will also work in close partnership with the Data Spaces Support Centre deployed under the first WP in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of Digital Europe Programme, in particular in view of a data spaces reference architecture; common building blocks, toolboxes and standards; and data governance models. Right from the outset, the awarded proposal(s) is/are expected to work towards achieving financial sustainability by the conclusion of the action and consider relevant actions in this respect. [66]
The project will need to take into consideration the work and recommendations of the preparatory action for the data space in agriculture and interoperability actions supported by the Digital Europe programme[67] as well as of the Horizon Europe Partnership Agriculture of Data.

The active participation of data providers and users from the project's inception is highly recommended since it will ensure that the data space is designed and structured to meet their needs, making the data space more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the project's runtime.

Deliverables

- Technical infrastructure for the Common European Agriculture Data Space.
- Data governance documentation, comprising a set of rules of legislative, administrative and contractual nature, that determine the rights to access, process, use and share data in a trustworthy and transparent manner.
- Provision of access to High Value Data Sets relevant for the EU Agricultural domain.
- Data-space specific Code of conduct and contract template relevant to the data space.
- Guidance/training documentation for the stakeholders willing to join the data space.
- Once the data space is deployed: quarterly report on usage; problem management along with documented solutions to overcome problems.

Type of action	Simple grant
Indicative budget	EUR 8 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries	Public and private entities such as (but not limited to) public administrations and/or governmental bodies, economic actors (SMEs, large organisations), relevant associations, academia/universities/research organisations, etc.

2.2.1.9 Public Procurement Data Space

[65] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

[66] www.dssc.eu

[67] Including the forthcoming action funded under the DEP WP 23/24 'Interoperability of data systems with spatial dimension in the field of agriculture'.

Objective

The objective is to significantly scale up the Public Procurement Data Space (PPDS)[68] that was developed under the previous WP, enhance its analytics capabilities and integrate the Smart middleware for the European Cloud Federation "Simpl" to connect to other data spaces. Member States have expressed their interest to connect their procurement data to the PPDS and the data space will be connected to other data sources, like business registers to understand the company structures.

Scope

Using the timeline provided in the Communication on the PPDS[69], the activities will be to:

- Support interested Member States to connect their national publication portals to the PPDS through the integration layer. The data will be mapped to the eProcurement Ontology, which is managed by the Publications Office of the EU in collaboration with user groups, to have a harmonized data format.
- Further develop the data analytics toolset and integrate mechanisms such as AI and others to help identifying patterns and monitoring policies like the Green Deal, and innovative or social procurement. As a concrete example, the new eForms notices provide the possibility for buyers to indicate that procurement procedures have a positive impact on the environment. This data will be collected and analysed. In addition, the Commission will improve the quality dashboard to give participating Member States feedback on data quality and data completeness and enable them to put in place or improve their own data quality management systems.
- Integrate historical data from TED and if possible, from national portals to be able to identify trends over the last decade and predict better future trends.
- Link the PPDS with existing data sources and data spaces available at EU and Member States level (e.g. beneficial ownership registers, business registers, eInvoicing, etc.) to be able to generate additional insights.

The PPDS is implemented progressively, so that the needs of Member States and other users can be taken on board while the implementation is ongoing. This collaborative approach will help to provide a useful product for various user groups both at national and at EU level.

Deliverables

- A PPDS that has access to more procurement data from interested Member States.
- New indicators that are developed together with Member States and other user groups.
- An improved data analytics toolset that includes AI/ML and NLP to identify patterns.
- Improved dashboards and functions to support different user groups better.
- Tighter integration of the PPDS and data.europa.eu for open data.
- Further integration with other data sources
- Enrich data with historical procurement data.
- Improved website to support different user groups better to make use of the PPDS.

[68] Internet website on the PPDS: https://single-market-economy.ec.europa.eu/single-market/public-procurement/digital-procurement/public-procurement-data-space-ppds_en

[69] Communication on the PPDS: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023XC0316%2802%29&qid=1678976891382

Type of action	Procurement
Indicative budget	EUR 3 million
Indicative time	2024
Indicative duration of the action	36 Months
Implementation	European Commission
Type of beneficiaries	Not applicable
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. The data managed by the Public Procurement DS includes sensitive information such as contract awards and conclusion of framework agreements, among others, whose unlawful disclosure might impact EU public order or impede law enforcement. The data space might be at risk of malicious action by individuals, groups or regimes that would attempt to compromise, distort or disclose data, thus compromising the availability of the service and the integrity of the information/data used for/within that service. Moreover, the participation of non-EU entities entails the risk of such sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.2.1.10 Common European mobility data space

Objective

The objective of this action is to contribute to the effective implementation of the Multi-Country Project (MCP) on European common data infrastructure and services with a focus on the mobility and transport sector. The action will support the creation of the common European mobility data space (EMDS), which will facilitate the access, sharing and reuse of data in the mobility and logistics sectors. It will support the implementation of the Communication on the creation of the EMDS. It aims to contribute to the sustainability of common data infrastructure and promote its large-scale adoption.

In line with the European Data Strategy, the action should contribute to creating a fair, competitive, and innovative data economy. It should help make the mobility and transport system smarter, more environmentally friendly and better adapted to the needs of its users, supporting the objectives of the Sustainable and Smart Mobility Strategy. The awarded proposal will have to take into account already existing data sharing initiatives at the European, national and local levels.

Scope

The awarded proposal should address the following activities:

1. Provide operational support to the establishment of a sustainable collaboration structure between Member States and other actors, taking into account the potential creation of a European Digital Infrastructure Consortium (EDIC).
2. Support, among the participants in the action and in the structure it seeks to establish, the exchange of information on available infrastructures, solutions, tools, agreements and standards related to the scope of the action, as well as the coordination across initiatives and projects in different countries and domains.

3. Analyse gaps in existing data and services infrastructure and propose measures to support the deployment, operation and maintenance of data and service infrastructure enabling mobility and logistics data access and exchange at the European level.
4. Assist, through financial support to third parties, the development of cross-border use cases focusing on real-life use cases based on mobility and logistics data sharing. These use cases should be implemented in several Member States, follow a coherent approach to interoperability and promote the sharing and reuse of best practices. Indicative areas for use cases are logistics, multimodal passenger mobility, cross-border sharing of e-mobility charging data and cross-border sharing of vehicle and driver data to check compliance with Urban Vehicle Access regulations, in particular Low Emission Zones.

All activities under this project will require close collaboration and alignment with existing and evolving EU initiatives related to mobility and transport data, in particular:

- NAPCORE and relevant National Access Points;
- DTLF and related projects under CEF;
- The CEF technical assistance project which aims at identifying and recommending common building blocks and governance models for the EMDS;
- The deployment action for the common European mobility data space (deployEMDS), especially regarding the development of data space building blocks and governance mechanisms, as well as piloting.

Duplication of existing initiatives should be avoided. Compliance is required with applicable EU legislation such as the ITS Directive and its Delegated Regulations and the implementation specifications of the Regulation (EU)2020/1056 on electronic freight transport information.

The awarded proposal will have to build on the outcomes of the preparatory action for the EMDS (PrepDSpace4Mobility) fundend under WP 2021-2022, notably the inventory of existing mobility data ecosystems and the analysis of possible common building blocks for the EMDS.

The awarded proposal will work in partnership with the Data Spaces Support Centre to ensure alignment with other common European data spaces, especially regarding the cross-sectoral blueprint and building blocks. It will use, in so far as possible and when available, the smart cloud-to-edge middleware platform Simpl[70].

The awarded proposal is expected to work towards achieving financial sustainability beyond the duration of the project. The awarded proposal should ensure that outcomes and deliverables of the project are owned or usable by a lasting structure supporting the implementation of the MCP in the mobility and transport sector.

The active involvement of data providers and users is highly recommended to ensure that the project's outcomes are designed and structured to meet their needs and to create a stronger sense of ownership.

To encourage the participation of diverse actors, the project should make use of financial support to third parties as part of the implementation of cross-border use cases. More information on funding rates and rules for this type of action are available in Appendix 2 and Annex 5 of the model grant agreement.

Deliverables

[70] https://digital-strategy.ec.europa.eu/en/news/simpl-streamlining-cloud-edge-federations-major-eu-data-spaces-updated-october-2023https://digital-strategy.ec.europa.eu/en/news/simpl-streamlining-cloud-edge-federations-major-eu-data-spaces-updated-october-2023

- Establishment of a structure supporting the implementation of the objectives of this action and allowing collaboration beyond the duration of the project.
- Information exchange platform: A platform for sharing, primarily among participants in the action and in the structure it seeks to establish, insights and data about infrastructure, tools, standards and agreements related to the scope of this action and complementing related initiatives.
- Coordination roadmap: A comprehensive plan detailing the alignment of various initiatives of actors participating in the action and in the structure it seeks to establish, across different sectors and member states.
- Recommendations for the development, operation and maintenance of key foundational elements supporting mobility data access and exchange, focusing on addressing gaps in the existing data and service infrastructure.
- Use cases portfolio: A collection of cross-border use cases implemented by third parties that demonstrate how cooperation and interoperability work in practice including guidelines and standards for the implementation of such use cases more generally, in alignment with existing European initiatives and in compliance with applicable legislation. This deliverable should be prepared in by the consortium with support from third-party beneficiaries.
- Use case evaluation reports: Detailed assessments for each use case, which include performance results, lessons learned, and recommendations for future projects. This deliverable should be prepared by third parties under the guidance of the consortium.

Type of action	Grants for financial support to third parties
Indicative budget	EUR 15 million
Indicative call planning	Third set of calls
Indicative duration of the action	48 months
Implementation	European Commission
Type of beneficiaries	Public and private entities such as (but not limited to): public administrations (national, regional and local level), EDIC, economic actors (SMEs, large organisations) in the mobility and logistics sector
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. The action will contribute to the deployment of the EMDS, which aims to play a central role in enabling data-driven services and processes in the mobility and transport sector, like optimising logistics supply chains or supporting multimodal travels. Mobility and transport infrastructure are critical infrastructures, subject to the NIS Directive, which are vital for the functioning of the economy and that can involve risks for human lives and health. The EMDS itself may thus become a target for cyber-attacks by malicious actors. The EMDS and the activities of the project is likely to involve supporting the exchange or use of sensitive data and information, such as data on mobility patterns, commercially sensitive data on logistic flows, or security-sensitive data on transport infrastructure. The participation of non-EU entities entails the risk of this sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the

Regulation (EU) 2021/694. This does not exclude the participation non-EU controlled entities, where they meet the conditions defined in this WP.

2.2.1.11 Health data space

These actions aim primarily to increase the amount of data related to health available for research, innovation, public health policy and healthcare delivery and establish sustainable cross-border linkage of and access to interoperable health datasets across Europe. The actions will build on and link to the genomics and cancer imaging data infrastructures to be deployed under the health data space topics in the Digital Europe Programme WP 2021-2022 (topics 2.2.1.7.1 and 2.2.1.7.2).

The first action to be awarded will support the deployment of a federated digital infrastructure for secure cross-border access and distributed analysis of the health data available in the Intensive Care Units for more precise and faster clinical decision-making, diagnostics, treatments and predictive medicine.

The second action to be awarded will support the creation of a high-value reference dataset of genomic data representative of European citizens to be hosted by and accessible via the federated European genomic data infrastructure to be deployed based on the Digital Europe Programme WP 2021-2022. Together with the genomic data and cancer imaging data infrastructures, both actions will support the goals of the proposed regulation on the European Health Data Space[71] (EHDS) by making more health data sets more easily available for researchers, innovators, policymakers and healthcare professionals in Europe.

The third action will prepare the future EDIC for facilitating the uptake of genomics and the European genomic data infrastructure in the contexts of healthcare delivery and public health policy.

The fourth and the fifth actions will support patient's access to their health data and demonstrate the benefits for healthcare providers of a common format for exchanging of electronic health records.

Actions will build on and complement projects supported under the WP 2021-2022, as well as Horizon 2020, Horizon Europe, EU4Health programme, and Recovery and Resilience Facility. The actions should take into account the outcomes developed by relevant research projects under Horizon 2020 and Horizon Europe, and the work of the relevant Research Infrastructures.

These actions are further described below.

2.2.1.11.1 Federated European Infrastructure for Intensive Care Units' (ICU) data

Objective

The action will establish and deploy a pan-European federated infrastructure for Intensive Care Units' (ICU) data combined with governance mechanisms allowing secure cross-border access to ICU datasets. The infrastructure shall primarily address data from acute care, including data generated from physiological monitors, laboratory investigations, imaging, clinical examination and examination protocols, and therapeutics as well as from emerging omics technologies used during the delivery of care. It shall be used by clinicians, researchers and innovators with the ultimate aim of more precise, faster and more effective clinical decision-making, diagnostics, treatments and predictive medicine. This infrastructure shall allow for both observational and interventional research and innovation to occur at pan-European level, also in preparation for possible future pandemics.

[71] Proposal for a Regulation of the European Parliament and of the Council on the European Health Data Space. COM(2022)197final. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0197

The ICU data infrastructure shall be supported by advanced corresponding IT tools and capacities in terms of data capture, processing, analysis and visualisation, with inherent interoperability and connectivity, enabling secure access to and distributed analysis of datasets, including AI use. In addition, it should support the exchange of best practices with a fast-track approach for addressing emerging need, such as in case of a pandemic. Finally, it shall be supported by a corresponding package for digital skills training and education as fit for the purpose for this scope.

Scope

The awarded action will support the deployment of the infrastructure needed to link and explore fragmented European databases of Intensive Care Units on acute care and telemedicine, complemented by a solid governance and a clear and sustainable business model for gathering data, models and best practice, and its exploitation by public and private organisations towards clear benefits for health communities and society. It will provide a harmonised approach for accessing acute care-related data and linking it with other health data sources enabling data discovery and re-use for researchers, innovators, clinicians, as well as AI and data tool developers. The action should contribute to supporting decision-making and improving patient care in the ICUs, through better short-term prediction and earlier identification of critical clinical status of patients, including for infectious diseases. It will also facilitate chronic and inherent risk factor identification, including for cancer. The action shall also establish a basis for data intensive computational model-based tools for decision support and risk prevention, towards a "virtual twin of an ICU patient".

The action shall address the interoperability requirements so that communication and exchange of data and information within and between ICUs is fully enabled. The proposal shall identify flexible common data models, core sets of standardized data elements and anonymisation strategies, and be in full compliance with the principles of GDPR, patient privacy, as well as accordance with the FAIR principles[72]. The work shall be based on common data models, interoperability mechanisms, intra- and inter-EU national collaborative exchange of data and knowledge including teleconsultations and synoptic near real-time sharing of clinical data to account for the urgency to treat within this medical discipline. The action shall set up a federated infrastructure of ICU data in Europe which would facilitate the development of short-term predictive models, better decision support tools and model (incl. AI) -based risk prevention tools helping intensivists in their work.

The action is expected to engage with ICU centres and relevant stakeholders in all EU Member States and regions with a view to increasing the representativeness of the ICU data sources vis-à-vis the European population, types of diseases covered, and sufficient quantity and quality of data for research and innovation. The action shall promote the effective implementation and evaluation of data-driven systems in Intensive Care. Implementation should be ICU practitioner-centred and designed according to the needs of users, notably the health workforce providing the care in practical terms and taking into account continuity of care. Incentives for use must be considered and added value demonstrated in terms of process facilitation or innovation and better outcomes.

The resulting data infrastructure should be aligned with the developments under the European Health Data Space (EHDS). It should be inter-operable with other building blocks and components of the EHDS, and the federated European infrastructures for genomics data and for cancer imaging data. The work should build on and bring forward the results accomplished in relevant Horizon 2020 and Horizon Europe projects and the Digital Europe Programme. It shall engage and coordinate with the relevant actions of the health cluster of the Digitizing European Industries (DEI) initiative, the European Reference Networks and the ongoing cooperation of ICU Hubs between Member States and regions with a view to establishing and fostering interoperability, harmonisation and standardisation.

[72] Findable, accessible, interoperable, reusable. https://doi.org/10.1038/sdata.2016.18

The awarded project(s) will use, in so far as possible, the smart cloud-to-edge middleware platform Simpl[73], and have to work in partnership with the Data Spaces Support Centre deployed under the first WP[74] in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of Digital Europe Programme. The joint work will target the definition of:

- the data space reference architecture, building blocks and common toolboxes to be used;
- the common standards, including semantic standards and interoperability protocols, both domain-specific and cross-cutting;
- The data governance models, business models and strategies for running data spaces.

Deliverables

- Deployment of an interoperable and secure federated infrastructure for trusted ICU datasets in the EU, and linked to AI resources, with established interoperable links to other federated European data infrastructures, such as on cancer-imaging and genomics.
- Secure and interoperable platform for aggregation of ICU datasets for secondary analysis and development of toolsets on relevant datasets for different treatment types useful for developing clinically relevant AI algorithms for specific use cases, including test and training data sets ("atlas" of anonymized Acute Care cases);
- Computational modelling tools for individual ICU patient patho-physiology simulation and analysis using ICU related clinical information (including decision-support tools), clinical consultation, and collaboration and monitoring, that are fully interoperable.
- Platform and mechanisms to exchange best clinical practice and adapted analysis and training datasets, also in case of an emerging health threat event, such as a pandemic.
- User Interface front-end module or system at the workforce level operational in minimum four EU languages. Design development in co-creation with the workforce with demonstrated improvement of provision of care: processes, documentation, quality control including new, adapted or extended ICU data sources including annotation, voice recognition, integrated datasets.
- A sustainable operational coordination and governance structure, open to the involvement of new stakeholders, including capacity building measures necessary to ensure the establishment, sustainable operation and successful uptake of the infrastructure with the ultimate aim to establish an entity under European law.
- A business model including an uptake strategy explaining the motivation and incentives for all stakeholders at the different levels (regional, national, European, global) to support the data infrastructure towards its sustainability, including data controllers, data users, service providers, healthcare workforce, systems and public authorities at large and taking into account the role of SMEs in the deployment and the value chain;
- A training and skills programme supporting the interdisciplinary nature of the subject matter and enabling the sustainable development, integration and use with a strong view to innovation, provision of citizen-centred health and a better quality of life for citizens and society.

Type of action	Simple grant
Indicative budget	EUR 5.1 million

[73] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

[74] Project implementing the topic 2.2.2.1 from the Commission Decision C(2021) 7914 final, adopting the Main Digital Europe Work Programme for 2021-2022.

Indicative call planning	First set of calls
Indicative duration of the action	42 months
Implementation	European Commission
Type of beneficiaries	Hospitals, governmental authorities, SMEs, IT solution providers, universities and large research organisations
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

In consistency with WP 21-22, this topic will be subject to Article 12(6) of the Regulation (EU) 2021/694 because it will cover sensitive personal health data which in conjunction with AI-based applications could potentially reveal sensitive information and impact on medical treatments that can be critical for the EU's security and public health.

2.2.1.11.2 Genome of Europe

Objective

This action will support the implementation of the Genome of Europe (GoE) multi-country project and contribute to achieving the objectives and long-term ambition of the 1+Million Genomes (1+MG) initiative. GoE aims to establish and launch a European reference genome database of genetic variation obtained by whole genome sequencing (WGS) for at least 500,000 citizens based on population-based national reference genome collections, collectively representative of the European population. GoE has the potential to foster break-through advances in research, innovation, disease prevention and healthcare delivery, widely spread across clinical disciplines, beyond current use cases (disease areas). Moreover, creation of a reference database will allow meaningful savings in healthcare systems as it will enable data imputation and enrichment of genotype information. A concerted genome sequencing effort is necessary to achieve a critical mass of WGS data across Europe. By fostering it, this action is expected to bring major efficiencies due to economies of scale and should enable all GoE countries to contribute with WGS data. It will also ensure consistent application of agreed common data requirements and quality measures across all national datasets, enabling the creation of a high-value European reference dataset.

The objective is also to support the initiative taking into account the potential creation of a European Digital Infrastructure Consortium (EDIC).

Scope

The focus of the action is on whole genome sequencing at clinical grade depth necessary for clinical application. This can be achieved by coordinated WGS sequencing expected to enable massive new data collection in all GoE countries. WGS data for the GoE must be generated following the 1+MG Trust Framework that brings together a set of minimal recommendations to enable secure cross-border access to genomic data in Europe, in particular as regards ethical and legal aspects, data standards, data quality and technical inter-operability. To this end, sequencing specifications should follow the available 1+MG guidance and align closely with that initiative.

The biological samples needed to generate the data, i.e., to sequence the genomes, can either originate from existing population-based cohorts and national biobanks, or be collected from participants recruited specifically for the national and European GoE reference databases. The participants will be selected at the national level to be representative of the respective population,

including a contribution of relevant minorities. To ensure uniform approach, the exact inclusion and selection principles need to be agreed at the European GoE level.

In parallel to data generating activities (WGS sequencing), the architecture, hardware and software necessary to aggregate national reference databases into a European reference database (The Genome of Europe) need to be designed, developed and implemented in cooperation with the Genomic Data Infrastructure (GDI) project. As well as newly generated GoE data, this should ensure effective integration of available national population-based WGS collections established before or independently of the GoE. The GoE database must be interoperable with and accessible through the 1+MG data infrastructure and equally aligned with the European Health Data Space (EHDS), in particular the infrastructure for secondary use of health data (HealthData@EU).

For data security reasons, sample transport, all WGS activities and genomic data transfer and storage must take place within the territory of eligible countries.

The GoE project forms an integral part of 1+MG and GoE data will be accessible via the European federated genomics data infrastructure (GDI) deployed under the Digital Europe topic DIGITAL-2021-CLOUD-AI-01-FEI-DS-GENOMICS. Besides Digital Europe's Data Spaces, the topic is also synergetic with the RRF support for the GoE multi-country project as stipulated in the national recovery and resilience plans of several Member States. Cooperation with other relevant European initiatives, and due consideration of other projects and infrastructures, for example those funded under the Horizon 2020 and Horizon Europe research and innovation programmes and the EU4Health Programme (e.g. Genomics for Public Health), will be strongly recommended to build on and bring forward their results as well as to ensure a good use of synergies and complementarities.

The awarded project will use, in so far as possible, the smart cloud-to-edge middleware platform Simpl[75], and have to work in partnership with the Data Spaces Support Centre deployed under the first WP[76] in order to ensure alignment with the rest of the ecosystem of data spaces implemented with the support of Digital Europe Programme. The joint work will target the definition of:

- the data space reference architecture, building blocks and common toolboxes;
- the common standards, including semantic standards and interoperability protocols, both domain-specific and crosscutting;
- the data governance models, business models and strategies for running data spaces.

Deliverables

- Joint or coordinated sequencing (WGS), as described under Scope.
- New WGS data for a large number of representative European citizens, to be further specified in the call document, generated in accordance with the guidance, specifications and standards agreed within 1+MG (1+MG Trust Framework).
- Integration of eligible population-based WGS data generated independently of the GoE and made available to the project.
- The Genome of Europe federated reference database established and accessible through the federated European genomic data infrastructure and the European Health Data Space (EHDS) infrastructure for secondary use of health data (HealthData@EU).

Type of action	Simple grant

[75] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

[76] Project implementing the topic 2.2.2.1 from the Commission Decision C(2021) 7914 final, adopting the Main Digital Europe Work Programme for 2021-2022.

Indicative budget	EUR 20 million
Indicative call planning	First set of calls
Indicative duration of the action	42 months
Implementation	European Commission
Type of beneficiaries	Public and private entities such as (but not limited to): public administrations (national, regional and local level), hospitals, research institutes, biobanks, research agencies, research infrastructures;
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This topic will be subject to Article 12(6) of Regulation (EU) 2021/694 in consistency with WP 21-22 for the reasons already provided in section 2.2. In addition, the data space will cover sensitive personal health data (such as individual sequenced genomes) which in conjunction with AI-based applications could potentially reveal sensitive information and impact on medical treatments that can be critical for the EU's security and public health.

2.2.1.11.3 1+ Million Genomes: sustainability and uptake

Objective

The objective of this action is to enable sustainable operation and uptake of the European Genomic Data Infrastructure (GDI)[77] that implements the EU Member States' initiative 1+ Million Genomes (1+MG). According to statements by Member States' representatives in 1+MG, establishing a European Digital Infrastructure Consortium (EDIC) to operate and maintain the European GDI is the preferred option for the sustainability of the initiative and data infrastructure. This action will support preparatory work for the creation and for the operation of an EDIC, facilitate strategic orientation of the 1+MG initiative and support expert work to enable the uptake of genomics for healthcare and public health purposes, as well as the data aspects of the 1+MG Framework.

Scope

The action will support Member States' work enabling creation and operation of an EDIC on genomics in line with the Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 and to prepare the future EDIC for playing a focal role in facilitating the uptake of genomics and the European genomic data infrastructure in the contexts of healthcare delivery and public health policy. The EDIC will play an essential role in the effort to ensure public trust in genomics, enable broad uptake by healthcare professionals, e.g. by enhancing digital skills and auxiliary data services, and to raise awareness among policymakers regarding the benefits of application and integration of genomics in healthcare systems' services and in public health policy measures. The EDIC will also need to define its relationship with the EHDS. Finally, the EDIC is expected to be involved in the implementation of data-related guidelines constituting the 1+MG Framework, in particular regarding (meta)data standards and data quality assurance.

To this end the action is expected to:

[77] The European Genomic Data Infrastructure will be deployed by the GDI project funded under the Digital Europe programme (project number 101081813, topic DIGITAL-2021-CLOUD-AI-01-FEI-DS-GENOMICS).

- support workshops, working groups, meetings with private and public stakeholders, necessary for creating the EDIC for the 1+MG initiative and supporting its implementation roadmap,
- make analysis and proposals on the necessary legal and ethical enablers and arrangements specific to this EDIC,
- map the gaps, challenges and unmet needs, and propose the respective actions for the EDIC, as necessary to establish the EDIC sustainability roadmap including legal, ethical, organisational and economic aspects, and covering implementation for research, healthcare and public health purposes,
- explore the implications of the European Health Data Space (EHDS) Regulation and operationalise the EDIC's participation in the HealthData@EU infrastructure,
- establish the evidence base for the health impact and economic implications of genomics (costs/benefits) to inform the relevant health economic models and health policy decisions,
- explore models for public-private partnerships for genomics in healthcare,
- maintain and promote the use of the Maturity Level Model (MLM) developed by the "Beyond 1 Million Genomes" (B1MG) project to ensure coordinated alignment across healthcare systems towards implementation and equity in access to genomics medicine,
- design actions to promote the literacy level and education of citizens, health professionals and policy makers on genomic medicine across Europe,
- establish frameworks that are necessary to ensure that the data made available to users via 1+MG meet the agreed data standards and data quality requirements, including specific roles for the EDIC.

This action should build on / align with the outcomes of the B1MG and GDI projects and goals of the Genome of Europe project, while clearly defining its distinct scope and deliverables. In particular, the data infrastructure developed and deployed by the GDI project and the respective data governance will form the cornerstone of the future EDIC. The action should also take into account and leverage the synergies with the future European Health Data Space and the respective preparatory projects (e.g. TEHDAS, HealthData@EU pilot). Moreover, the results of other relevant past and ongoing projects under Horizon 2020, Horizon Europe, EU4Health and IMI2/IHI should be duly considered to avoid duplication of efforts.

Deliverables

- Documentation agreed by Member States about ethical, legal, privacy-related and economic aspects of 1+MG implementation necessary to operate an EDIC on genomics.
- Sustainability roadmap for the EDIC.
- Data on clinical utility and economic aspects of genomics (costs/savings) for economic models and policymaking.
- Frameworks for 1+MG data/metadata standards' maintenance and data quality assurance.

Type of action	Coordination and support action grant
Indicative budget	EUR 2 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months
Implementation	European Commission

Type of beneficiaries	Public and private entities such as (but not limited to): public administrations (national, regional and local level), hospitals, research institutes, biobanks, research agencies, research infrastructures

2.2.1.11.4 Supporting patients' access to their health data in the context of healthcare services for citizens across the EU

Objective

The action will enable patients to access their health data in the context of healthcare provision for individual citizens (*i.e.,* 'primary use' of health data) thus contributing to reaching the digital target of 100% of EU citizens having access to electronic health records by 2030 as set by the Digital Decade Policy Programme[78]. It will scale up and leverage the results from existing projects, frameworks and technologies, such as the services implemented in the 'MyHealth@EU'[79] infrastructure supported under EU4Health, the European Electronic Health Record Exchange Format (EEHRxF)[80], the EU Digital Covid Certificate (EU DCC), or the EU Digital Identity Wallet. Therefore, it will contribute to the technical implementation and large-scale deployment actions foreseen in the proposal for a Regulation on the European Health Data Space (EHDS)[81].

Scope

Proposal(s) under this action should expand the geographical coverage of the services offered through MyHealth@EU allowing patients' access to their consolidated health data and cross-border health data exchanges. Furthermore, it should deploy at scale the EU Digital Identity Wallet in the national eID ecosystems in health and deploy solutions enabling patients to access their translated health data on the basis of MyHealth@EU services.

The outcomes of projects launched under EU4Health, Digital Europe and Horizon Europe programmes should be used and leveraged to accelerate the uptake of patient-mediated services in MyHealth@EU.

In addition, the awarded proposal(s) will have to review and map the work performed under other EU-funded actions and projects in the field of eID for health, in particular those enabling digital identification and access of patients to their health data, such as the POTENTIAL project[82] that is piloting the EU Digital Identity Wallet for claiming ePrescriptions.

In particular, eID should be enabled for registration and login of patients accessing their health data. Due to the sensitivity of health data, the use of the EU Digital Identity Wallet as a highly secure privacy-enhancing eID means recognized throughout the Union is strongly encouraged.

The solution that awarded proposal(s) will deploy should ensure ubiquitous access, i.e. a mobile-first approach should be favoured. In addition, the solution should be designed with accessibility in mind, to ensure equal access to health data. Patients should be able to view and consult their health data in their country and abroad, potentially use online services, control, and allow access to their health data and carry out transactions through the online healthcare system. The solution is to enable patients to

[78] Decision 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030

[79] https://health.ec.europa.eu/ehealth-digital-health-and-care/electronic-cross-border-health-services_en

[80] https://digital-strategy.ec.europa.eu/en/library/recommendation-european-electronic-health-record-exchange-format

[81] https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en

[82] See POTENTIAL project

access priority categories of data as proposed in the EHDS, i.e. patient summaries, ePrescriptions, hospital discharge reports, images and imaging reports, and laboratory results.

To test this solution, the action should engage with relevant user communities, including cancer patients, survivors and their families, persons with different disabilities, older people, and should seek their feedback.

Overall, the proposal(s) under this action are expected to cover the following tasks:

- Review and Map Projects: Evaluate and chart relevant ongoing projects for standards tech methods of electronic identification of patients and digital solutions for MyHealth@EU development.
- Design Consolidated Patient Solution: Create a unified patient data access solution, building on past projects, for cross-border use regardless of Member State, aligning with EEHRxF and collaboration with NCPeHs and patients.
- Deploy NCPeH and MyHealth@EU: Establish NCPeHs and MyHealth@EU services for cross-border health data exchange, enhancing data consolidation.
- Scale Solution: Roll out the solution widely in healthcare settings, linking to MyHealth@EU's NCPeHs, including user-facing features and backend APIs.
- Test Patient Access Acceptance: Collaboratively assess patient access via MyHealth@EU, working closely with NCPeHs and stakeholders, reporting on user experience, especially in cancer-related domains.
- Engage Users and Assess Implications: Involve users and stakeholders in design, assessing ethical, legal, and societal impacts during technical deployment.

The solution should cover a large number of Member States.

The active participation of data providers and users from the project's inception is highly recommended since it will ensure that the action is designed and structured to meet their needs, making the action more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the project’s runtime.

Deliverables

- Review report with review, analysis, and mapping of precursor projects with standards, technologies, and digital solutions, justifying the chosen solution for broader adoption;
- Documentation on the deployment of the necessary NCPeHs, MyHealth@EU services and infrastructures for the cross-border exchange of health data to support patient access;
- Open-source solution for patients’ access to their health data, including the integration with MyHealth@EU;
- Large-scale deployment of the solution, with the aim of covering a large number of Member States;
- User acceptance reports;
- Report on efforts to raise user awareness and assess ethical, legal, and societal implications of the technical deployment.

Type of action	Simple grant
Indicative budget	EUR 10 million
Indicative call planning	Third set of calls

Indicative duration of the action	36 to 48 months
Implementation	European Commission
Type of beneficiaries	The consortium can include public and private entities such as (but not limited to): public administrations and Member State authorities (e.g. national contact points for eHealth, digital health authorities), hospitals, medical centres, end-users (such as patients' and healthcare professionals' organisations), not-for-profit organisations, industry, SMEs.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. It will provide for the deployment of a unified patient data access solution in several Member States. As it concerns the access to and exchange of patient health care data, the solution will invariably be linked, if not integrated, with critical patient management systems supporting healthcare operations and other essential public infrastructures and services, including those enabling digital identity services. These critical health and other public infrastructures are exposed to significant security risks, notably cyber-attacks. When such risks materialise, the impact on high numbers of patients and citizens is significant as healthcare operations are disrupted, as well as having the potential to affect malicious access to manipulation, exploitation and exposure of sensitive personal data concerning health. The participation of non-EU entities entails the risk of sensitive data and information, that could be used for such purposes, being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.2.1.11.5 Demonstrating the in-service use of the European Electronic Health Record Exchange Format (EEHRxF) in healthcare settings

Objective

The objective of this action is to showcase in-service, sustainable implementation of the European Electronic Health Record Exchange Format (EEHRxF) in healthcare settings. In particular, it will aim at demonstrating that the EEHRxF brings value, without introducing undue burden on health professionals and health systems.

The result of this action will be real-world demonstrators of the EEHRxF that will guide other stakeholders to adopt the EEHRxF, reduce the costs for its adoption and produce lessons learned.

Scope

The Commission Recommendation (C (2019) 800 final)[83] on a European Electronic Health Record Exchange Format (EEHRxF) defined the scope and baseline for common technical specifications for the transfer of health data in chosen health information domains, or data categories, such as patient summaries and ePrescriptions, but also laboratory results, medical images and imaging reports, and

[83] Commission Recommendation (EU) 2019/243 of 6 February 2019 on a European Electronic Health Record exchange format, (OJ L 39, 11.2.2019, p.18).

hospital discharge reports. On 3 May 2022, the Commission adopted a legislative proposal on the European Health Data Space (EHDS)[84], which takes forward this idea.

A number of Union initiatives continue to contribute to the development and adoption of the technical specifications for the EEHRxF, including the MyHealth@EU infrastructure[85], X-eHealth[86], XpanDH[87] and projects funded under HORIZON-HLTH-2023-IND-06-02. The joint action on primary use of health data from work programme 2022 of EU4Health[88] aims at providing recommendations for a formal description of the EEHRxF.

The readiness of the EEHRxF varies per data category. Thanks to their implementation in MyHealth@EU services for cross-border health data exchanges, certain data categories such as patient summaries, e-prescription and e-dispensation are already at a higher level of maturity for their widespread adoption. However, further development is needed for other data categories, such as laboratory results, medical images/imaging reports, and hospital discharge reports.

The scope of proposal(s) thus covers real-world, reference, mature (TRL-9 or equivalent) and complete implementation of EEHRxF demonstrators in operational healthcare settings that fully support collection and exchange of health data in priority categories for the EHDS. Examples of data categories in these demonstrators include ePrescriptions, eDispensations, patient summaries, medical images and imaging reports, laboratory results and hospital discharge reports. The project, or projects, selected as part of this call should go beyond analysis and design and shall focus on the longer term deployment, operation and use of the EEHRxF.

Awarded proposal(s) will demonstrate the use of the EEHRxF in healthcare settings and develop guidelines on how to improve the user-friendliness of the format for health professionals and its cost-effectiveness for health systems.

The specific activities covered by this action are to:

- Collect information on technical and non-technical challenges in EEHRxF adoption and data entry tools, including those using free text analysis by health professionals;
- Design, implement and deploy user-friendly EEHRxF demonstrators and data entry tools in operational clinical settings across multiple sites, considering expansion and sustainability;
- Through real-world implementations, demonstrate the added value of the use of the EEHRxF and its user friendliness for health professionals and cost-effectiveness for health systems, by:
    - increasing the availability of high-quality and structured health data;
    - increasing interoperability of health data for healthcare services at local, regional, national and European level;
    - increasing quality and completeness of health data included in electronic health records for use at national level and across borders through MyHealth@EU;
    - increasing the accessibility for patients to their health data using the EEHRxF;
    - increasing the cost-effectiveness and sustainability for health systems.
- Provide guidelines for the implementation of the EEHRxF, following the lessons learnt from the demonstrators, including technical and non-technical aspects.

[84] https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en.

[85] https://health.ec.europa.eu/ehealth-digital-health-and-care/electronic-cross-border-health-services_en

[86] https://www.x-ehealth.eu/

[87] https://xpandh-project.iscte-iul.pt/

[88] wp2022_en - p81 DI-g-22-22.06.pdf (cec.eu.int)

These activities shall build upon the outcomes of other projects aiming at the development and rollout of the EEHRxF, such as X-eHealth, XpanDH, projects funded under HORIZON-HLTH-2023-IND-06-02, and the relevant joint actions supported by EU4Health.

The active participation of data providers and users from the project's inception is highly recommended since it will ensure that the action is designed and structured to meet their needs, making the action more relevant and leading to increased adoption rates and a stronger sense of ownership of data providers and users by the end of the project's runtime.

Deliverables

- Analysis of the challenges of the use of the structured electronic health data in real clinical settings and methods, processes, tools and/or technologies that can address these challenges;
- Implementation of the EEHRxF and of tools for structured data entry in operational clinical settings in a user-friendly way for health professionals and health systems;
- Description of the design, development, deployment and testing of the implementation of the EEHRxF in real clinical settings;
- Analysis of ways to overcome possible barriers to EEHRxF implementation;
- Assessment of cost effectiveness in a cross-border setting;
- Recommendations on the EEHRxF optimal use, management and evolution, with a focus on how to address the challenges related to the collection of high-quality health data and of making it available to patients or to other health professionals at local, regional national or European level.

Type of action	Simple grant
Indicative budget	EUR 4 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 to 48 months
Implementation	European Commission
Type of beneficiaries	The consortium can include public and private entities such as (but not limited to): public administrations and Member State authorities (e.g. digital health authorities, national contact points for eHealth in MyHealth@EU), hospitals, medical centres, end-users (such as patients' and healthcare professionals' organisations), not-for-profit organisations, industry (particularly, electronic health record systems manufacturers) and SMEs.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. It will provide for the deployment of a unified patient data access solution in several Member States. As it concerns the access to and exchange of patient health care data, the solution will invariably be linked, if not integrated, with critical patient management systems supporting healthcare operations and other essential public infrastructures and services, including those enabling digital identity services. These critical health and other public infrastructures are exposed to significant security risks, notably cyber-attacks. When such risks materialise, the impact on high numbers of patients and citizens is significant as healthcare operations are disrupted, as well as having the potential to affect malicious access to manipulation, exploitation and exposure of sensitive personal data concerning health. The

participation of non-EU entities entails the risk of sensitive data and information, that could be used for such purposes, being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.2.2 Digital Product Passport

The Digital Product Passport (DPP) is an information system that makes accessible on a need-to-know basis data relevant to product sustainability along their value chains.[89] The DPP is expected to make an important contribution to climate mitigation by aiming to achieve sustainable and circular systems in three key value chains by improving product sustainability, boosting material and energy efficiency, enabling new business models and circular value extraction based on data sharing.

Objective

To enable sharing of key product related information that are essential for products' sustainability and circularity, including those specified in Annex III of ESPR proposal[90], across all the relevant economic actors. Consequently, to accelerate the transition to circular economy, boosting material and energy efficiency, extending products lifetimes and optimizing products design, manufacturing, use and end of life handling.

- To provide new business opportunities to economic actors through circular value retention and optimisation (for example product-as-a-service activities, improved repair, servicing, remanufacturing, and recycling) based on improved access to data;
- To help consumers in making sustainable choices; and
- To allow authorities to verify compliance with legal obligations.

Scope

Support one Pilot action that will demonstrate in real setting and at scale DPPs in at least 2 value chains (product categories) with a preference to those with long and complex supply chain and/or challenging repair, refurbishment and recycling. This DPP information system should rely on international or European standards in the following areas: data carriers and unique identifiers, access rights management, Interoperability (technical, semantic, organisation) including data exchange protocols and formats, data storage, data processing (introduction, modification, update), data authentication, reliability, and integrity, data security and privacy. Where possible, this will consist in using the smart cloud-to-edge middleware platform Simpl.[91] The access to information included in the DPP should be role-dependent (i.e., differentiated by stakeholder type). The full interoperability of the same DPP information system among different supply chains should be one of the characteristics tested and proven by the pilot.

[89] In March 2022 the Commission adopted the 'Ecodesign for Sustainable Products Regulation' proposal (ESPR) which establishes DPP. Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC COM(2022) 142 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0142

[90] https://environment.ec.europa.eu/system/files/2022-03/COM_2022_142_1_EN_annexe_proposition_part1_v4.pdf

[91] See https://digital-strategy.ec.europa.eu/en/news/simpl-cloud-edge-federations-and-data-spaces-made-simple

The pilot will build on the available results of the Coordination and support action (CIRPASS)[92] as well as other relevant initiatives. It will also consider the appropriateness of the latest tracking and tracing technologies, internet of things systems, distributed ledger technologies, cybersecurity methods and cloud technologies and infrastructures (such as GAIA-X).

A specific contribution is expected on demonstrating at large scale the feasibility of acquiring, managing and securely sharing the data held or generated by operators such as supply chain actors, manufacturers, resellers, repairers, remanufacturers, and recyclers, along these value chains for which an access by other relevant stakeholders would have a major beneficial impact on circularity and sustainability.

The real-life deployment should validate and further improve protocols for secure and tailored access for the relevant stakeholders. It should test in real life setting open digital solutions for identification, tracking, mapping and sharing of product information along its life-cycle, ensuring interoperability across borders and a well-functioning EU Internal Market. This pilot will build on existing open international and European standards[93] with the aim to provide for a consistent operational framework.

Deliverables

- Deployed and validated at scale and real life setting Digital Product Passports in at least two value chains.
- Report on further needs for standardisation and specifications to ensure interoperability, security and acceptance by all the stakeholders.
- Recommendations based on the lessons learnt for the deployments of DPP in other value chains.

Type of action	Simple grants
Indicative budget	EUR 6 million
Indicative call planning	First set of calls
Indicative duration of the action	30 months
Implementation	Executive agency HaDEA
Type of beneficiaries	(Consortia of) public entities, private entities including economic actors / SME, relevant associations and NGO, academia/ universities/ research organisation

2.2.3 Support for Data for EU

2.2.3.1 Open Data Portal

Objective

The service data.europa.eu is the common platform for European open data covering datasets from EU, national, local, regional and geo portals. The objective is to build and maintain this platform which gives access to open data from EU, national, regional, local and geo portals. The service data.europa.eu will also continue to offer training courses, courses and support for data providers in making their data available as well as fostering the uptake of data reuse. Support will also be provided

[92] CIRPASS, https://cirpassproject.eu/

[93] Link to indicative list of standards developed by StandICT project (official deliverable expected in January 2030).

for the sustainability of the Big Data Test Infrastructure (BDTI) component. The main focus will be to adapt the functionalities of the portal in order to facilitate discovery and access to data through API.

The objective of this topic is to increase the easy availability, quality and usability of public sector information in compliance with the requirement of the Open Data Directive, in order to boost the re-use and combination of open public data - both from European countries and from EU institutions and bodies - across the EU, for the development of information products and services, including AI applications.

Developing, maintaining and operating data.europa.eu

Goal: Development, maintenance, operation, evolution and hosting of an enhanced, merged secure, robust, and user-friendly pan-European portal for the dissemination of the content of the data.europa.eu portal (including open data from Member States public administrations and European Institutions, Bodies and Agencies), and enabling professionals and members of the general public to find, download, query and visualise datasets of interest and learn and feedback about public data resources; also enabling publishers to test and improve (meta) data quality.

Fostering uptake on data supply, including through the support to the improvement of the (meta) data quality supply

Goal: Empowering and guiding Member States to understand re-users' demand and be able to collect and publish good quality fit-for-purpose public data resources complying with appropriate regulatory, technological, and organisational requirements.

Fostering uptake of data re-use

Goal is to facilitate an engaged community of re-users in the public and private sector that is aware and knowledgeable of the public data resources potential and recognises and shapes data.europa.eu as a single access point to European public data resources and as a hub for research and learning.

Scope

Service contracts will maintain and further expand the Open Data infrastructure deployed since 2015 under the Connecting Europe Facility programme. Funding will be provided for:

- Consolidation and expansion of the data.europa.eu Data Portal[94], including the integration with the EU and Member States Open data and INSPIRE geoportals
- Maintenance and further expansion of the Big Data Test Infrastructure (BDTI) Building Block, including the possibility for the public sector to use it for testing Business-to-Government (B2G) data sharing collaborations for the public good.

These tools will contribute to Green Deal applications and other common data spaces where relevant, in providing a test platform and tools for accessing multiple sources of data, data which the data.europa.eu Portal, extended to include the High Value Datasets, will provide through a harmonised single-entry point.

Deliverables

- Enhanced version of the data.europa.eu portal, fully integrating the High Value Datasets (HVD) made available by Member States according to the HVD Regulation 2023/138 of 21/12/2022.
- Operational new section on the data.europa.eu portal, including a dedicated catalogue implementing a searchable asset list containing an overview of all available data resources made available by Member States according to the Data Governance Act Regulation 2022/868 of 30/5/2022.

[94] data.europa.eu gives access to open data from European national, regional, and local open data portals, as well as EU institutions, bodies and agencies open data.

- Improved version of the Big Data Test Infrastructure, making available additional tools for Big Data analysis.

Type of action	Procurement
Indicative budget	EUR 6 million
Indicative time	2023
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

2.2.3.2 The European Single Access Point (ESAP) for EU capital markets

Objective

The objective of this action is to build the fundaments of the European Single Access Point (ESAP), an open data portal for sustainability information of companies and for information relevant for capital markets.

Given the objectives of the Green Deal and of the Capital Markets Union Action Plan easy access to information about the sustainability of companies and on their financial position and their performance, is of key importance for investors, civil society and other stakeholders. Moreover, making information about smaller and medium-sized companies easily available will help improve their access to financing.

A political agreement was reached in May 2023 on the Commission's package of proposals for the establishment of the ESAP.[95] This open data portal will improve and simplify access to information that financial institutions and other companies already have to make public on the basis of EU legislation. Most of this public information is currently not centrally available in the EU but scattered across the Union and Member States: much of the information is disclosed on the websites of financial institutions and other companies; some of the information is available with supervisors in the Member States or with the European Securities and Markets Authority (ESMA) and some of it in so-called Officially Appointed Mechanisms.

Under the provisional agreement, gradually and starting from 2027, this public information will become easily accessible at the ESAP, which will be operated by the ESMA.

This action will contribute to the further development of broad and liquid capital markets to finance the European economy, including for smaller and medium-sized companies and strengthen the EU Single market. It will ensure that sustainability information is easily available, thereby supporting the mobilisation of sustainable finance and helping achieve the objectives of the Green Deal. It will also harmonise the regime on the digital use and re-use of this public information. The project will take into account the final outcome of the legislative process, including as regards the scope of application and the functionalities of ESAP.

Scope

In close cooperation with ESMA, the Commission will procure the necessary IT service contracts to design and develop the technical infrastructure of the ESAP. In this phase, and based on the outcome of the negotiations of the ESAP package, the focus will be on:

[95] COM(2021) 723 final, COM(2021) 724 final, and COM(2021) 725 final.

- Creating the infrastructure that ensures that the public information can be submitted by the collection bodies under the ESAP Regulation to ESAP;
- The development of the web portal, search engine, download services and other data access services.

Deliverables

Design and develop services/functionalities relevant for ESAP such as:

- data collection services, allowing, in line with the phasing-in provisions of the ESAP package, the relevant collection bodies to submit data to ESAP;
- data access services for the public as end users (web portal, search engine, download services);
- data processing, data management, data quality processes, monitoring, security services;
- integration with relevant ESMA systems and services such as identity and access management, file transfer, security monitoring;
- advanced features such as e-translation, notification services, or the application programming interface;
- support to collection bodies in the provision of information to ESAP.

Type of action	Procurement
Indicative budget	EUR 5 million
Indicative time	2023-2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

2.3 Artificial Intelligence

AI can bring many benefits to the economy and society. However, given the nature of AI as a general-purpose technology and the ongoing efforts to address the risks it may pose for specific fundamental rights through the proposed AI Act, it is important to continue to build-up additional capacity towards world-class large-scale reference sites for testing and experimentation of AI-powered solutions that will foster the deployment of trustworthy, secure, transferable and scalable AI in Europe and to provide means for an effective implementation of the future EU Regulation on AI (the 'AI Act'). This will also facilitate the respect of fundamental rights by minimising the risk of erroneous or biased AI-assisted decisions.

Many solutions prototyped or tested in labs have the potential to address the current needs for AI-based solutions. However, they often cannot be deployed due to the lack of testing in real (or representative) environment as opposed to just virtual for proving the capability to efficiently address the needs of the users, or due to the lack of certification against relevant existing standards such as safety. In addition, market and post-market compliance assessment under the upcoming AI Act are basic elements that are not in place yet. The actions proposed are expected to address those issues and to play a key role in the implementation of the proposed regulatory framework for AI.

TEFs will have strong connections and use data spaces as much as possible and will interact with parallel mechanisms as the AI-on-demand platform where relevant. Additionally, TEFs will naturally

develop fruitful exchanges with EDIHs, as they are potential both providers and consumers of their services.

On top of the current planned sectorial TEFs (Health, Manufacturing, Agri-Food, Smart Cities and Communities), the current WP introduces additional horizontal actions. In particular, a Coordination and support action will ensure that a cross-sector perspective can be applied to all existing and future TEFs that will complement the current ones and fill the gaps where a smart investment for the uptake of AI is needed. A special focus is given to AI in the healthcare sector and to language technologies including an open-source language foundation model**.**

New actions are also introduced, aiming at supporting the preparation of the implementation of the future AI Act. Finally, two actions have focus on local communities, building on the smart communities' data infrastructure, developing the different layers of VR/AR worlds for communities and moving towards an ecosystem of networked Local Digital Twins across the EU.

2.3.1 Testing and Experimentation Facilities

2.3.1.1 Coordination of AI sectorial Testing and Experimentation Facilities

Objective

The Coordination and support action grant will support the sectorial Testing and Experimentation Facilities (TEFs) created under the Work Programme 2021-2022 (Health, Manufacturing, Agri-Food, Smart Cities and Communities) and the future new ones to be create under the Digital Europe Programme, to develop complementary cross-TEF activities in providing AI services from a cross-sector perspective, to maximise the overall impact of TEFs in their ambitions of achieving world-class excellence and help the sectorial TEFs to better link with relevant EU projects, initiatives and stakeholders in the AI ecosystem of excellence. By boosting the reinforcing feedback loops, the CSA will also bolster the sectorial TEF's and the ecosystem's sustainability.

Once the sectorial TEFs funded under the 2021 call are established, it is necessary to coordinate the TEFs with other actions launched in the Digital Europe Programme (in particular data spaces, the edge AI TEF, the AI-on-demand platform, relevant cloud and HPC initiatives) and to develop a strong ecosystem around the TEFs enabling a faster and growing adoption of AI technologies in the European market.

Scope

- The CSA will help develop synergies and exchanges between the TEFs, and with other relevant projects, such as the European Digital Innovation Hubs (EDIHs), data spaces, network of excellence research centres, and other actions funded e.g. under DEP and Horizon Europe [96], AI-on-demand platform, and the community at large.
- It will establish strong links with Edge to Cloud and relevant HPC actions funded under strategic objective 1 (EuroHPC JU), using when appropriate the SIMPL platform as a connector, and help TEFs to make the most out of all these resources and services.
- It will support the running projects in allowing economies of scales regarding common activities run by the individual networks (e.g., organization of events, access to common resources, mentoring and exchange mechanisms among TEFs, integration with 3rd party services and other EU funded projects, etc.) and exchanges of best practices to reinforce and optimize cooperation.

[96] European Network of AI Excellence Centres, H2020-ICT-48-2020 Networks of AI Excellence Centres

- It will support TEFs to help companies using their services to comply with the AI Act. This could be through regulatory sandboxes, standards, certifications, labelling schemes, research methodologies for the explainability of AI systems and collaboration with public authorities, depending on what TEF themselves offer and what additional or complementary support to the companies is needed.
- It will support TEFs in their dissemination activities towards industry, users and public administrations. Special attention should be on coordinating mentoring and twinning programmes for innovators in order to foster fair participation and potential expansion of TEFs activities across Europe to complement and reinforce the on-going TEFs. It should contribute to the visibility of AI & robotics in Europe, building on technologies tested in TEFs and targeting sectorial audiences, with a clear focus on real world applicability.
- Support and coordination with regards to co-funding instruments, helping TEFs in common approaches towards Member States including support and exchange of best practices in the implementation and reporting requirements imposed by state-aid rules, contractual requirements, interpretation of the Grant Agreements etc.
- Act as facilitator for cooperation with the AI-on-demand platform. Foster contribution from TEFs and channelling TEFs needs towards the AI-on-demand platform.
- Facilitate coordination with the edge AI TEF. Solutions developed and tested in the former could be later integrated and tested in the sectorial TEFs.
- The CSA will establish the necessary resources to help and support TEFs in their coordinated go-to-market approach, including but not limited to sustainability plans, sale strategies, price lists, etc.
- Facilitate exchanges with EDIHs and national competence centres, etc. to maximise the opportunities offered e.g., to maximise the outreach to all regions across Europe).
- Support the European Commission in the monitoring of existing TEFs, assessing progress and providing recommendations for their implementation and drawing lessons for policy-making.
- Targeted stakeholders: The consortium should include a relevant representation of all the sectorial TEFs selected from the 1st call of the Digital Europe Programme, to ensure that the selected CSA optimally support their coordination. These organisations will be subject to Article 12(6) of Regulation (EU) 2021/694.

Deliverables

- Action plan organised along different domains: technological, business models, skills development, dissemination, legal aspects, outreach, etc, to develop links and synergies with EDIHs, data spaces, edge AI TEF, network of AI research excellence centres, and the AI-on-demand platform.
- A catalogue of common resources and services across the TEFs.
- Joint dissemination and communication plan with TEFs on their activities and services, to be implemented within the project duration.
- A specialised support unit to coordinate co-funding instruments, including regular interactions with Member State's administrations, including with regards to Grant Agreements.
- Technical mechanisms for a seamless exchange of assets with the AI-on-Demand platform. Delivery of individual and targeted sectorial sections within the platform (distributed model).
- A specialised business consultancy unit focussing on business and go-to-market strategy, optimising TEF business sustainability.

- Periodic impact assessment and road-mapping: collection and analysis of the key performance indicators (KPI) defined for the TEFs and sharing of good practices and lessons learnt.

Type of action	Coordination and support action grant
Indicative budget	EUR 3 million
Indicative call planning	First set of calls
Indicative duration of the action	48 months
Implementation	European Commission
Type of beneficiaries	All entities
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

In line with WP 21-22 this topic will be subject to Article 12(6) of Regulation (EU) 2021/694 for the following reasons: AI and robotics qualify as critical technologies and dual use items under Article 2(1) of Council Regulation (EC) No 428/2009 and as factors that may be taken into consideration by Member States or the Commission for screening foreign direct investment under EU foreign investment regulation (EU 2019/452). In particular, the TEFs outputs, validated AI solutions, ready to be deployed, will be made available to any type of users, including public authorities, providing public services, or private sector, including those working in security sensitive areas (energy, mobility, some security sensitive manufacturing sectors), or areas with an impact on public order (e.g. healthcare, food supply chain) therefore the highest level of trust and security of the TEF process and output must be ensured. Therefore, trust is an essential feature of the TEFs: organizations running and coordinating the TEFs will have a big responsibility in validating the AI products and solutions, including their security features and protection of fundamental right and EU values, before their large diffusion. They will also have access to confidential information about the solutions tested in their facilities, some of which are likely to be related to the security or safety aspects of the solutions; therefore, they will have to be trusted by third parties, and must ensure highest level of trust and security, which justifies the use of Article 12(6). In addition, organisations running and coordinating the TEFs will have access to sensitive public sector and private data, including from the sensitive data spaces subject to the application of Article 12(6), as well as to business related data and AI algorithms, before they are eventually deployed to the market.

2.3.2 Developing CitiVerse

Objective

The action will help define what the 'CitiVerse' means for Europe building on the smart communities' data infrastructure that is developed under WP2021-22 and WP23-24. The objective is to bring EU CitiVerse industry, including SMEs, together in developing the different layers of VR/AR worlds useful for local authorities and citizens. The project(s) stemming from this action will take into account potential EDIC in the field.

The action could build on existing local digital twins expanding their capabilities. One or more projects, led by the industry in cooperation with one or more communities, will introduce VR/AR and metaverse technology to allow citizens and other stakeholders to «navigate and interact» in their urban spaces from basic 'default' sensory experiences all the way to digital asset-enhanced AR overlays merging the physical and virtual communities into a hybrid metropolis. This will create a steady and immersive environment for citizens and businesses, a CitiVerse, that can be used for virtual/real spatial planning,

management or navigation while also enhancing the social, architectural, green and cultural heritage dimension of living spaces.

Use cases will span from hybrid systems to fully-fledged verses created with data coming from various data sources, notably from the EU data spaces such as the smart cities and communities, but also from other public and private sources. European industry, including the wealth of European SMEs active in technologies relevant for metaverses and in content creation, will contribute to its development, taking the leadership in an area rich of possibilities. The action will contribute to the ecosystem of SMEs and larger companies nurtured through the VR/AR Industrial Coalition[97], and at the same time it can benefit from the mobilising and structuring actions of the Coalition as well as from integrating the values and principles of the New European Bauhaus initiative.[98] The action should also explore links and synergies with the Climate-neutral and smart cities Mission, and in particular to selected Mission cities, when identifying use cases.

Scope

In particular, the action will:

- Start developing the CitiVerse for citizens to offer them interoperable and sustainable services.
- Develop concrete CitiVerse use cases (and combinations of them) in the area of navigating in a community, discovering its assets such as culture, history, tourism and offering innovative services related to tourism, entertainment, shopping, future development and urban planning, etc., infrastructure management and sustainable mobility.
- Encourage EU technology providers to integrate various data sources together to develop and train AI in a new specific CitiVerse context.
- Activate a network of EU industrial partners, including SMEs, in Member States to provide technology capacity for the CitiVerse. This network may be part of, and interact with, the VR/AR Industrial Coalition and/or the New European Bauhaus initiative.
- Identify building visualization solutions and multi-dimensional models to implement CitiVerse prototypes.
- Exploit the long tradition of Europe in cultural and media content, involving European content creators, in particular SMEs, in the design of engaging in immersive CitiVerse environments.
- Work towards recommendations for a robust, open and interoperable CitiVerse legal framework compatible with EU values and laws.
- Include security by design and plan how CitiVerse applications and platforms can be used in real-life contexts.

Deliverables

The action will result in one or more projects proposing varied use cases for the CitiVerse. Such project(s) may be focusing on the same pilot areas envisaged by the EU Smart Communities data space project (call 3 [DIGITAL-2022-CLOUD-AI-03-DS-SMART][99]), although focus on other pilot areas is also possible. The concept could also be built on the existing EU data infrastructure and interconnected Local Digital Twins.

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[97] The Virtual and Augmented Reality Industrial Coalition, https://digital-strategy.ec.europa.eu/en/policies/virtual-and-augmented-reality-coalition

[98] The New European Bauhaus: beautiful, sustainable, together. (europa.eu)

[99] Funding & Tender Opportunities, https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/digital-2022-cloud-ai-03-ds-smart

The project(s) should also propose a roadmap to expand CitiVerse solutions in Europe using Minimal Interoperability Mechanisms (MIM)-compliant standards and EU technology solutions and make recommendations for interoperable and open CitiVerse platforms in line with EU values and policy landscape.

Type of action	Simple grant
Indicative budget	EUR 15 million
Indicative call planning	First set of calls
Indicative duration of the action	30 months
Implementation	European Commission
Type of beneficiaries	All entities
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This topic will be subject to Article 12(6) of Regulation (EU) 2021/694 for the following reasons: The Citiverse will help operating security and data critical sectors (energy supply and consumption, water management, waste management, traffic information, etc). Furthermore, the tools and technologies involved will have to handle sensitive data (including citizens' data) and should therefore be built including security by design. Moreover, the tools will be used in activities that are closely linked to the functioning of the public sector and its interaction with citizens (they can have a role in local elections, issuing advice to citizens in crisis situations etc).

Using Article 12(6) will provide continuity with earlier actions. The actions under this topic will develop VR/AR tools that could further use the data space for smart communities, for which Article 12(6) was used in the previous WP21-22. The tools will also be used to complement the Local Digital Twins for which the procurement of a Local Digital Twin toolbox was called for with Article 12(6) in the previous WP 21-22.

2.3.3 Towards networked Local Digital Twins in the EU

Objective

Building on the Data Space for Smart Communities and the EU Local Digital Twin (LDT) Toolbox[100] , both supported by the WP 2021-2022, and in synergy with the action "Developing CitiVerse" (see 2.3.2), the main objective of this action is to consolidate existing results and move towards an ecosystem of mature and networked LDTs across the EU to help cities and communities achieve economies of scale when developing their data platform and LDT services.

EU cities and communities are evolving towards digital communities at a different pace and this topic is proposing three complementary activities to help them achieve economies of scale when adopting data, LDT and AI-based solutions. Previous WP supported the creation of an EU data space for smart communities (and its validation via pilots) and action 2.3.2 pioneers innovative services using 'Citiverse' technology. Under the WP 2021-22, the Commission has also launched procurement actions to support the development of a LDT toolbox in the EU. However, more effort is needed to create a pan-European ecosystem of digital twins that can connect and scale up towards a future "EU CitiVerse". To achieve the approach is to support the development of open source LDT solutions based

[100] Technical specifications in https://op.europa.eu/en/publication-detail/-/publication/d19e2324-3b23-11ee-bd8d-01aa75ed71a1/language-en

on common needs of EU cities and communities (both urban and rural), to connect them and to enrich them with additional innovative services. In order to address the different maturity level of cities and communities, this action will help (1) connect and further develop the already existing LDTs, (2) gain a critical mass of smart communities' data sets, as well as (3) deploy, test, and add more complex AI-based elements to the LDT toolbox, addressing the needs of digitally advanced smart communities.

These and future actions regarding LDTs are contributing to the effective implementation of a Multi Country Project (MCP) in the area of Connected Public Administration.

The action is divided in three objectives, each to be achieved through a separate work strand:

- Objective 1: **Technical inter-connection of existing LDTs:** Connecting data platforms and LDTs from cities and communities that already have a LDT in place, in order to create an EU "federation" of LDTs. Reinforced interoperability through the aggregation of LDTs at a larger scale (cross sectors, cross cities, and cross borders) will help to scale up the EU common data sets and open-source solutions. It will also facilitate the way for less advanced cities and communities who wish to join the existing EU LDT ecosystem.
- Objective 2: **Creation of LDTs based on common needs:** Developing open-source pilots of LDTs services, based on shared needs of cities and communities that already have a local data platform and/or a LDT and want to expand them with new real-life use case services. These services should aim to improve decision-making processes and citizen interaction; reduce risks, costs and downtime; enhance resilience and sustainability of LDT platforms and enable new value creation.
- Objective 3: **Adding new complex AI-based tools to the LDTs toolbox**: Complementing the EU LDT toolbox launched under WP2021-22 with additional complex AI-based and innovative services (e.g., for adaptable multi-sector considerations, advanced simulation and modelling approaches including bottom-up self-organised models). The AI services should be developed and tested within existing cities/communities and be transferable to other contexts.

These objectives will be implemented through three work strands by a single project that will provide cascading funding to the third parties through a single call.

Scope

The selected proposal will manage a community of projects selected by cascading funding mechanism. The work of these projects will be implemented through three main work strands:

- Work strand 1: Connect existing LDTs at EU level and lay down the foundations of an EU LDT ecosystem. When connecting LDTs, and their related data sets, projects should align with the smart cloud-to-edge middleware platform Simpl to achieve interoperability and make use of horizontal services available under the Digital Europe programme such as the Smart Communities dataspace blueprint, the EU data cloud infrastructure and the EU LDT toolbox.
- Work strand 2: Launch new pilot LDT services based on common needs of cities and communities to enhance interoperability and collaboration. The services should be tested in real-life conditions and expand the EU LDT ecosystem by making use of and contributing to the development of the EU LDT toolbox catalogue. The pilots should include at least the following activities:
    a. designing real life use cases based on open and interoperable data sets across sectors. The use of these data sets should follow requirements of the data space for smart cities and communities' blueprint;
    b. building and deploying the pilot services on LDT platforms at city/community level with real use case data;
    c. defining roadmaps for making available the LDT-based services on the EU LDT toolbox catalogue

- Work strand 3: Add new complex AI-based components to the forthcoming EU LDT toolbox[101] to address the needs of cities/communities:

a. Develop and deliver new AI-based services to create simulations, predictive models and forecast in a variety of sectors and use cases amongst which the New European Bauhaus, public services and communities' resilience;

b. Develop and deliver solutions for designing, optimising, and testing urban policies in dynamic complex environments with several interwoven sectors (e.g., traffic volume and pollution levels). AI classical optimization may be complemented with self-organised bottom-up solutions that will offer the necessary adaptability and robustness;

c. Develop and deliver new complex AI-based services related to citizen's engagement, with or without the use of eXtended Reality technology to address aspects of the New European Bauhaus initiative and implement a sustainable, democratic and citizen-centric CitiVerse.

To maximize the scale-up and reusability of the new services, these should be designed in such a way that they can be adopted by different maturity levels LDT architectures.

Outcomes and deliverables

Expected outcomes and deliverables of these three working strands are:

- An EU ecosystem of LDTs sharing a common blueprint.
- An uptake in the number of local platforms and digital twins, with associated services compatible with the EU data cloud infrastructure, reusing interoperable and open-source tools from the LDT toolbox.
- New AI-based services extending and supplementing the catalogue of the EU LDT toolbox for cities and communities.
- Increasing and maturing the AI services offering the public domain with new predictive and modelling services and immersive solutions, paving the way to the CitiVerse.

Type of action	Grant for financial support to third parties
Indicative budget	EUR 20 million Within the open call for cascading grants, the selected project should ensure that at least 85 % of the budget is allocated to the cascading funding, from which at least 30 % is allocated to work strand 1 activities; at least 30 % to work strand 2 and at least 15 % to work strand 3.
Indicative call planning	Fourth set of calls
Indicative duration of the action	42 months
Implementation	European Commission
Type of beneficiaries	Public and private entities such as (but not limited to): public administrations (national, regional and local level), EDIC, technology developers and suppliers, research and academia.

[101] Part of the envisaged procurement action that will be launched by the end of 2023.

Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. The LDT will offer modelling and simulation services linked to several critical city infrastructures such as energy supply and consumption, traffic information, urban management etc. relying on sensitive data, which could then be exposed to vulnerabilities and impact public order. Indeed, these services and infrastructures might be at risk of malicious action by individuals, groups or regimes that would attempt to compromise, distort or disclose data, thus compromising the availability of the service and the integrity of the information/data used for/within that service. Moreover, the participation of non-EU entities entails the risk of such sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.3.4 Platform for advanced virtual human twin (VHT) models

Objective

A virtual human twin (VHT) is a computational model of human patho-physiological processes at different anatomical scales. VHTs hold enormous potential in health and care, namely by delivering on personalised care from targeted prevention to tailored clinical pathways and supporting healthcare professionals in virtual environments (e.g. from medical training to surgical intervention planning) and the virtual worlds. They can make a significant contribution to achieving the goals of the European Health Union.

The main objective of this action is to develop a distributed platform making available to users (1) a federated repository of VHTs related resources, (2) a combined set of open source software toolkits, and (3) access to computational services, enabling them to develop, test and integrate VHT models. The software toolkits to access the platform repository and services will be deployed and hosted by each user organisation or institution.

The platform will be used by researchers, developers, engineers, practitioners, innovators in the health and care domain, including for professional training and educational purposes. It will provide controlled and secure access to an environment of simulation and visualisation tools. It will also include openly accessible and proprietary data and model assets for advanced modelling. The platform will be used for developing, testing and integrating existing and new VHT models, based on reference datasets, other research outputs and user resources, and will be fully interoperable with augmented and virtual reality environments. Its use will be based on access to computational services enabled by strategic digital capabilities (e.g. HPC, cloud, edge computing, AI), with links to suitable testing and experimentation facilities (e.g. the healthcare TEF for AI) and other resources becoming available in the context of the European Health Data Space.

Scope

Deliver a user-friendly, open-source, trusted, platform for bringing together VHT resources in healthcare. It should be enterprise-class, secure, fully supported, scalable, making use of extant infrastructure and services, catering for a large user base, and implementing an agreed access rights and IP policy to be elaborated in the action.

The platform will comprise of the following components:

- the federated repository of data and VHT model assets;
- an opensource reference implementation access federator for building and visualising simulations; and
- an orchestrator of computational services for running these simulations on shared resources.

The action will, inter alia:

- ensure the operation and maintenance of the repository, its full and trusted interoperability with the other software and service components developed under this action, and manage its growth of tools and assets;
- build a trusted access federator open-source software instance enabling simulations using models and data available in the federated repository, including a model and data interoperability bridge and visualisation modules;
- design and build a trusted open-source orchestrator instance that makes use of compute, storage and network services available for simulations in this federated environment; and
- deploy visualisation, resource portfolio management, user customisation features and tools.
- develop a suitable ethical, societal and legal governance framework for future, advanced VHT models;
- support networking and awareness activities, including on ethical and legal issues.

Platform design and implementation will have to address architectural, computational, and other technical VHT model requirements (standards and/or API-based for the interoperability bridge module, other), ensuring the platform's effective utilisation. The platform requirements should, inter alia, also enable linking with and use of existing and future High-Performance Computing (HPC), storage, connectivity and other capacities available at EU level.

Outcomes and deliverables

- A trusted distributed platform accessible to a wide range of users providing access to data and model resources, user-friendly software and services linking VHT models and data and enabling use case-based advanced multi-scale simulations of human patho-physiology;
- Open-source software and specifications for interoperable VHT models, interfaces, as well as services supporting trusted resource federation, capable of integration and/or use as part future simulation-based products, projects, augmented / virtual reality solutions and virtual worlds.
- Functionalities addressing user access and AI-related requirements during development, testing and implementation.

Type of action	Procurement
Indicative global budget	EUR 24 million
Indicative time	End of 2023/ start of 2024
Indicative duration of the action	24-36 months
Implementation	European Commission
Type of beneficiaries	Not applicable
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This topic action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. The interaction between the user infrastructures and the main platform infrastructure will provide users, due to the distributed and interconnected nature of the infrastructure to support platform operations, access to other EU and Member State critical infrastructures (e.g. data spaces, hospital systems, telecom networks, public computing infrastructures including Cloud and HPC). These critical and other essential public infrastructures and services are exposed to significant security risks, notably cyber-attacks. When such risks materialise, the impact on high numbers of patients and citizens is significant as critical operations could be disrupted, as well as having the potential to affect malicious access to manipulation, exploitation and exposure of sensitive personal data concerning health. The participation of non-EU entities entails the risk of sensitive data and information about such critical infrastructure being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.3.5 Support for Health Data Access Bodies to foster efficient pathways for AI in healthcare

Objective

Healthcare demands continue to increase due to factors like population growth, aging populations, and the prevalence of chronic diseases. Healthcare technologies can help meet these demands by, among others, increasing effectiveness of treatment and diagnostic solutions and efficiency of health systems. The deployment of new medical digital technologies and artificial intelligence (AI) powered solutions for healthcare purposes requires access to real world health data. The amount of data available to drive the development of AI should be as large as possible to limit the introduction of biases that could undermine the effectiveness and safety of healthcare AI solutions or increase inequalities in access to care.

The European Health Data Space (EHDS) establishes a common framework for the reuse of health data. It aims to facilitate and streamline access to EU-wide real-world health data for specific purposes such as the development, testing, deployment and uptake of products or services contributing to public health or the training, testing and evaluation of algorithms, including in medical devices, AI systems and digital health applications. The proposal for a Regulation on the EHDS[102] provides for Health Data Access Bodies (HDABs) in each country as trusted anchors to support and supervise the reuse of health data.

As part of the wider AI ecosystem in health, such as Testing and Experimentation Facilities (TEFs) for AI and European Digital Innovation Hubs (EDIHs), this action aims to strengthen the role and capabilities of HDABs in streamlining the testing and deployment pathways for healthcare AI solutions.

The aim of this action is also to reduce time-to-market and foster the development of new AI-based healthcare products and services that significantly improve patient safety and wellbeing, while preserving privacy and security. This action is not only relevant to the implementation of the EHDS, but also to the implementation of the Artificial Intelligence Act (AIA)[103], which establishes an overarching framework for trustworthy AI, including in healthcare (e.g. medical devices).

[102] https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en

[103] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0206

Scope

The action comprises the following:

- Identifying current pathways, i.e. regulatory, organisational and technical processes and means, for the development, testing and deployment of AI in health, as well as limitations, bottlenecks and gaps reducing the overall effectiveness of these pathways;
- Designing more effective pathways by leveraging EHDS and Health Data Access Bodies, and possibly Testing and Experimentation Facilities (TEFs) and European Digital Innovation Hubs (EDIHs);
- Creating and implementing the necessary capabilities at the level of the Health Data Access Bodies to support these pathways for the development, testing and deployment of AI in health, and building around them an appropriate community including where appropriate, data users, data holders, TEFs and EDIHs;
- Testing and showcasing these pathways with Health Data Access Bodies and the relevant actors in the community, based on specific examples in relevant disease areas, e.g. cancer, mental health or cardiovascular diseases;
- Providing guidelines and recommendations for improving the development, testing and deployment pathways for AI in health, taking advantage of the opportunities offered by the EHDS.

Deliverables

- Report on the identified pathways for testing and deployment of AI in health and their limitations and gaps in the current landscape;
- Description of pathways based on health data access bodies' services and other key actors such as TEFs and EDIHs, where relevant, in light of the EHDS and the AIA;
- Guidelines for creating and deploying the necessary capabilities for HDABs to support the development, testing and deployment pathways for AI in healthcare;
- Reports on the tests and showcases conducted;
- Recommendations for the implementing of development, testing and deployment pathways of AI in health based on the opportunities offered by the EHDS and the requirements of the AIA.

Type of action	Coordination and Support Action (CSA)
Indicative budget	EUR 4 million (100% funding)
Indicative time of call opening	Third set of calls
Indicative duration of the action	36-48 months
Implementation	HaDEA
Type of beneficiaries	Health data access bodies, public sector bodies and Member States' authorities; academia; healthcare providers; private entities such as health technology SMEs and start-ups;
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This topic action will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons. This action includes two activities that come with security risks. Firstly, the designs of infrastructures

to connect HDABs with data sources and other data space infrastructures, constitute security sensitive information in their own right. In addition to a secure process for sharing these, the parties with whom the designs will be shared have to fulfil an appropriate set of criteria for security as a requirement to be met. The application of Article 12(6) is considered an appropriate safeguard in this regard. Furthermore, testing activities involving the use of live systems must be restricted to avoid undue access, exploitation, operational disruption and related risks linked to the participation of non-EU entities without the provision of the necessary guarantees. Security is a prerequisite and foundation for building and maintaining trust in HDABs as new structures. Without security as an enabler and enduring pillar of trust, HDABs will find it increasingly difficult to elicit user support and fulfil their mandate as part of the EHDS. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.3.6 AI in support of Quantum-Enhanced Metabolic Magnetic Resonance Imaging Systems

Objective

Magnetic resonance imaging (MRI) is a powerful tool for detecting, diagnosing and monitoring a wide range of medical conditions. An emerging approach based on quantum-enhanced metabolic MRI enables detection of the tissue metabolism, down to the cell level, leading to a much higher precision of detection and analysis of the human body. In combination with artificial intelligence (AI) and/or machine learning techniques to analyse the vast amount of data generated and for image analysis, it will lead to faster, more accurate and personalized diagnosis, treatment and follow-up notably of cancer and/or neurological disorders. The overall aim of this action is to prepare for the industrialisation and deployment of such emerging systems, with a focus on cancer imaging and/or neurological imaging.

Scope

Metabolic MRI has the potential to provide information about changes in tissue metabolism which can precede macroscopic tissue changes seen with standard MRI. For example, this emerging technology can provide early detection of changes in tissue metabolism and fast feedback on treatment effectiveness, a crucial aspect of finding effective cancer therapy. The development of AI techniques for the analysis of quantum-enhanced metabolic MRI images could substantially enhance the capabilities of this new technology, transforming the process into a more automated, personalised and efficient one.

Therefore, the scope of this call is to develop and experimentally validate in an hospital environment a more precise and faster tool for the study, diagnosis, treatment and follow-up of cancer and/or neurological disorders (such as Alzheimer's disease and multiple sclerosis) by enhancing existing MRI systems with quantum-enhanced metabolic MRI and AI techniques.

The project will include the deployment of innovative automated polariser systems for quantum-enhanced metabolic MRI in at least two research hospitals in two different Member States, working in close collaboration. The systems should allow for fast turnover and generation of metabolic agents within a few minutes, without the need for operating such systems at cryogenic temperatures. The polarisation level should be sufficiently high such that a metabolic MRI scan can be performed in a single-shot experiment, shortly after injecting the metabolic agent into a living organism.

The project will also underpin the development of one or several AI models for the analysis of metabolic MRI data. To this end the images generated in the course of the project will be collected and annotated. These images, duly anonymised, will, together with images from other European

initiatives and other clinical datasets, will be used to train one or several AI models useful for the development of new diagnostic and treatment selection protocols.

The project should be designed in in two phases. The start of the second phase should be conditional of the successful completion of the first phase:

Project Phase 1:

- Deployment and validation in a pre-clinical environment of two first-generation polariser systems for the refinement of hyperpolarisation techniques, metabolic agents, MRI sequences, and signal detection to optimise the visualisation of metabolism in a range of tissues with different pathologies.
- Creation of an initial experimental AI model to analyse the MRI images in combination with inputs from other sources and forms of medical analysis, including, where relevant, datasets accessible via the cloud, with a view to developing future diagnostic and treatment selection protocols.

Project Phase 2:

- The second phase consists of the deployment and validation in a clinical environment of two second-generation polariser systems and associated AI techniques (including the training of new models if necessary) to investigate tumour growth and disease progression, diagnosis, treatment selection and decision-making, and the evaluation of medical outcomes, as well as evaluate and optimise treatment of cancer and/or neurological diseases.

Outcomes and deliverables

In phase 1:

- Validation of the capabilities of metabolic MRI in a pre-clinical context as a diagnostic tool for cancer and neurological diseases and identifying appropriate treatments. This includes benchmarking of the success rate in finding effective cancer therapy within a relevant time frame, treatment responsiveness, recovery time and accuracy of treatment efficacy prediction.
- The development of AI/machine learning techniques for cancer imaging and/or neurological imaging, e.g. by analysis of datasets accessible via the cloud, via the creation of an experimental AI/machine learning model.
- Contribution to European and national initiatives on cancer imaging, and the future European Health Data Space.

In phase 2:

- Benchmark metabolic MRI against standard MRI and other standard diagnostic tools by performing clinical trials in patients.
- Operational impact of introducing metabolic MRI in hospitals, including financial implications and number of patients treated.
- Assessment of metabolic MRI combined with AI techniques as a means to detect early signs or support the diagnosis of Alzheimer's disease and/or multiple sclerosis.
- Standard procedures and best practices for the use of quantum-enhanced metabolic MRI in combination with AI techniques for cancer imaging and/or neurological imaging as a contribution to preparations for the wide use of this technology in European hospitals. Recommendations should be application/diagnosis-specific and mention, among other parameters, the preferred metabolic agent and the number and duration of metabolic MRI scan intervals.

- Extended AI models as a tool for diagnosis, treatment selection and decision-making, and the evaluation of medical outcomes, including assessment of correlations between metabolic MRI imaging data and treatment success, in line and coordination with the European Cancer Imaging Initiative.
- Use project results to contribute to European and national initiatives on cancer imaging, and in line with the future European Health Data Space.

Type of action	SME support action
Indicative Budget	EUR 5 million
Indicative year of call	Third set of calls
Indicative duration of the action	36-48 months
Implementation	European Commission
Type of Beneficiaries	industrial partners (including SMEs) and research hospitals, R&D centres or institutions
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This topic will be subject to Article 12(6) of Regulation (EU) 2021/694 because it will cover sensitive personal health data to be handled by AI-based applications. In order to safeguard unauthorised access to this sensitive data and its use in the still emerging field of AI, and protect the EU's security and public health interests, it is necessary to subject the participation of non-EU entities to security safeguards. Such participation entails the risk of such sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Moreover, this topic also covers EU capacities in quantum sensing, an emerging field that will be of high strategic value in the development of applications in healthcare and other sectors fundamental to the EU's security interests. Therefore, based on the outlined security reasons, the action is subject to Article 12(6) of the Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.3.7 Support for the AI Act

The EU has been preparing the world's first comprehensive regulatory framework for trustworthy AI, the 'AI Act'. The AI Act should guarantee the safety and fundamental rights of people and businesses using AI, while boosting AI uptake, investment and innovation across the EU. The Commission presented its proposal for the AI Act[104] in 2021, based on broad consultation with industry, civil society, public authorities, academia and experts. It follows a risk-based approach and set proportionate rules to address specific risks posed by the use of an AI system.

While the AI Act is currently in the final stages of the legislative process, the Commission has started preparations for its future implementation. It has notably published a first AI Standardisation Request[105] and is working together with European Standardisation Organisations, industry and civil society to support the development of technical specifications in support of the AI Act. It has also been cooperating with Member States and supporting the implementation of pilot regulatory sandboxes[106]

[104] See COM(2021)206

[105] See C(2023)3215

[106] This includes notably a pilot project in Spain – see https://digital-strategy.ec.europa.eu/en/news/first-regulatory-sandbox-artificial-intelligence-presented

which aim to test regulatory requirements with companies and provide some good practices and input to support the future implementation.

Without prejudice to the outcome of the negotiations of the co-legislators, a number of additional actions should be launched in order to prepare and facilitate the implementation of the AI Act.

2.3.7.1 EU AI Innovation Accelerator preparatory action

Objective

The overall objective of this topic is to accelerate innovation and trustworthy AI by providing a range of services and tools to providers of AI systems, in particular to SMEs, to prepare for and facilitate compliance with the upcoming AI Act.

Scope

The action to be supported under this topic should focus on developing prototypes of services, tools and infrastructure that would be supporting companies to achieve and assess the compliance of their AI systems with the AI Act. This work notably includes:

- Developing process frameworks, virtual infrastructure, tools, metrics and benchmarks for compliant development and validation of AI systems against the AI Act requirements (e.g. for data quality, accuracy, robustness, safety), including through prototype(s) of software solutions for legal compliance;
- Developing a prototype of a digital tool supporting providers of AI systems in classifying their AI system in accordance with the levels of risks envisaged in the AI Act;
- Developing a prototype of a self-assessment tool for conformity assessment, risk management and post market-monitoring, specifically adapted to the needs of SMEs;
- Developing a digital platform and infrastructure making the frameworks, tools and metrics developed under this action publicly available;
- Providing personalised technical and legal support to small and medium sized enterprises and public authorities to use the frameworks, tools and infrastructure developed under this action, including to provide ad hoc replies to inquiries in relation to the AI Act - this would include developing online training and awareness-raising material targeted at providers and users of AI systems in relation to relevant requirements and obligations under the AI Act.

The awarded proposal from this topic is expected to collaborate as appropriate with the one from section 2.3.7.2 (AI regulatory sandboxes: EU-level coordination and support). In particular, the latter should rely on draft tools, metrics and guidelines developed under this action. At the same time the testing experience in the sandboxes under 2.3.7.2 should serve to test and update the deliverables under this action.

In terms of target group, this action should focus mainly on under-resourced companies, in particular SMEs and start-ups, and under-resourced public authorities developing high-risk AI services/products or general-purpose AI as defined by the AI Act, in particular for what concerns any personalised services and support actions.

All final materials, frameworks and tools developed and validated under this action will be made publicly available and may be used by any provider or user of AI system.

To build on synergies with other initiatives supported by the EU, this action should establish contacts with TEFs, the AI-on-Demand platform, data spaces, and EDIHs, in order to work out which existing resources can be offered jointly to AI innovators and which resources would have to be built in future.

Close cooperation should also be pursued with international and European Standardisation Organisations (in particular CEN[107] and CENELEC[108]) to take into account progress in the development of AI standards and use them as a basis for the development of the action.

Deliverables

- Harmonised frameworks, tools and infrastructure at European level to support compliance with the AI Act that have been tested in practice by under-resourced SMEs and public authorities.
- Provision of materials and training courses to support compliance with the AI Act.

Type of action	Grant for procurement
Indicative budget	EUR 6 million
Indicative call planning	Third set of calls
Indicative duration of the action	2 years
Implementation	European Commission
Type of beneficiaries	Public or private entities, including research and technology organisations, private companies and organisations supporting the AI innovation ecosystem.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to Article 12(6) of Regulation (EU) 2021/694 for the following reasons: The action is expected to play an instrumental role in the support to the development of systems that will be compliant with the future Regulation on AI, including in particular for what concerns the requirements introduced for high-risk systems. As per the AI Act proposal, this category of systems should include AI systems used for the management and operation of critical infrastructure, as well as AI systems used by law enforcement authorities for activities that are highly sensitive. The participation of non-EU entities entails the risk of such sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, this topic will be subject to article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.3.7.2 AI regulatory sandboxes: EU-level coordination and support

Objective

This topic aims at providing support and coordination at EU level for AI regulatory sandboxes established under the future AI Act, with a view to scaling up the corresponding activities once the AI Act is fully applicable. Depending on the outcome of the legislative process, the corresponding action should also contribute to the implementation at EU level of other tasks related to regulatory sandboxes as envisaged in the AI Act.

[107] European Committee for Standardization.

[108] European Committee for Electrotechnical Standardization.

Scope

The action to be supported under this topic will include the following tasks:

- Supporting the creation and effective cross-border cooperation at EU level between national competent authorities establishing AI regulatory sandboxes as envisaged under the AI Act;
- Developing common frameworks, processes and tools for supervision of AI projects in the regulatory sandboxes and providing technical and legal support to competent authorities and innovators for their implementation;
- Organising the practical testing of draft guidelines, tools and processes (developed in the 'EU AI Innovation Accelerator preparatory action') and assisting providers of innovative AI systems across Europe selected to participate in sandboxes to comply with the AI Act with the involvement and under the supervision of national competent authorities responsible for the AI Act;
- Analysing the experience accumulated in the national AI sandboxes with a view to updating the tools and processes tested by innovators and providing conclusions, good practices and lessons learnt for evidence-based regulatory learning and for the development of EU guidelines and other rules implementing the AI Act;
- Creating a single EU information platform[109] providing a one-stop-shop for all AI regulatory sandboxes, enabling the sharing of information and providing a central repository of the tools, knowledge and lessons learnt in the sandboxes.

The awarded proposal from this topic should collaborate as appropriate with the one of 'EU AI Innovation Accelerator preparatory action' to be supported under the topic proposed in section 2.3.7.1. In particular, it should rely on draft tools, metrics and guidelines developed under the 'EU AI Innovation Accelerator preparatory action', while the testing experience in the sandboxes should serve to test and update the deliverables under that action and complement these tools based on the learning experience in the sandboxes. The selection of the providers that can participate in the sandboxes will be based on the eligibility criteria to be defined in the AI Act implementing acts on regulatory sandboxes, but with a priority access for small and medium sized enterprises.

All final materials, frameworks and tools developed and validated under this action will be made publicly available and may be used by any provider or user of AI systems.

This action should build on the experience and the deliverables from pilot regulatory sandboxes[110]. It should also work with relevant national hubs and initiatives and Member States, including those setting up or planning to set up AI regulatory sandboxes at national level or creating other supporting infrastructure and services to support compliance with the AI Act and accelerate innovation. To build on synergies with other initiatives supported by the EU, this action should establish contacts with TEF, the AI-on-Demand platform, data spaces, EDIHs and EDICs focused on AI in order to work out which existing resources can be offered jointly to AI innovators and which resources would have to be built in future. Close cooperation should also be pursued with international and European Standardisation Organisations (in particular CEN[111] and CENELEC[112]) to take into account progress in the development of AI standards and use them as a basis for the development of the action.

Depending on the outcome of the legislative process, other tasks related to sandboxes and envisaged in the AI Act might also have to be addressed under this action.

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[109] Envisaged by the Council and the EP in their amendments to the AI Act.

[110] Such as the Spanish pilot that tests the draft AI Act with companies in the second half of 2023.

[111] European Committee for Standardization.

[112] European Committee for Electrotechnical Standardization.

Deliverables

- Common processes and tools for the operation of AI regulatory sandboxes under the AI Act, and the testing and supervision of a cohorts of projects at EU level.
- Common platform for sharing information, including a repository of all practices, lessons learnt and outcomes from the testing done in the sandbox.

Type of action	Coordination and Support Action grant
Indicative budget	EUR 2 million
Indicative call planning	Third set of calls
Indicative duration of the action	2 years
Implementation	European Commission
Type of beneficiaries	Public or private entities, including research and technology organisations, private companies and organisations supporting the AI innovation ecosystem.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to Article 12(6) of Regulation (EU) 2021/694 for the following reasons: The action will coordinate and provide essential support to the structures to be put in place by Member States to support the AI innovation ecosystem in ensuring compliance with the future Regulation on AI, including in particular for what concerns the requirements introduced for high-risk systems. As per the AI Act proposal, this category of systems should include AI systems used for the management and operation of critical infrastructure, as well as AI systems used by law enforcement authorities for activities that are highly sensitive. The action will also require provision of support and close collaboration with public supervisory authorities and access to sensitive information related to the activities of their local AI ecosystems. Participation of non-EU entities entails the risk of sensitive data and information being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, this topic will be subject to Article 12(6) of Regulation (EU) 2021/694.This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.3.7.3 EU database for stand-alone high-risk AI systems

Objective

The AI Act proposal[113] foresees that the Commission shall, in collaboration with the Member States, set up and maintain an EU database where stand-alone high-risk AI systems should be registered.

To feed this database, AI providers will be obliged to provide meaningful information about their systems and the conformity assessment carried out on those systems. Co-legislators are also envisaging an extension of the duty to register to certain categories of users. Moreover, the information contained in the database shall be accessible to the public.

[113] See COM(2021)206 – article 60.

This registration will enable competent authorities, users and other interested people to verify if high-risk AI systems comply with the requirements laid down in the AI Act and to exercise enhanced oversight over those AI systems posing high risks to fundamental rights.

While the AI Act is still being negotiated and detailed provisions related to this database might eventually differ from the Commission proposal, the principle of establishing such a database is expected to remain in the version of the Regulation that would be adopted by the co-legislators.

Hence, this action aims at ensuring the availability of the database by the date of application of the related provisions.

Scope

On the basis of the provisions of the version of the AI Act that will have been adopted by the co-legislators, this action will cover the design, the development, the establishment and the maintenance of the system allowing to implement the EU database for stand-alone high-risk AI systems, including its infrastructure and the accessible, user-friendly and secure interfaces allowing the supply of information by providers and the access by competent authorities and citizens across Europe.

Deliverables

The EU database for stand-alone high-risk AI systems will constitute the main deliverable of this action.

Type of action	Procurement
Indicative global budget	EUR 0.5 million
Indicative time	2024
Indicative duration of the action	24-36 months
Implementation	European Commission
Type of beneficiaries	Not applicable
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to Article 12(6) of Regulation (EU) 2021/694 for the following reasons: The database to be developed under this action should include information about AI systems used for the management and operation of critical infrastructure as well as about AI systems used by law enforcement authorities for activities that are highly sensitive in their nature. Participation of non-EU entities entails the risk of highly sensitive information about security infrastructure, risks and incidents being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, this topic will be subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.3.7.4 Pilot action for the establishment of future Union Testing Facilities in AI

Objective

In the context of the implementation of the AI Act, it is envisaged to establish Union Testing Facilities (UTF) in the area of artificial intelligence to support Member States authorities in the ex-post verification of the compliance of AI systems placed on the market with AI Act requirements whenever

deemed necessary[114]. Such Union Testing Facilities shall also provide independent technical or scientific advice at the request of the AI Board or market surveillance authorities.

The main objective of this action is to launch a pilot project to prepare the implementation of the concept of testing facility for AI and define the requirements for a full-scale operation of the testing facility (after the pilot phase).

Scope

On the basis of the requirements of the EU Regulation on Artificial Intelligence ('AI Act') when adopted and the ongoing work aiming at developing corresponding standards (further to the standardisation request[115] issued by the Commission and addressed to CEN-CENELEC), the action should perform the following tasks:

- developing an approach to the implementation of the UTF concept for AI systems, including notably the approach to the testing of the compliance of AI systems with the requirements introduced by the AI Act, as well as the expertise and infrastructure requirements of a future AI UTF;
- carrying out preliminary testing of AI systems (to validate the proposed approach);
- providing independent technical or scientific advice at the request of the Commission, the AI Board, or Member States market surveillance authorities;
- organising workshops and other activities fostering collaboration and exchange of information between Member States market surveillance authorities in preparation of the implementation of the AI Act;
- conducting initial and further training courses for the benefit of the staff of market surveillance authorities of Member States and the Commission,
- in the context of activities of standardization organizations, including notably CEN/CENELEC JTC 21, contributing to the development of standards to verify and validate AI systems against the AI Act's requirements for High-Risk scenarios, whether stand alone or integrated in regulated products and services.

Deliverables

The main deliverables of the action should be:

- a tested and validated suite of testing procedures and tools to be used in a future full-scale UTF;
- training material for market surveillance authorities;
- recommendations for the long-term establishment of union testing facilities on AI.

Type of action	Coordination and Support Action grant
Indicative global budget	EUR 1.5 million
Indicative call planning	Third set of calls
Indicative duration of the action	24-36 months
Implementation	European Commission

[114] On the basis of the provisions of Regulation (EU) 2019/1020 on market surveillance and compliance of products, Union Testing Facilities are already being established in other areas, such as toys, radio equipment, construction products and for the eco-design and energy labelling sector.

[115] See C(2023)3215 - https://ec.europa.eu/transparency/documents-register/detail?ref=C(2023)3215

Type of beneficiaries	All entities
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694

This action will be subject to Article 12(6) of Regulation (EU) 2021/694 for the following reasons: The action will be instrumental in contributing to the supervision of the implementation of the future Regulation on AI, including in particular for what concerns AI systems used for the management and operation of critical infrastructure and AI systems used by law enforcement authorities for activities that are highly sensitive. Participation of non-EU entities entails the risk of highly sensitive information about security infrastructure, risks and incidents being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, this topic will be subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.4 Alliance for Language Technologies and open-source foundation model

The advent of generative AI, exemplified by models like ChatGPT, represents a transformative moment in technological innovation. Yet, most of the advances are coming from regions outside Europe and do not cover all languages equally.

Building an ecosystem around large language and AI models in Europe will provide better autonomy for the use and sharing of European data and will reduce EU's dependence on technologies from outside Europe.

2.4.1 Alliance for Language Technologies

Through federating Member States efforts, this action will directly contribute to preserving the linguistic and cultural diversity in Europe while effectively implementing the European Common Data Infrastructure and Service MCP's objectives in the area of language technologies. By providing the necessary data and model adaptation capacities, the action will have a strong impact on the deployment of large language foundation models and their applications such as generative AI. This federated effort will be established around two work strands.

First work strand – Data collection & Fine-Tuning

The first work strand will support the language data collection and the adaptation of existing large language foundation models to specific languages, domains or industries so as to support the onboarding of the latest language technologies by the European actors.

Scope

Data: Leveraging on the Common European Language Data Space and other relevant Data Spaces, this activity will, in compliance with the applicable legislation (e.g. Copyright and GDPR), gather the necessary language data (text, audio, image and other modalities) from a broad array of European industrial, academic and institutional actors, and provide data in sufficient quality and quantity that can be made available to build large language foundation models, ensuring a coherent coverage of all the official languages of the Member States as well as the most socially and economically relevant ones. This will also include providing data required to adapt such large language foundation models to specific languages, domains or industries. The action will also provide a repository of existing European Large Language foundation models as well as models adapted to specific languages, domains or industries. Once sufficiently advanced, the consortium may consider working on a future

copyright infrastructure and related issues to allow efficient use of language and other data, while taking into account the interests of the rightsholders.

Fine-tuning:

- This activity will also provide large language models fine-tuned to specific languages, domains or industries as a result of further training of large language foundation models on specific language data. This process involves adapting, evaluating and optimizing foundation models for specific languages, domains or industries. It will facilitate the efficient deployment of these models across various industries, requiring less task-specific data compared to building models from scratch, which is particularly advantageous for SMEs. The action will also include the support for the ongoing maintenance and enhancement of these models, ensuring their adaptability to evolving tasks and domains over time.
- In addition, this activity will also provide, including through Financial Support to Third Parties, dedicated supports and services, in particular for SMEs, to facilitate the fine-tuning of available models. This supports and services will provide third parties with an infrastructure to fine-tune and evaluate existing models for their purpose.

The EuroHPC Joint Undertaking would provide access to their facilities for the adaptation and fine-tuning of the models when necessary.

The consortium that will carry out this action should be composed by representatives of Member States; public and private organisations, SMEs, RTOs; entities with access to large compute capacities; public and/or private data providers, such as the media or publishing industry.

Deliverables

- Increased accessibility to language data for the development and adaptation of large language foundation models, in consideration of issues linked to data privacy and security, as well as potential risks of disinformation.
- A repository of families of existing large language foundation models for public and industrial reuse in the EU.
- A repository of families of large language models fine-tuned to specific languages, domains or industries.
- Infrastructure and services for models fine-tuning.

Second work strand - Ecosystem

The second work strand will support the coordination of a European Language Technologies ecosystem. This activity will bring together public and private organisations to provide infrastructure and support to developers and users of large language models, especially SMEs.

Scope

The infrastructure will act as advisory point, offer awareness raising and community building. It will support SMEs to onboard the large language models in their production workflows.

The work will be carried out in close collaboration with national initiatives, the Data Spaces, the AI on-demand platform, Testing and Experimentation Facilities, Digital Innovation Hubs, the EuroHPC Joint Undertaking's supercomputing facilities and in synergy with the open-source foundation model action.

The consortium that will implement this action should be composed by representatives of Member States.

Deliverables

- An improved EU-wide digital infrastructure for Language Technologies.
- A strong community with the establishment of a coordination framework for the different stakeholders (e.g., Member States and industry) around relevant European, national and private initiatives for large language models.

First work strand – Data and Fine-tuning

Type of action	Simple Grant
Indicative Budget	EUR 20 million
Indicative time of call opening	Third set of calls
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries	Public and private entities such as (but not limited to): public administrations (national, regional and local level), EDIC, economic actors (SMEs, large organisations), higher education entities and research and technology organisation
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694.

Second work strand - Ecosystem

Type of action	Coordination and Support action grant
Indicative budget	EUR 4 million
Indicative call planning	Third set of calls
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries	Public and private entities such as (but not limited to): public administrations (national, regional and local level), EDIC, economic actors (SMEs, large organisations), higher education entities and research and technology organisation
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694.

Both work strands of this topic will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons: generative AI and foundation models have demonstrated a broad and expanding range of capabilities, such as writing computer code, composing speeches, and generating visual media. In the European Economic Security Strategy adopted by the Commission on 20 June 2023, AI is one of the critical technology areas that are key to EU's economic security. The outputs of the action will include validated foundation models available to any type of users, including those in security sensitive areas (energy, mobility, security sensitive manufacturing sectors), or areas with an impact

on public order (e.g. healthcare, food supply chain). In addition, the action will offer access to a large variety of language data, including some originated from private and public sector that could be combined and potentially used for disinformation or malicious attacks. Organizations running and coordinating the action will be responsible for validating the solutions, including their security features and protection of fundamental rights and EU values, before their large diffusion. They will also have access to confidential information about the solutions tested in their facilities, some of which are likely to be related to the security or safety aspects. Moreover, organisations running and coordinating the action will have access to data coming from the data spaces subject to the application of article 12(6), as well as to business related data and AI algorithms, before they are eventually deployed to the market. Participation of non-EU entities entails the risk of highly sensitive information about security infrastructure, risks and incidents being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the actions relating to the Alliance for Language Technologies are subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

2.4.2 Making available a high performing open-source European foundation model for fine-tuning

Objective

Future developments in AI are expected to be based on the further use or fine tuning of large foundation models. It is therefore important that AI companies have full access to European trustworthy foundation models that include all the official languages of the Member States as well as the most socially and economically relevant ones and ensures transparency. Easy and long-term availability of foundation models in the EU would ensure European sovereignty in this area. Building on different European initiatives regarding foundation models would foster the creation of an open community around this topic, strengthening capabilities and consolidating resources, ensuring long-term commitment by European actors to the development of transparent foundation models, and facilitating exploitation and fine tuning by European SMEs.

The initiative aims to propose and make available one open-source large language foundation model as an infrastructure designed to be largely used by public or private users, and in particular by European SMEs, for further fine tuning. With this objective, the initiative will support the scaling up of an existing European foundation model and will release it under an open licence to maximize the impact on European Industry.

Differently from existing open-source foundation models, all relevant components of such model benefitting from this action will be made available, such as properly anonymized training datasets, algorithms, and model weights. To consider security concerns, the model and its components will be licensed to European actors by a European entity (to be selected), established in the EU and not controlled by a third country. Possible entities could be the AI-on-Demand platform, a possible future EDIC or upon proposal from the consortium.

The consortium that will carry out this action will comprise relevant developers including start-ups or RTOs leading in the domain, or a combination of these.

Scope

- European large language foundation model: this action will co-fund activities involving a number of developers[116], to scale-up a well selected, open-source foundation model to be made available to EU industrial and public services users and to the AI developer community, ensuring coverage of all the official languages of the Member States as well as the most socially and economically relevant ones, thereby maximizing the impact within the bounds of the technology. This model will be eventually applicable to broader types of uses and applications.
- Attention should be paid to the performance, transparency and security of the deployed model, through appropriate testing procedures, in compliance with the future AI Act.
- The EuroHPC Joint Undertaking would provide access to their facilities for the retaining of the model.
- Once developed, the model should be deployed and made available through the AI-on-Demand platform and the Alliance for Language Technologies action and/or other.
- The action should coordinate and build on related actions under Horizon Europe and Digital Europe Programme such as TrustLLM, HPLT, AI-on-Demand and the Alliance for Language Technologies action. Through this coordination the action should foster a coordination framework for the different stakeholders (e.g., Member States and industry) around relevant European, national, and private initiatives developing foundation models, ensuring complementary and synergies with communities supported by the Alliance for Language Technologies action.

Deliverables

- An EU wide digital infrastructure providing a high performing European large language foundation model for industrial and public services exploitation;
- Development of a strong community with the establishment of a coordination framework for the different stakeholders around development and exploitation of such foundation model.

Type of action	SME Support Action (75% co-funding rate for SMEs and 50% for all the other beneficiaries)
Indicative Budget	EUR 25 million
Indicative time of call opening	Third set of calls
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries	Private companies, including SMEs and start-ups, research and technology organisations, higher education entities and EDIC.
Security	Call restricted on the basis of Article 12(6) of the Regulation (EU) 2021/694.

This topic will be subject to article 12(6) of Regulation (EU) 2021/694 for the following reasons: Generative AI and foundation models have demonstrated a broad and expanding range of capabilities, such as writing computer code, composing speeches, and generating visual media. In the European Economic Security Strategy adopted by the Commission on 20 June 2023, AI is one of the

[116] Such as start-ups leading in the domain, RTOs, or a combination of these.

critical technology areas that are key to EU's economic security. The outputs of the action will include validated foundation models available to any type of users, including those in security sensitive areas (energy, mobility, security sensitive manufacturing sectors), or areas with an impact on public order (e.g. healthcare, food supply chain). Organizations running and coordinating the action will be responsible for testing the models, including their cybersecurity features and protection of fundamental rights and EU values, before their wide diffusion. Moreover, organisations running and coordinating the action will have access to data coming from the data spaces subject to the application of article 12(6), as well as to business related data and AI algorithms, before they are eventually deployed to the market. Participation of non-EU entities entails the risk of highly sensitive information about security sensitive data or security-related features and potential vulnerabilities of such critical technologies of being subject to legislation or pressure that obliges those non-EU entities to disclose this information to non-EU governments. Therefore, based on the outlined security reasons, the action relating to high performing open-source European foundation model for fine-tuning is subject to Article 12(6) of Regulation (EU) 2021/694. This does not exclude the participation of legal entities established in associated countries and legal entities that are established in the Union but are controlled from third countries, where they meet the conditions defined in this Work Programme.

3 Cybersecurity

Cybersecurity is at the heart of the digital transformation of the European Union. The Digital Europe Programme will continue to strengthen the capabilities of the Union to protect its citizens and organisations aiming –amongst others- to improve the security of digital products and services throughout the whole supply chain.
In accordance with the Annex 1 of the Regulation (EU) 2021/694, the activities funded in 2023 and 2024 will focus on supporting the deployment of cybersecurity infrastructure, strengthen cybersecurity uptake, specifically in sectors affected by the Covid-19 pandemic and the effects of the war in the Ukraine and the ensuing economic crisis and support the implementation of relevant EU legislation and political initiatives[117].
The Cybersecurity activities are specified in a dedicated WP 2023-2024 which will be implemented by the Cybersecurity Industrial, Technology and Research Competence Centre (ECCC)[108] and the Network of National Coordination Centres (NCCs) as soon as the ECCC is operational, as provided for in the ECCC Regulation and in Article 6(2) of Regulation (EU) 2021/694.

Actions in the Cybersecurity WP 2023-2024 will include in particular joint actions in order to create an advanced (state of the art) threat detection and cyber incident analysis ecosystem by building capacities of Security Operation Centres (SOCs), including National SOCs and Cross-Border SOC platforms,

- actions relating to the implementation of the proposed Cyber Resilience Act,
- actions relating to the transition to Post-Quantum Cryptography,
- contributions to improving the prevention, detection, analysis and the capability to respond to cyber threats and incidents by providing additional means to support preparedness, and

[117] In particular the Cybersecurity Strategy, the NIS Directive, and its second revision (NIS 2), the Cybersecurity Act, the Regulation on the European Cybersecurity Competence Centre (ECCC) and the Network of National Coordination Centres the Cybersecurity Blueprint and Joint Cybersecurity Unit Recommendation, the EU toolbox for 5G security and the Proposal for a Regulation on cybersecurity requirements for products with digital elements - Cyber resilience Act, as well as the Proposal for the Cyber Solidarity Act and the Communication on the Cybersecurity Skills Academy.

response to large-scale cybersecurity incidents via Cybersecurity Emergency Mechanism, without prejudice to the proposed Cyber Solidarity Act,
- actions to support the implementation of EU legislation on cybersecurity and National Cybersecurity Strategies,
- support cybersecurity capacity building at national and, where relevant, regional and local levels through National Coordination Centres which will aim at fostering cross-border cooperation and at the preparation of joint actions as defined in the Regulation (EU) 2021/887.

This WP includes activities in the area of cybersecurity that will be implemented by the European Commission and that aim to strengthen response to cyber threats and incidents across the EU through a mechanism that will support the efforts of the Member States. During 2023 this will also include preparedness in key sectors; from 2024 such preparedness support services will be handled only by the ECCC.

The indicative budget for the topics included in this chapter is EUR 35 million.
The indicative budget to be implemented via the dedicated Cybersecurity WP is EUR 375 million overall.

3.1 Incident Response Support and Preparedness for Key Sectors

Objective

This mechanism aims to complement and not duplicate efforts by Member States and those at Union level to increase the level of protection and resilience to cyber threats, by assisting Member States in their efforts to improve the capability to respond to cyber threats and incidents by providing them with knowledge and expertise and increase preparedness in key sectors.

Scope

The **support of incident response** (ex-post) shall include the following activities:

Gradual set-up of an EU-level cyber reserve with services from trusted private providers to provide relevant services to mitigate the impact of serious incidents. Such services would support immediate recovery and/or restore the functioning of essential services, as well as identification and preservation of digital evidence. Actions to set up the cyber reserve could include:

- Technical assistance with Incident management.
- Information Security Incident Analysis and Crisis Communications as a retainer type of service.
- Artefact and Forensic Evidence collection and analysis preserving the chain of custody.
- Information Security Incident Coordination.
- Comprehensive reporting including scope, recommendations, remediation and findings.
- Coordination with preparedness support services funded under the DEP cybersecurity programme, and other relevant activities on cybersecurity incident preparedness.

The provision of **preparedness support services** (ex-ante) shall include activities that complement and reinforce the activities under the Cybersecurity WP, e.g., focusing on EU coordinated actions for penetration testing. For penetration testing services the focus will be on entities in key sectors identified in the Council Recommendation on a Union-wide coordinated approach to strengthen the resilience of critical infrastructure (energy, digital infrastructure, transport and space). Those entities will benefit from ENISA's support in this area.

This support will be complemented by strengthening of capabilities to develop up-to-date and strategic-level situation analysis, risk scenarios and overviews of the threat landscape through ENISA's contribution in the Cyber Analysis and Situation Centre.

The implementation of this action will be without prejudice to the adoption of the proposed Cyber Solidarity Act[118], and shall be aligned with the proposed Cyber Solidarity Act once this enters into force.

Deliverables

- EU-level cyber reserve with services from trusted private providers for incident response
- Penetration tests in key sectors.
- ENISA's contribution to the Cyber Analysis and Situation Centre.

Type of action	Contribution agreement
Indicative Budget	EUR 20 million
Indicative time	2023
Indicative duration of the action	2 years
Implementation	ENISA
Type of Beneficiaries	Not applicable
Security	Action restricted on the basis of Article 12(5) of the Regulation (EU) 2021/694.

All actions under this topic aim at services intended specifically for protection against criminal and/or politically motivated cyber threats, including in particular supply-chain attacks. The participation of non-EU entities (that is, entities not established in the EU, or established in the EU but not controlled by a Member State or national from of a Member State) could lead to highly sensitive information about security risks and incidents being subject to legislation that obliges the non-EU parties to provide this information to non-EU governments. Also non-EU participants could be more susceptible to pressure from non-EU governments to divulge such information.

In order to protect the essential security interests of the Union, the implementation actions under this topic should depend on legal entities (e.g., providers) established or deemed to be established in Member States and controlled by Member States or by nationals of Member States.

Participation to the calls funded under this topic will therefore be subject to the provisions of Article 12(5) of the Regulation (EU) 2021/694. Calls for proposals and calls for tenders shall be restricted to legal entities established or deemed to be established in Member States and controlled by Member States or by nationals of Member States. EEA EFTA countries are fully associated to the Digital Europe Programme and benefit from a status equivalent to that of the Member States.

3.2 Incident Response Support

Objective

This mechanism aims to complement and not duplicate efforts by Member States and those at Union level to increase the level of protection and resilience to cyber threats, by assisting Member States in

[118] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL laying down measures to strengthen solidarity and capacities in the Union to detect, prepare for and respond to cybersecurity threats and incidents" COM(2023) 209.

their efforts to improve the capability to respond to cyber threats and incidents by providing them with knowledge and expertise.

Scope

The **support of incident response** (ex-post) shall include the following activities:

Gradual set-up and operation of an EU-level cyber reserve with services from trusted private providers to provide relevant services to mitigate the impact of serious incidents. Such services would support immediate recovery and/or restore the functioning of essential services, as well as identification and preservation of digital evidence. Actions to set up the cyber reserve may include:

- Technical assistance with Incident management.
- Information Security Incident Analysis and Crisis Communications as a retainer type of service.
- Artefact and Forensic Evidence collection and analysis preserving the chain of custody.
- Information Security Incident Coordination.
- Comprehensive reporting including scope, recommendations, remediation and findings.
- Coordination with preparedness support services funded under the DEP cybersecurity programme, and other relevant activities on cybersecurity incident preparedness.

This support will be complemented by strengthening of capabilities to develop up-to-date and strategic-level situation analysis, risk scenarios and overviews of the threat landscape through ENISA's contribution in the Cyber Analysis and Situation Centre.

The implementation of this action will be without prejudice to the adoption of the proposed Cyber Solidarity Act[119], and shall be aligned with the Cyber Solidarity Act once this enters into force.

Deliverables

- EU-level cyber reserve with services from trusted private providers for incident response
- Contribution to the Cyber Analysis and Situation Centre.

Type of action	Contribution agreement
Indicative Budget	EUR 15 million
Indicative time	2024
Indicative duration of the action	2 years
Implementation	ENISA
Type of Beneficiaries	Not applicable
Security	Action restricted on the basis of Article 12(5) of the Regulation (EU) 2021/694.

[119] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL laying down measures to strengthen solidarity and capacities in the Union to detect, prepare for and respond to cybersecurity threats and incidents" COM(2023) 209.

All actions under this topic aim at services intended specifically for protection against criminal and/or politically motivated cyber threats, including in particular supply-chain attacks. The participation of non-EU entities could lead to highly sensitive information about security risks and incidents being subject to legislation that obliges the non-EU parties to provide this information to non-EU governments. Also non-EU participants could be more susceptible to pressure from non-EU governments to divulge such information.

In order to protect the essential security interests of the Union, the implementation actions under this topic should depend on legal entities (e.g., providers) established or deemed to be established in Member States and controlled by Member States or by nationals of Member States.

Participation to the calls funded under this topic will therefore be subject to the provisions of Article 12(5) of the Regulation (EU) 2021/694. Calls for proposals and calls for tenders shall be restricted to legal entities established or deemed to be established in Member States and controlled by Member States or by nationals of Member States. EEA EFTA countries are fully associated to the Digital Europe Programme and benefit from a status equivalent to that of the Member States.

4 Advanced Digital Skills

The actions under Strategic Objective 4 aim at supporting the excellence of EU education and training institutions in digital areas, including by encouraging their cooperation with research and businesses. The goal is to improve the capacity to nurture and attract digital talent, whilst fostering an ecosystem that will help drive innovation and digital breakthroughs. These actions contribute to reach the Digital decade target of 20 million ICT specialists employed in the economy in 2030, which include promoting the access of women to this field as well as increasing the number of ICT graduates and are in alignment with the Digital Education Action Plan (2021-2027)[120]. They can also contribute, where applicable, to the Deep Tech Talent Initiative[121], one of the flagship initiatives under the New European Innovation Agenda[122] and complement the two proposals for a Council Recommendation on digital education and skills adopted in April 2023.

Strategic Objective 4 will focus on the following main work strands in this WP:

- Building excellent consortia delivering specialised and inclusive education programmes (ranging from Bachelor's, Master's to doctoral programmes or equivalent) focusing on key emerging technologies, increasing synergies and complementarities with programmes and initiatives like Erasmus+, European Universities Alliances and the Large Scale Partnerships (LSPs) under the Pact for Skills, in particular the Digital Ecosystem Partnership, as well as their focus on the digital transformation, also by ensuring interoperability between the participating organisations.
- Actions will also boost the number of education and training opportunities for "users of advanced digital technologies", who are professionals in specific sectors, but also proficient users of digital technologies and/or multipliers, e.g. advisors in certain sectors. These are for example medical doctors that can use artificial intelligence (AI) in order to improve diagnostics techniques or

[120] Digital Education Action Plan (2021-2027) | European Education Area (europa.eu)

[121] The Deep Tech Talent initiative (https://www.eitdeeptechtalent.eu/) is run by the European Institute of Innovation and Technology (EIT). It aims to train 1 million talents in deep tech areas (incl. AI, cybersecurity, Augmented Reality, blockchain) by 2025 and will be implemented both directly by the Knowledge and Innovation Communities (KICs) of the EIT and through pledges from stakeholders.

[122] The Commission adopted a New European Innovation Agenda to position Europe at the forefront of the new wave of deep tech innovation and start-ups. It will help Europe to develop new technologies to address the most pressing societal challenges, and to bring them on the market. The New European Innovation Agenda is designed to position Europe as a leading player on the global innovation scene.

architects able to harness the potential of extended and virtual reality for their construction projects or enhance their production processes, farm advisors exploiting the potential of precision farming technologies or software experts with specific automotive expertise.

- Developing summer schools, boot camps and other activities, such as specialised career days to attract a wider audience to digital careers, whereas specific activities for raising awareness targeting pupils from the youngest age onwards, from all socioeconomic backgrounds, and in particular girls, will be key. These will need to be delivered in partnerships by higher education institutions, vocational education and training providers or research centres with organisations that are active in promoting digital and coding skills, as well as attracting girls and women to digital careers.
- Providing insights into the gender gap in the ICT professions in the EU, collecting information on the gender gap in ICT professions in other countries internationally, identifying and analysing best practices to tackle it, providing a set of recommendations on activities needed to fight the gender gap in ICT professions in EU as well as creating a network of expertise and community of stakeholders to boost female participation in ICT across Europe.
- Actions under this specific objective will be supported by the Digital Skills and Jobs Platform by offering promotion and dissemination activities, giving visibility to the actions and ensuring that they reach the relevant stakeholders. The Digital Skills and Jobs Platform will support collaboration among the Digital Skills and Jobs Coalition and the digital skills community in Europe.

The participation is open to all eligible entities as established by Article 18 of the Digital Europe programme, in particular public sector as well as private sector organizations including SMEs, higher education institutions and NGOs.

The overall budget for the topics included in this chapter is EUR 121 million.

4.1 Specialised Education Programmes in Key Capacity Areas

Objective

This topic aims at contributing to the target of reaching 20 million ICT specialists in the EU by 2030, while promoting gender convergence, as set in the Digital Decade Policy Programme. Gains from major breakthroughs in key capacity digital technological areas (e.g. artificial intelligence, data analytics, virtual worlds, photonics, quantum, cloud and edge computing, and others) cannot materialise if there are not enough people with adequate knowledge to develop, deploy and use those digital technologies and their related applications. Evidence from the Structured Dialogue on digital education and skills with Member States shows that a majority of Member States expressed concerns about the shortage of ICT specialists[123]. Even in Member States that are digital frontrunners, there is a persistent shortage of people able to develop and deploy key digital technologies[124]. There also is a significant increase in the demand for professionals combining sectoral knowledge with digital skills enabling the use of digital solutions for specific business cases. This is for example the case of employees in the manufacturing sector able to use augmented reality/virtual reality (AR/VR) tools to repair engines remotely, software developers and engineers with specific automotive expertise, or professionals in industrial sectors that are key to the green transition who are increasingly relying on advanced digital technologies in the development of renewable energy or clean and smart mobility

[123] SWD (2023) 205 final: COMMISSION STAFF WORKING DOCUMENT accompanying the documents: Proposal for a Council Recommendation on the key enabling factors for successful digital education and training and Proposal for a Council Recommendation on improving the provision of digital skills in education and training {COM(2023) 205 final}.

[124] For example, over 70% of enterprises looking for ICT specialists in the Netherlands, Finland and Luxembourg found it extremely difficult to recruit ICT specialists. DESI 2022, https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-index-desi-2022.

solutions. These profiles can be referred to as users of advanced digital technologies and they are crucial to enable and support the digitalisation of traditional industrial sectors from agriculture and finance to manufacturing, automotive and medicine, and are key to achieve the twin green and digital transition.

Looking at the related education offer, the 2022 JRC report shows that the offer of specialised education programme in AI, cybersecurity, HPC and data science has slightly improved in the EU 27, in particular in AI, where the number of Master programmes has increased by 20% compared to the previous year. However, it remains lower than in the United States. For cybersecurity the United Kingdom alone continue to offer as many programmes as all EU Member States together[125].

The actions in the skills pillar therefore aim at tackling this challenge, while triggering a new way of delivering these programmes, building partnerships between academia, businesses and research across the EU.

Scope

The first calls for Master's programmes' in the Digital Europe Programme have supported the development of excellent consortia delivering education programmes and self-standing modules to build up advanced digital skills in key digital areas, mainly AI and cybersecurity[126], as well as interdisciplinary programmes targeting the acquisition of advanced digital skills in specific sectors, such as health. The call of 2023 builds on the experience of the first work programme[127], addressing the latest initiatives to support the development and deployment of key digital skills and capacities in digital technology areas, such as AI, data, cloud computing, Internet of Things, as well as other inter-, trans- or multi-disciplinary areas, and their applications in strategic sectors.

The call of 2024 will support the development and deployment of key digital skills in selected digital areas: virtual worlds, edge computing, quantum computing, photonics, and robotics and automatization. The call will also support interdisciplinary programmes that will target the acquisition of advanced green digital skills (e.g. in the area of AI, data analytics, virtual/augmented reality, robotics, cloud computing, Internet of Things, machine learning, etc.) in selected strategic sectors: agriculture, transport, renewable energy, waste management, as well as the acquisition of advanced digital skills for government and public sector. In the selected digital areas and strategic sectors there is a high demand for ICT specialists (and is expected to further grow), but at the same time the offer of education programmes for these areas/sectors is limited, what will hinder their potential for economic uptake and growth. The call should also support possible cooperation in the context of ongoing international cooperation related to digital topics (e.g. digital partnerships, trade and technology councils, policy dialogues, Talent Growth Task Force), e.g. by supporting students from those countries with financial support (e.g. via scholarships, fee waivers, or others) to participate in the education programmes including promoting female students participation. The proposals should clearly identify one digital area or one strategic sector as the main focus of their work and the challenges addressed. It is expected to fund at least the highest-ranking proposal from each above listed digital area or strategic sector providing that all thresholds are attain and within the limits of the budget available for this topic.

Projects financed under this topic are encouraged to build synergies and complementarities with actions on technology deployment supported by other pillars of the programme as well as links and synergies with programmes and initiatives like Erasmus+, European Universities Alliances, Erasmus+ Alliances for Innovation, European Digital Innovation Hubs (EDIHs), the EIT Campus, the Deep Tech

[125] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC128844/JRC128844_01.pdf

[126] Previous calls prioritised key digital areas were: Artificial intelligence, Blockchain, Cloud computing, Cybersecurity, Data, Extended reality, Internet of Things, Microelectronics, Photonics, Quantum, Robotics.

[127] List of selected projects from previous DIGITAL programme calls are and will be available on the Funding and Tenders portal (i.e. DIGITAL-2021-SKILLS-01-SPECIALISED and DIGITAL-2022-SKILLS-03-SPECIALISED-EDU).

Talent Initiative and its possible follow-up initiatives, as well as the Large Scale Partnerships under the Pact for Skills.

The primary objective of this topic is to support the design and deliver a higher degree education programme(s) (at ISCED levels 6 (Bachelor's or equivalent level), 7 (Master's or equivalent level) or equivalent in 2023 and at ISCED levels 6, 7, 8 (doctoral or equivalent level) in 2024 - hereafter education programmes and to develop related self-standing modules, in selected key digital areas and for the acquisition of advanced digital skills in specific strategic sectors. Besides the design and delivery of new educational programmes and self-standing modules, the selected projects can cover activities to attract qualified teaching staff, scholarships for students, the purchase or leasing costs for equipment, and different activities to establish partnership between academia, industry and research centers. The selected projects will also bring a clear EU added-value to the proposed education activities (such as cross-border collaborations, networks and exchange of ideas).

Deliverables

- Consortia of higher education institutions, research organisations and businesses and other stakeholders design and deliver education programmes and self-standing modules in the area of advanced digital skills for developers and users of advanced digital technologies.
- Higher education institutions are upgraded with digital solutions, equipment and infrastructure, with a special focus on interoperability of IT systems.
- Students are supported with scholarships (for participating in education programmes and internships), or via other financial and support measures.
- Structural and sustainable partnerships between members of the consortium are established.
- As a separate deliverable this action entails a coordinated and support action which will provide an analysis of skills need in key digital areas, in view also of existing and possible future labour shortages, and continue to support the networking among the organisations part of the digital consortia, building a brand of excellence.

Type of action	Lump sum grants
Indicative budget	EUR 85 million (30 million in the second set of calls and 55 million in the fourth set of calls)
Indicative call planning	Second and fourth set of calls
Indicative duration of the action	48 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Higher education institutions, vocational education and training institutions, research organisations and businesses

Type of action	Coordination and support action grant
Indicative budget	EUR 2 million
Indicative call planning	Second set of calls
Indicative duration of the action	48 months
Implementation	Executive Agency HaDEA

Type of beneficiaries	Higher education institutions, vocational education and training institutions, research organisations and businesses

4.2 Reinforcing Skills in semiconductors

Objective

The share of students choosing ICT and notably semiconductors disciplines is too low to satisfy the demand required by the labour market. It is estimated that the BRIICS countries (including Indonesia) will produce three-quarters of the global STEM graduates by 2030 while Europe will be lagging well behind with an 8% share[128]. The shortage of potential employees with specific knowledge in semiconductors, and in particular the negligible share of students willing to undertake this field, has many different causes related to the low awareness of the impact of semiconductors in the society and citizens' daily life, and to low expectations in terms of prospective career and employment conditions. The problem is acute, given the gap between the labour market demands and the unavailability of both technicians and high-level graduates, and it is even more exacerbated by a strong gender imbalance.

The image of semiconductors related jobs needs to be improved in this regard with a holistic approach by industry and academia, jointly addressing:

- The low awareness of the public, and particularly the younger generation, of the social importance of semiconductors and its benefits for the whole society, i.e., for the green and digital transition or the targets set by the Chips Act.
- The awareness gap on future work commitments and employment conditions. It is well known that studies are greatly influenced by students' previous experience within the secondary school and in their private lives, which can hardly provide insight into this high-tech sector. Starting from the very first classes in secondary schools is of the greatest importance for targeting students interested to approach these disciplines, with particular focus on female students.
- The obstacles faced by companies, in particular SMEs given their limited means, to get the required talents, by setting up initiatives to attract both technicians and graduates and bridge the gap between education and their labour demands.
- The need to provide updated academic curricula both in theoretical knowledge and lab experience on cutting edge topics - the high pace of advancements in the semiconductor sector forces upgrades that are difficult to implement by private and public universities, and liaison with industrial stakeholders is essential to access new technologies, launch educational opportunities and increase their attractiveness to students.
- The need of continuing vocational training to enhance employability, supporting personal development and encouraging re- and up-skilling. Technicians must be provided with additional training during their lifelong careers to keep up to date with new technologies and techniques.

Scope

Consortia can apply for one or both the actions described below.

Academic network

[128] "Education Indicators in Focus N°31" by the OECD, 2015.

The proposed project is required to develop a European Semiconductors Skills Academy: a European network of higher education institutions and relevant industries, including start-ups and SMEs in microelectronics, to address the above issues.

The Academy must strive for collective actions to increase the visibility and the attractiveness of existing curricula already run by the members of the consortium. In particular, focus should be on increasing the number of enrolled students coming from secondary schools and ensuring the availability, in higher education institutions' curricula, of topics addressing industry's needs as well as cutting-edge topics in the sector, for example Chip Design.

The Academy should address, for example:

- the identification of relevant courses, jointly vetted with the industry partners, starting from existing curricula, or from newly selected cutting-edge topics, which should eventually lead to an automatic recognition of the European Credit Transfer System (ECTS) across universities, facilitating students' and workers' mobility and competence recognition across Member States;
- the upgrade of university laboratories for the delivery of the courses identified;
- cooperation agreements resulting in hands-on experiences in industry and financed by industry as part of the student curricula;
- the involvement of start-ups and SMEs as beneficiaries of students' mobility;
- communication actions and initiatives aimed at the general public as well as specific activities for the promotion of studies in semiconductors in local areas, particularly aimed at secondary school students.

Vocational training

The proposed project is requested to define a platform among Vocational and Educational Training (VET) centres, industry, in particular start-ups and SMEs, academia, and social partners to address the need of continuing vocational training to enhance employability. Notably, the platform will support innovative approaches to attract talents and re-/up-skill workforce for start-ups and SMEs, for example, through:

- the identification of relevant training contents, jointly vetted with the industry partners;
- bootcamps on specific semiconductors topics vetted by and including start-ups and SMEs;
- training curricula implying the involvement of SMEs as beneficiaries of technicians' mobility;
- recognition of specific hard and soft semiconductors VET curricula across Europe;
- addressing the gender dimension of employability in the sector;
- apprenticeships in start-ups and SMEs and online training addressing employability for migrants and immigrants.

Deliverables

Concerning the projects addressing the Academic network (point I in scope above)

- Definition of the required curricula using the ECTS system with capacity for around 500 students/year across at least 5 Member States, for BSc and MSc levels.
- A scholarship programme for selected semiconductors students enrolled in the common curriculum at BSc and MSc levels.
- On-the-job experiences for undergraduate students in companies involved in the consortium.
- Upgrade of laboratories used for the teaching activities delivered by the project.

- Communication initiatives toward the public, including social media.
- Local or regional programmes led by the industrial partner(s) to target secondary school students, including for example a Summer/Winter School based on practical learning activities, introductory seminars, visit to facilities etc.

Concerning the projects addressing the Vocational training (point II in scope above)

- Bootcamps, workshops and career days dedicated to semiconductors, addressing start-ups and SMEs needs, at least one of them focusing on diversity and inclusivity.
- Definition of VET curricula in semiconductors and delivery of the relevant training courses with capacity for around 1000 technicians involving at least 20 start-ups and SMEs across at least 5 Member States.

Type of action	Simple grant
Indicative budget	EUR 10 million
Indicative call planning	First set of calls
Indicative duration of the action	48 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Higher education institutions, vocational education and training institutions, research organisations and businesses

4.3 Cybersecurity Skills Academy

Objective

Cybersecurity has become a growing concern for European citizens, businesses and public authorities. In addition to skilled citizens, the EU needs a bigger pool of cybersecurity specialists to protect businesses and public services in Europe and design the cybersecurity solutions of the future. Currently, around 200,000 cybersecurity experts are missing in Europe. Legislative initiatives on cybersecurity such as the recently revised NIS2 Directive or the upcoming Cyber Resilience Act, and sector-specific legislation including provisions on cybersecurity, will put even more pressure on companies and public authorities to have access to cybersecurity specialists.

To address these challenges, the European Commission has already deployed many actions, in close collaboration with relevant actors. However, actions and resources are often perceived as scattered and inaccessible. The Cybersecurity Skills Academy would constitute a European umbrella integrating various activities with the objective of increasing their visibility, accessibility and impact.

Those activities would align along common goals, key performance indicators and a joined-up communication strategy to seek greater impact.

Scope

The Cybersecurity Skills Academy; training programmes for SMEs, start-ups and the public sector

Funding will be available for the implementation of new training opportunities or the scale-up of successful ones with a special focus on the needs of SMEs and public administration in the area of cybersecurity. Trainings should take into account businesses' needs and in particular facilitate access to cybersecurity talents for SMEs and start-ups across all sectors. To ensure the high levels of

cybersecurity necessary for digital public administration, the Academy should cater for the upskilling, reskilling and interdisciplinary understanding of cybersecurity for civil servants**.**

Consortia of organisations active in the domain of cybersecurity and universities or training providers should devise and deliver the activities of the Academy. Activities should include, among others, the identification of relevant training courses, including bootcamps on specific cybersecurity topics, jointly vetted with industrial partners that would enhance employability of trainees or increase cybersecurity capabilities of public servants, communication actions for promoting the courses, etc. The involvement of the national cybersecurity competence centres could be foreseen to address specific needs at national level, where significant variations exist as to the level of cybersecurity readiness.

Setting-up and operating the Cybersecurity Skills Academy

- Definition of a set of clear KPIs to measure the impact of the different actions considered under the scope of the Academy
- Bringing together relevant players from all Member States for monitoring the cybersecurity skills landscape, following up its evolution and taking action to help Member States develop specialised training programmes, in particular addressing cybersecurity start-ups and SMEs as well as public administrations to address the cybersecurity skills gap
- Exploring, defining and setting up an impactful scheme promoting the standardisation of procedures for cybersecurity competence recognition and professional certification in the European market
- Promoting the development and the use of up-to-date curricula in cybersecurity
- Performing communication around this initiative, to engage stakeholders and to facilitate the interactions between those stakeholders
- Leveraging the Digital Skills & Jobs Platform to support the Academy and integrating the existing best practices that will feed the Academy

Deliverables

- Training courses to address the most in-demand skills such a cyber-forensics, cyber ranges, malware analysis and AI for cybersecurity among others
- On-the-job training courses and traineeships opportunities for start-ups and SMEs and for public administrations in innovative companies in cybersecurity and cybersecurity competence centres
- Online training, user friendly and accessible to everyone in all languages
- Scheme for establishing a cybersecurity competence recognition and professional certification in the European market
- KPIs framework and its monitoring, including through measurable indicators, during the duration of the action

Type of action	Simple grant
Indicative budget	EUR 10 million
Indicative call planning	Second set of calls
Indicative duration of the action	36 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Higher education institutions, vocational education and training institutions, public administration

	services, research organisations, businesses, and national cybersecurity competence centres

4.4 Boosting digital skills of young people, in particular girls

Objective

Students in digital and ICT disciplines represent a minority, in 2021 they were 4.5% of total graduates[129]. There is also a severe gender balance issue, with only 19% of ICT specialists and one in three sciences, technology, engineering and/or mathematics (STEM) graduates being women. During the Structured Dialogue for digital education and skills, Member States also report about competition for the few pupils that have suitable profiles and interest in studying STEM disciplines at university level.

In order to fill the significant shortage of sector specialists using advanced digital technologies and ICT specialists, it is necessary to increase the pool of pupils who would be ultimately interested to study STEM and ICT, with a special focus on girls and women who are vastly underrepresented in the digital field. Boosting the development of digital skills from an early age and in a continuous manner is essential for influencing the level of digital skills of the EU population and the number of male and female students that will consider studies and career in the ICT. Moreover, evidence shows that pupils who are involved in the learning of coding or computational thinking from an early age are more likely to continue studying ICT or digital-related fields and this has an impact for example on the number of girls choosing this study-path.[130]

In the bilateral dialogues with Member States as part of the structured dialogue on digital education and skills, many called for innovative approaches to attract young people, and especially girls as of primary school (or even earlier), to digital careers and to encourage a mind-set shift in their perception. This action will therefore include dedicated activities to encourage girls and women to take part in digital studies.

Scope

The aim of this action is to pilot actions to increase the number of students pursuing digital studies and careers, with a special focus on increasing participation of girls. It will support joint actions between leading technical higher education institutions, businesses and schools to promote digital studies, through hands-on activities and challenge-based projects. Another aim of this action is to scale-up the EU Code Week initiative, putting it on stronger and broader footing, thus further increasing its impact beyond the > 4 million people reached every year, among which almost half are young women and girls.

For example, the actions will finance summer schools for high-school students on digital areas, career days for people interested in digital, with a view to encourage more gender diversity and promote exchanges between higher education institutions and primary and secondary schools on digital topics. Digital Europe Programme consortia already awarded under the first WP could also be leveraged, with a view to give the possibilities to younger students to access the state-of-the-art laboratories, experience the campus facilities and follow seminars from the most renowned experts in Quantum computing, Cybersecurity, AI, cloud, among others. Special attention should be given to the role of girls and women in the digital field, with a focus on debunking stereotypes and tackling the self-efficacy and confidence gap.

[129] DESI 2022 and data from the digital visualisation tool.

[130] Microsoft_girls_in_STEM_final-Whitepaper.pdf

This action is in line with Action 13 of the Digital Education Action Plan (2021-2027), which aims to enhance girls and women's digital competences through projects like Girls Go Circular and ESTEAM Fests.[131]

Deliverables

- Stronger cooperation between primary, secondary and VET schools and tertiary education and research to increase the number of pupils enrolling in digital studies aiming at gender convergence. This will lead to the development of:
- Summer schools
- Specialised information and career days
- Dissemination and outreach activities, such as EU Code Week

Type of action	Coordination and support action grant
Indicative budget	EUR 6 million
Indicative call planning	First set of calls
Indicative duration of the action	24 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Technical universities, primary, secondary and vocational education and training organisations and tertiary education and research organisations

4.5 Girls and Women in Digital

Objective

This action contributes to gender convergence[132] as mentioned in the Digital Decade Policy programme and part of its target of 20 million ICT specialists in the EU by 2030.

Women are significantly under-represented in ICT professions, one of the fastest growing sectors of employment. According to Eurostat[133], from 2012 to 2022, the number of ICT specialists in the EU increased by 57.8 %, almost seven times the increase for total employment. However, women only represent 21% of ICT graduates[134] and less than 19% of ICT specialists[135] in the EU, despite the fact that girls outperform boys in digital literacy[136]. This paradox is addressed in the Digital Education

[131] Digital Education Action Plan – Action 13 https://education.ec.europa.eu/focus-topics/digital-education/action-plan/action-13
[132] COM(2021) 118 final, page 5.
[133] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=ICT_specialists_in_employment#ICT_specialists_by_sex
[134] Eurostat, Graduates by education level, programme orientation, sex and field of education [EDUC_UOE_GRAD02__custom_5451972].
[135] Eurostat, Employed ICT specialists by sex, Statistics | Eurostat (europa.eu).
[136] 2018 International Computer and Information Literacy Study (ICILS), https://education.ec.europa.eu/sites/default/files/document-library-docs/icils-2018-policy-note.pdf

Action Plan[137] and through the Ministerial Declaration 'Commitment on women in digital' of 2019[138], hereafter referred to as the 'Women in Digital Declaration'.

However, to date little progress has been made. According to the 2022 data[139], 81.1 % of people employed as ICT specialists in the EU were men, against 18.9 % of women. Romania (25.2 %) and Bulgaria (28.9 %) were the only Member States where the share of women was higher than 25 %.

Scope

This action will:

- follow up on developments in the MS with regards to the Women in Digital Declaration, and in particular identify best practice and promising initiatives;
- create a network of expertise and community of stakeholders, so the Commission stays informed about effective best practice to encourage and support female participation in ICT across Europe. This investment will support an increase in the number of girls and women studying and working in ICT;
- provide insights into the gender gap in the ICT professions in the EU, collecting information on the gender gap in ICT professions in the Member States, identifying and analysing best practices to tackle it;
- provide a comparison of the gender gap in ICT professions in the EU with the situation in non-EU countries with economic relevance or with high shares of female ICT specialists;
- provide a set of recommendations on activities needed to fight the gender gap in ICT professions in the EU.

The successful consortium will map, analyse and recommend as follows:

- Identify relevant centres/experts of academic research on this topic;
- Identify relevant NGOs and civil society organisations across EU;
- Identify relevant contacts in international organisations and Member State;
- Create a community of expertise and practice from these contacts;
- Identify and document the factors discouraging or preventing girls and women from pursuing ICT studies and career paths;
- Identify and document relevant measures to tackle the gender gap in ICT studies and careers;
- Identify best and effective practice to encourage and retain female participation in ICT studies and career paths in the EU and beyond;
- Prepare a set of practical recommendations to encourage and retain female participation in ICT studies and career paths.

Adequate measures of quality assurance and quality monitoring, as well as activities leading to mutual learning and exchange of good practices, will be implemented.

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[137] Digital Education Action Plan (2021-2027), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0624 .

[138] Ministerial Declaration 'Commitment on women in digital' (2019), https://digital-strategy.ec.europa.eu/en/news/eu-countries-commit-boost-participation-women-digital .

[139] Data are taken from Digital Economy and Society Index, Women in Digital Scoreboard 2022, https://digital-strategy.ec.europa.eu/en/policies/desi and Eurostat, Employed ICT specialists by sex (2022), https://ec.europa.eu/eurostat/databrowser/view/ISOC_SKS_ITSPS__custom_6053218/bookmark/table?lang=en&bookmarkId=a4b02e9e-1977-47b9-b666-2d4faf735823 .

This action will increase the Commission's understanding of the factors behind the current gender imbalance, and of effective measures to change the status quo.

Outcomes and deliverables

- A report identifying the main obstacles for girls and women in choosing career as ICT specialists, and showcasing practical, effective and feasible actions to increase the number of women in ICT. The report should also present the EU in a global comparison and document best practices and success factors of EU and non-EU countries with high(er) numbers of women in ICT careers.
- An overview of national and regional strategies and measures to implement the "Women in Digital Declaration".
- A forum to report on progress and discuss initiatives with regards to the "Women in Digital Declaration", for example in the form of a conference and proceedings.

Type of action	Coordination and support action grant
Indicative budget	EUR 2 million
Indicative call planning	Third set of calls
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Civil society organisations, research organisations and businesses

4.6 Digital Skills and Jobs Platform

Objective

The Commission has set ambitious targets in the Digital Decade Policy Programme of increasing to 80% the number of European adults possessing at least a basic level of digital skills and reaching 20 million ICT professionals in Europe, while promoting access to women in this field in order to bridge the gender gap in the technology sector, by 2030.

The Digital Skills and Jobs Platform contributes to the Digital Europe Policy Programme and aims to support the closing of the digital skills gap and the reaching of the Digital Decade targets. To achieve this, the Platform provides a single point of information related to digital skills in Europe. At EU level, the Platform gathers all relevant information and funding opportunities for stakeholders to benefit from. It also provides access to an EU-funded self-assessment test in which users can evaluate their digital skills and receive training/learning recommendations. The Platform also provisionally hosts the Cyber Security Skills Academy. At national level, as a result of Connecting European Facility (CEF) calls in 2019 and 2020, connections to 22 National Coalition websites are being established. These national websites are connected to the core Digital Skills and Jobs Platform, establishing a mutually enriching exchange with relevant content and data on digital skills and jobs at EU and national level.

The objective of this topic is to consolidate and uphold the operation of the Digital Skills and Jobs Platform, including corrective and adaptive maintenance. This topic will also sustain and extend the activities related to the Digital Skills and Jobs Coalition, notably by further supporting collaboration among National Coalitions and the digital skills community in Europe, as well as deepening the exchange between the National Coalition websites and the core Platform. This topic aims to further increase the number of National Coalitions, to get existing and new National Coalitions to be more active and engaged, and to increase the number of members of the Digital Skills and Jobs Coalition. Events, communication campaigns and other activities should be foreseen to raise awareness of the

need to close the digital skills gap in the EU and mobilise the community of relevant stakeholders. Synergies should be sought with the EIT Campus and the Deep Tech Talent Initiative (DTTI).

Scope

The work will be implemented through two main work strands.

The selected project under the first work strand, the Digital Skills and Jobs Platform, implemented through procurement, will further populate and maintain the Platform in line with EU political priorities and showcase in an accessible and inclusive manner all opportunities available for digital skills development from relevant sources.

The funding will facilitate access to information and resources about digital skills and jobs in Europe for all type of users in a single space. Services will cover digital skills training offers/traineeships, learning recommendations, good practices, skills intelligence/data, skills strategies, training resources, funding opportunities, news, and events. The Platform will leverage on the smart functionalities, based on user profiles, interoperable with external data sources and spaces.

Activities under the first work strand will include:

- Maintain, actively operate and populate the existing Digital Skills and Jobs Platform with relevant content that addresses the needs of the European Digital Skills and Jobs Community and the digital skills gap in Europe.
- Ensure that the Platform is user-centric, accessible, and provides a top-quality personalized user experience, capitalising on the smart functionalities and their evolution.
- Re-publish relevant information on digital skills, selected and post-edited by the national websites interconnected to the European Platform for Digital Skills and Jobs, financed through the second work strand.
- Ensure support and "customer service" to the national partner websites, consultations on content, editorial plans, assistance with interoperability.
- Organise regular webinars and workshops to stimulate collaboration and exchange of good practice among the wider stakeholder community and the national websites managers.
- Expand, engage and manage an international stakeholder community.
- Develop and implement a communication plan to reach new audiences with the Platform services and content.
- Analyse the possible evolution of the Platform and suggest new functionalities to improve user experience and offer new services.

The action **under the second work-strand,** the National Coalitions for Digital Skills and Jobs), will be implemented through a coordination and support action and will aim to further extend the activities of National Coalitions' websites established under CEF calls in 2019 and 2020 as well as support the creation of new websites in Member States who do not have any National Coalitions yet.

Activities under the second work strand will include:

- Develop and connect the infrastructures (websites) of National Coalitions for Digital Skills and Jobs that are not yet connected to the Core Digital Skills and Jobs Platform through interoperable interconnections, integrating and enabling exchanges with the Core Platform components.
- Provide access to national/regional/local actors and practices, building interoperable links to provide services relevant to the local context.

- Expand and engage National Coalitions for Digital Skills and Jobs that are already connected to the Core Digital Skills and Jobs Platform.

Deliverables

First work strand:

- A functioning platform providing content relevant to closing the digital skills gap in Europe.

Second work strand:

- Connected National Coalitions for Digital Skills and Jobs to the Core Platform.

First work strand:

Type of action	Procurement
Indicative budget	EUR 4 million
Indicative time	2024
Indicative duration of the action	24 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Not applicable

Second work strand:

Type of action	Coordination and support action grant
Indicative budget	EUR 2 million
Indicative call planning	Third set of calls
Indicative duration of the action	24 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	Existing Digital Skills and Jobs National Coalitions, industry, civil society, training providers, social partners, public authorities and other relevant organisations who are contributing to reducing the digital skills gap in Member States

5 Accelerating the Best Use of Technologies

The roll-out and best use of digital capacities will focus on priority areas such as the support the SMEs and public authorities in their digital transformation and will also provide resources to activities started in previous programmes, for which the continuation of funding is essential to avoid disruption.

The activities will be organised around five main strands:

- Blockchain
- Deployment of Public Services
- Interoperable Europe
- Justice and consumers
- Confidence in digital transition

In addition, under this chapter the Digital Europe programme will also support the development of consumer application addressing urgent needs in energy consumption.

Participation is open to all eligible entities as established by Article 18 of the Digital Europe programme, in particular public sector as well as private sector organisations, including SMEs, NGOs and international organisations.

The overall budget for the topics included in this chapter is EUR 248 million.

5.1 Blockchain

Objective

The objective of this action is to further develop, reinforce, pilot and deploy the European Blockchain Services Infrastructure (EBSI) and its use cases, in cooperation with the European Blockchain Partnership (EBP)[140]regrouping all EU Member States, Norway, Liechtenstein and Ukraine and potentially other countries in future steps. The EBP is evolving with the expected creation of a European Blockchain Services Infrastructure Consortium as a European Digital Infrastructure Consortium (EBSIC-EDIC) for which an application has been made by a group of Member States in June 2023. When the EBSIC-EDIC is set-up, other EPB members should be eligible to join the EBSIC-EDIC, as members or as observers.

The period 2023-2024 corresponds to a phase of expansion where the EBSI will implement at the same time a network in production for full operation and exploitation of use cases; and in pre-production for acceptance process, as well as a pilot network for node operators and services providers to pilot use cases before possible upgrade into production. In addition, development and testing capacities are required for providing evolution of EBSI capabilities and enabling the implementation of new services and the possible integration of new solutions to reinforce EBSI overtime. This will mobilise a high number of stakeholders and users leveraging the first EBSI production ready version (starting to be exploited in production when the EBSIC-EDIC can be operational) and will enrich the initiative with new capacities for more demanding use cases.

The expected creation of the EBSIC-EDIC will enable to continue the development of the EBSI and its ecosystem and to operate and scale-up the infrastructure and its use cases by providing a dedicated

[140] The European Blockchain Partnership (EBP) currently regroups all Member States, Norway, Liechtenstein as member, and Ukraine as observer.

entity that can engage with various stakeholders and propose complementary business models (including for instance pay per use models) for the exploitation of EBSI.

One of the key objectives for the EBSI is to provide for Trust electronic ledgers and to contribute to the implementation of the EU Digital Identity Wallet[141].

The work on EBSI will be done in synergy with other actions such as the implementation of the European Blockchain regulatory sandbox[142] and support to standardisation.

Scope

The funded activities will cover:

First work strand (procurement)

- Support to the EBP Policy, Technical and other ad-hoc groups working with the Commission, including the contribution to a smooth transition toward the EBSIC-EDIC. Activities will also support possible cooperation with other initiatives (e.g., in the context of international cooperation, of cooperation with INATBA[143], or other relevant initiatives);
- EBSI support services: these will include support to the uptake and operation of EBSI (including helpdesk type activities), support to standardisation activities; communication and dissemination actions; support to acceptance and uptake by stakeholders and end users; and support to any other specific actions like ethics or economic aspects that are related to EBSI development and implementation;
- EBSI Legal & Liability assessment and facilities: this activity will support the provision of services to ensure that EBSI and its applications are designed and implemented in full compliance with the EU regulatory framework; and that liability aspects are clarified when exploiting EBSI. This work will be done in synergy with the EU regulatory sandbox activities;
- Development and deployment of additional capacities, with possible testing of new protocols, new nodes to provide for higher performances, meeting high standards in terms of security, privacy and data protection, interoperability and sustainability. This will concern the implementation of different environments for production, pre-production, development and testing, with the contribution of an increasing number of stakeholders in the EBSI ecosystem.

Support to the development and implementation of more EBSI cross border use cases, in line with EBP priorities, in coordination between EBP countries and the EC, with specific development and deployment activities. These use cases will exploit and require existing and future capacities of EBSI. A particular focus would be to ensure that EBSI contributes to the new EU Digital Identity Framework and the implementation of the EU Digital Identity Wallet, notably in relation to specific use cases where the use of blockchain is assessed as adding value, in full alignment with the EU Digital Identity trust model and governance, and providing continued support to projects like DC4EU[144] and EWC[145] and the sustainability of their results.

Funding in 2024 continue to support the activities taking into account the move to production of EBSI with new requirements for the networks, in particular the need to provide for operational and security purposes, as well as the need to reinforce support to use cases, notably those addressed through projects launched in 2023 through the Digital Europe Programme. These activities will continue to be funded through procurement until the EBSIC EDIC will be in full capacity to implement them.

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[141] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) No 910/2014 as regards establishing a framework for a European Digital Identity

[142] see the European Blokchain Regulatory Sandbox

[143] International Association for Trusted Blockchain Association (https://inatba.org/)

[144] Digital Credentials for Europe | DC4EU

[145] Home - EUDI Wallet Consortium

Second work strand (subject to grant)

The second strand, starting in 2024, will be supporting the EBSIC-EDIC after its creation, as the new entity in charge of the development, operation and maintenance of the EBSI and of all the above activities concerning it. It includes ensuring a smooth and full transition between the current organisation of EBSI and the one under the EBSIC-EDIC, as soon as the EBSIC-EDIC is in position to do so. The funded activities will cover:

- Support to EBSI EDIC, once operational, to implement EBSI activities and operational tasks required to further develop, exploit and maintain the EBSI networks at production level.
- support to use cases, stakeholders' management, communication and other tasks provided as part of the EBSI Service Desk.

The EBSI will continue to contribute to the implementation of the European Digital Identity and Trust Ecosystem and in particular to support EU Digital Identity Wallet activities (see 5.2.1.1 where new Large-Scale Pilots can be supported to test and facilitate the deployment of the EU Digital Identity Wallet in priority for cross border use cases, including possibly pilots using EBSI to support its implementation).

Deliverables

Deliverables will include:

For the first work strand

- Governance of EBSI with the European Blockchain Partnership and its evolution in 2024 after the creation of the EBSIC-EDIC.
- Updates of specifications, APIs, SW resources, tooling, documentation for EBSI[146] and implementation of maintenance activities.
- Strengthened EBSI support services for EBSI nodes operators and use cases actors.
- Reinforcement of the EBSI ecosystems, with new actors engaged in production and pilot environments of EBSI through the EBSI early adopter programmes.
- Regular webinars, hackathon type of events, as well as promotion & communication campaigns and the mobilisation of stakeholders via multiple channels.
- EBSI exploited as trust service for electronic ledgers, in particular for supporting the EU Digital Identity Wallet implementation.

For the second work strand

The governance of EBSI, the implementation and the provision of the deliverables listed under the first work strand from 2025 onwards and for subsequent phases under the full EBSIC-EDIC responsibility and management.

First work strand:

Type of action	Procurement
Indicative budget	EUR 14 million
Indicative time	2023 -2024

[146] They will be made available through the EBSI website and related repositories: https://ec.europa.eu/digital-building-blocks/wikis/display/EBSI/Home

Indicative duration of the action	12-36 months
Implementation	European Commission
Type of beneficiaries	Not applicable

Second work strand:

Type of action	Simple grant*
Indicative budget	EUR 6 million
Indicative call planning	Specific call for named beneficiary*
Indicative duration of the action	36 months
Implementation	HADEA
Type of beneficiaries	EBSIC-EDIC as named beneficiary*

* Simple grant (50% funding rate) to identified beneficiary according to Financial Regulation Article 195 (f).

The EBSIC-EDIC is a specific and unique body created via an application of Member States to support blockchain activities, including as first and main objective to continue the development and operations of the pan European Blockchain Services Infrastructure (EBSI) in its production phase. The EBSIC-EDIC assembly of member is open to any Member State, whose participation as member – if it provides contribution - or as observer is based on simple notification. The EBSI is the unique pan European blockchain based infrastructure which is governed by public authorities (via the EBSIC-EDIC assembly of members). It is based on a network with nodes spread across all Europe. It aims to support public services benefiting to EU citizens, enterprises and administrations. Private services could be also supported under specific conditions.

An application was received by the European Commission in June 2023 for the setting up of EBSIC-EDIC, with a seat to be established in Belgium (Brussels). The preparation for the EC decision on the application received is pending. This section is without prejudice to the Commission's decision to set up the proposed EDIC or reject the application, in accordance with the DDPP Decision. The EC decision might entail changes in the official title of the proposed EBSIC-EDIC.

5.2 Deployment of Public Services

The programme will advance the further digitalization of government and public administrations, focusing on preparing a European Identity and Trust Ecosystem, leveraging public procurement for digitalisation and innovation, enhancing the interoperability of digital public service delivery, as well as the digital transformation of justice.

5.2.1 European Digital Government Ecosystem

5.2.1.1 European Digital Identity and Trust Ecosystem (Standards and Sample Implementation)

Objective

The action aims to support the implementation of the European Digital Identity and Trust Ecosystem and manage the transition between the current and future frameworks supplementing or replacing

the current digital service infrastructure (eID) by the EU Digital Identity Wallet framework. For this purpose, Member States and other participants to the European Digital Identity Ecosystem shall be enabled to rely on a set of specifications and tools supporting the implementation of the wallet, other identity means and trust services.

Furthermore, in support of the new European Digital Identity and Trust Ecosystem the following digital service infrastructures for trust services in support of European cross border digital transactions will be defined, developed adjusted and maintained in cooperation with Member States where necessary and appropriate for the purpose of supporting digital solutions across policy domains' specific projects, enabling "interoperability by design" and ensuring accessibility for persons with disability and older persons:

- the European Trust Services Ecosystem allowing companies, citizens and administrations to validate European qualified trust service providers supporting the governance of the eIDAS regulatory system;
- the eID component ensuring legal, organisational, semantic and technical interoperability for accessible and secure digital operations that require cross-border identity recognition as well as future frameworks supplementing or replacing it;
- further improvement of the EU Digital Identity Wallet covering the specification as well as the reference implementation (Software) and potentially necessary central components maintained by the Commission.
- eDelivery as a standards-based solution for safe and cryptographically secured data exchange over the internet, which underpins much of the data exchange between Member States and/or the Commission and Member States in multiple Domains;
- eSignature maintaining the standards-based approach for safe and cryptographically secured communication of intent in digital transactions. The library for electronic signature is re-used by multiple European trust services leveraging the opportunities created by the eIDAS regulation;
- eArchiving preserving data in an open, interoperable and sustainable way. In addition to supporting actions from the previous WP, during this new period eArchiving will also review its standards with stakeholders, create new specifications following the common data spaces development, develop the curriculum of digital preservation skills to support capacity building, establish an EU cross-border network of digital preservation experts and deploy and promote the new eArchiving certification initiative.

Scope

The support will be provided via two separate work strands:

The first work strand will cover the procurement of services to support the implementation of the digital service infrastructures and their governance for the European Digital Identity and Trust Ecosystem. This will include advisory, technical and security consultancy services for digital identity and trust services, solution design and implementation, interoperability and conformance tests, hosting and support services as well as ad-hoc services.

The second work strand will be implemented using grants and focuses on pilot implementations of the EU Digital Identity Wallet and its ecosystem by public and private sector service providers validating technical references, standards, components and solutions, with regards to new use cases for exchanging digital attestations of attributes and identity credentials by means of a personalised digital wallet. These activities could also include innovative technical solutions based on electronic ledgers such as those developed by EBSI where the use of blockchain is assessed as adding value.

Deliverables

First work strand: for the European Digital Identity and Trust Ecosystem covering eDelivery, eSignature, eID, the EU Digital Identity Wallet and eArchiving:

- technical references, standards, components and solutions;
- updates of specifications, profiles, documentation and support and updated versions of sample software implementation;
- user manuals and release notes, implementation guidelines, governance and business models;
- stakeholder and community engagement strategies including communication via web pages and social media for the promotion of the services;
- support to implementers across Member States (guidelines, webinars etc.) as well as necessary communication efforts.

Second work strand: continuation of the Large-Scale Pilots and further support for use cases.

Support for two successive waves of large-scale pilots to test the deployment of the EU Digital Identity Wallet in priority use cases, including pilots using EBSI to support the EU Digital Identity Wallet in cross border use cases (see action 5.1), deploying the EU Digital Identity Wallet in national eID ecosystems by Member States. The second round of grants should help enhance technical specifications and implementation guidelines for the wallet and its eco-system and prepare its application in a new range of use cases, enabling it to support interaction with a wide range of public and private services and related attestations.

First work strand:

Type of action	Procurement
Indicative budget	EUR 40 million
Indicative time	2023 and 2024
Indicative duration of the action	24 months each time
Implementation	European Commission
Type of beneficiaries	Not applicable

Second work strand:

Indicative type of action	Simple grants
Indicative budget	EUR 20 million
Indicative call planning	Third set of calls
Indicative duration of the action	24 months
Implementation	HaDEA
Type of beneficiaries	Private persons, private companies, public bodies, EDIC

5.2.1.2 Support to the implementation of the Once Only Technical System under the Single Digital Gateway Regulation

Objective

The objective of the topic is to support the implementation and launch of the Once Only Technical System (OOTS) referred to in the **Single Digital Gateway Regulation (EU) 2018/1724**, **SDGR**). The OOTS will enable the cross-border automated exchange of evidence (documents and data) between public administrations in the EU under the control of the user, effectively forming an EU cross-domain and cross-sectorial data space where citizens and businesses will no longer have to supply the same data to public authorities more than once.

The Commission adopted the technical specifications of the OOTS on 5 August 2022. These specifications will have to be implemented by Member States. As a result, the OOTS will be a distributed collection of systems enabling the sharing of information between the Online Portals of Member States with the authentic data sources from all other Member States. As such, supporting Member States in adapting and connecting their portals with the OOTS is integral to the work – in addition to creating the common services required for the mapping of evidence between Member States and the identification of the appropriate data source in each Member State.

It is important to stress that, to launch administrative procedures, businesses and citizens will continue to use the Online Portals of Member States, which they can find through the link repository and search facility of the Single Digital Gateway (SDG). To this end, the OOTS will create a general-purpose data space for the public sector in Europe, which will be highly reusable and can be expanded to additional sectors. In this line, the OOTS reuses and is tightly linked to the Building Blocks funded by the Digital Europe Programme, in particular eID, eDelivery and eSignature. The use of these Building Blocks is a specific requirement to the integration of Member States' systems into the OOTS.

Scope

The action will build on the requirements stemming from the SDGR and its Commission Implementing Regulation (EU) 2022/1463. The support will be provided using procurement and will cover a range of activities enabling the development and launch of the OOTS and its core, Commission-provided services, as well as services targeted to support Member States. These different work strands can be described as the following:

Development of OOTS

- Evolution of technical specifications set out in the Commission Implementing Regulation (EU) 2022/1463;
- Creation and evolution of the operational framework and operating model of the OOTS as set out in the Commission Implementing Regulation (EU) 2022/1463;
- Creation and evolution of the EU-wide security framework of OOTS shared between Member States and the Commission;
- Support to the development effort of Member States up to the go-live date of the OOTS with a helpdesk, training, etc. – special focus on compliance to security and interoperability specifications of OOTS and support to the on boarding effort of Member States to connect their authorities to the Once Only Technical System as data providers and data consumers;
- In cooperation with the Member States, improve the user experience of finding, understanding, and launching administrative procedures;
- Development, go-live and evolution of the OOTS Common Services to be provided by the Commission to the Member States, also taking into consideration the synergies with the EUDI wallet;
- Evolution of the Projectathon events to Onboardtathons where the focus will be moved to the on boarding of data providers and data consumers;

- Contribution to the Common European Dataspace with the experience and components of the Once Only Technical System (OOTS);
- Identification and mapping of relevant evidence in all Member States and moving it to ready for exchange status;
- Improve the SDG links repository functionality in order to help refine the technical and operational specifications set out in the Commission Implementing Regulation (EU) 2022/1463 and the evidence mapping process;
- Exploration of synergies with sectorial systems in relevant fields;
- Increasing the outreach efforts and, eventually, functionalities of the OOTS as a tool that contributes to the reduction of administrative burden on SMEs;
- Organisation of the sub-groups referred to in the Commission Implementing Regulation (EU) 2022/1463 on the OOTS.

Outcome and deliverables

- Refined Technical and Operational Specifications;
- Operational framework and operating model of the OOTS;
- UX Guidelines for eGov Portals and Preview Areas;
- OOTS Security framework;
- OOTS Testing Services;
- OOTS Connectathon and Onboardtathons;
- OOTS Common Services;
- Mapping of evidence among all Member States;
- Synergies with sectorial systems and the EUDI wallet.

Type of action	Procurement
Indicative budget 2023	15 million
Indicative time	2023 and 2024
Indicative duration of the action	12 months
Implementation	European Commission
Type of beneficiaries	Not applicable

5.2.1.3 eProcurement and eInvoicing

Objective

With 13.6% of the GDP (around €2 trillion per year) in Europe, the procurement power of public administration is unparalleled. Public buyers are therefore key to make purchases more economically, ecologically, innovative, and social. This action on digital procurement (eProcurement) is therefore necessary to continue to make procurement and all its phases (planning, procurement, ordering, invoicing, and payment) more efficient. This action will:

- Assess and support the implementation of digital public procurement in Member States

- Enhance certain tools and initiatives like eInvoicing, eForms and eCertis
- Support the overall interoperability in this domain
- Ensure alignment with EU key policies, like the Green Deal
- Monitor the overall development of Digital Procurement in the EU and non-EU countries.

eInvoicing is a very important topic in the domain of digital procurement. The European eInvoicing policy has started in 2014 with the adoption of "Directive 2014/55/EU on electronic invoicing in public procurement". Due to the diversity of national solutions which lead to market fragmentation, the Directive has foreseen the adoption of a common European Standard to allow the consolidation of a Digital Single Market. Since 2014, almost 10 years after, the market situation for eInvoicing changed substantially as eInvoicing is now broadly used in B2B and B2G, in Europe and worldwide. Two major developments changed the landscape: at EU level, the Member states developed fiscal policies based on eInvoicing, in a non-harmonized manner. On the other hand, the European standard has known an international outspread, several governments having adopted a solution based on the European standard with Singapore, Australia, Egypt, Malaysia, and others preparing to do so too. In the light of these changes, the high-level objective at EU level is the harmonization of national policies and technical solutions:

- Support the evolution of the EU eInvoicing standard, aiming to ensure alignment with other European Commission policies on eInvoicing, especially the one developed by DG TAXUD in the legislative proposal on 'VAT in the Digital Age'[147] (conditioned upon its adoption), respectively on tax reporting;
- Push for the harmonization of national policies to stimulate the take-up of eInvoicing in Europe and the deployment of interoperable and harmonized services and solutions in the EU, taking into account the technical solution to be rolled-out for VAT reporting and technology developments in the financial supply chain.

Scope

Two working strands will be supported:

For eProcurement:

- Bilateral meetings with Member States to assess and support them in the domain of Digital Procurement
- Workshops on topics like eForms and eCertis to enhance collaboration with Member States.
- Support the evolutive maintenance of the toolset used in public procurement to achieve better interoperability (like eCertis and eForms).

For eInvoicing:

- Monitor the evolution and ensure the harmonized update of the European eInvoicing Standard. The European Standard and its updated versions are developed by CEN and are subsequently published by the Commission in the OJEU to form the basis of a European Policy on eInvoicing. Technical updates are needed due to the technological evolution. On the other hand, alignment with other Commission policies under development is needed, as currently with TAXUD policies.
- Support TAXUD with policy and technical expertise in developing a common European eInvoicing solution for VAT reporting in the Member States.

[147] Proposal for a COUNCIL DIRECTIVE amending Directive 2006/112/EC as regards VAT rules for the digital age, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0701

- Support the build-up of digital capacities of the Member States for eInvoicing, which, in turn, will help their businesses access international markets, in a context where the European standard or similar solutions are developed in different non-EU countries.

Deliverables

For eProcurement:

- Updated documentation from all Member States on how Digital Procurement is implemented.
- Documentation from Workshops.
- Enhanced toolset like eCertis, and eForms that will be more integrated.

For eInvoicing:

- Publishing an updated European eInvoicing Standard, incorporating changes linked to all recent developments in the domain of eInvoicing.
- Harmonization between EU policies, market (B2B) developments, technical solutions (which will implement the European Standard) and the B2G aspect from the Directive 2014/55/EU on electronic invoicing in public procurement.

Type of action	Procurement
Indicative budget	EUR 3 million
Indicative time	2023-2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

5.2.2 Interoperable Europe - Interoperability for the Public Sector

Europe has set the goal of 100% key digital public services online by 2030 as part of the digitalisation of public services. This is one of the four pillars helping to deliver Europe's Digital Decade for 2030. To reach this goal, the pace of digital transformation and delivery of digital public services needs to increase. Digital public services that are interoperable, open and fair and that foster innovation, in line with EU core values and standards are important instruments for creating the digital single market and ensuring a strengthened digital sovereignty. Interoperability of administrations, processes, services and data plays a central role in this endeavour. It helps build resilient digital public administrations that can deliver public services that span borders and sectors across the EU, allowing to safely share data, stay connected and create innovative services.

The **Interoperable Europe** action aims to establish and support a renewed interoperability strategy that will ensure the development of interoperable trans-European digital public services by strengthening cross-border interoperability of network and information systems and solutions which are used to provide or manage public services in the EU, establishing common rules and a framework for coordination of public sector interoperability. The current topic activities are based on the

recommendations[148] expressed by the Expert Group on Interoperability of European Public Services[149], which paved the way for the proposal for a regulation, the Interoperable Europe Act[150].

5.2.2.1 Interoperable Europe Policy Support

Under this WP, the European Commission will ensure the set-up of the various elements pointed out in the interoperable Europe policy strategy.

The Interoperable Europe action will continue to deliver on the interoperability projects launched in the first Digital Europe WP 2021-2022 and expand them.

Objective

The following objectives will be pursued:

- Provide European public sector entities with commonly accepted and recommended cross-border and cross-sector interoperability, concepts, frameworks, solutions, services and standards;
- Ensure EU policy-making is digital-ready and interoperable-by-default, facilitating policy implementation, and improving access to and operation of public services;
- Support public sector policy makers, administrators and IT experts/practitioners with the capacities and training on commonly accepted interoperability principles, concepts and solutions/standards; and,
- Support an effective structured cooperation to drive an interoperable, digital by default approach in public administrations across Europe and support the implementation of the European Interoperability Framework and preparatory actions for the Interoperable Europe Act.

Scope

The Interoperable Europe action will focus on the following areas:

Interoperable Europe oversight: this work strand will support the governance of the Interoperable Europe action. The current policy framework of non-binding interoperability cooperation, around the voluntary European Interoperability Framework (EIF)[151], is no longer fit for addressing the needs of Member States practitioners and policymakers. Therefore, the innovative framework put forward in the proposal for a regulation - the Interoperable Europe Act - is very much needed to move a gear up in terms of coordination and implementation on the ground. Interoperability activities funded under Digital Europe Programme will:

- Support the structured cooperation mechanism proposed by the Interoperable Europe Act, as well as existing structures (e.g., Interoperability expert group).
- Engage Member States, at all levels of administration. The right mechanisms should be implemented to enable continuous feedback from Member States and to ensure that the solutions delivered rightly address their evolving needs.

Interoperable Europe Catalogue: Interoperability is an enabler of digital transformation in European public administrations. To do so one needs a catalogue of reusable solutions, technical specifications and standards to assist public administrations with implementation of interoperability on the ground

[148] https://ec.europa.eu/transparency/expert-groups-register/core/api/front/expertGroupAddtitionalInfo/43164/download

[149] Interoperability of European Public Services (E03714) https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=3714

[150] Interoperable Europe Act, https://commission.europa.eu/publications/interoperable-europe-act-proposal_en

[151] European Interoperability Framework (EIF), https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/european-interoperability-framework-detail

as well as a methodology and guidelines focused on increasing reusability of public sector digital solutions.

Interoperable Europe Competency Hub: expanding the public-sector-interoperability knowledge base and its various aspects, such as innovation, adoption of open source, capacity-building policy, and modernisation of public services are an essential element to support the practical implementation of the Interoperable Europe policy, through all interoperability layers by conducting studies, assessing R&I results, including from Horizon 2020 and Horizon Europe, identifying best practices, running observatories as well as monitoring activities.

Semantic interoperability: it is paramount to ensure seamless data flows across domains and borders. New major EU digitalisation policies like the Data Governance and Data Act and the high value datasets will need support to agree on common semantic interoperability specifications to ensure data portability and reusability. The Interoperable Europe action will provide consultancy and expertise to the Data Spaces Support Centre and specific sectorial data spaces to ensure a minimum level of semantic harmonisation across sectors. Member States also need to develop strong data semantic capabilities to implement national and EU digitalisation policies.

Digital Ready Policy-Making: this work area aims to strengthen links between policy-making and the digital implementation of such policies as well as to promote the needed cultural shift towards multidisciplinary teamwork – thus move ahead Europe's digital transformation. Creation and running of the digital-ready policy making community[152] of stakeholders from the European, national, regional or local administrations as well as from academia, businesses or the general public.

Space for innovation: emerging digital technologies are transforming society in an unprecedented way and enable further innovation in the shape of new products and services but also in terms of new ways of interaction when it comes to public services. It is essential to better understand and develop knowledge around the challenges posed by these technologies, identify best practices as well as pitfalls. Part of the challenges posed by emerging technologies also include, interoperability issues, which need to be addressed at an early stage to avoid further fragmentation and allow an easy and effective sharing and reuse of solutions.

Deliverables

- Blueprint revision of the European Interoperability Framework as the main reference instrument for ensuring public sector interoperability;
- An Interoperability assessment methodology, as well as a process to run mandatory Interoperability assessments, as well as updated and improved assessment tools;
- New effective and aligned monitoring method to check interoperability uptake, impact and gaps;
- Further development of monitoring and reporting activities on digital public administration and interoperability (National Interoperability Framework Observatory[153]), factsheets and state of play reports, according to the new policy;
- A catalogue of reusable interoperability solutions aligned with the business needs of the new Interoperable Europe policy;
- Development of tools for the analysis of requirements, design of services, assessment of standards and specifications as well as services for interoperability validation and conformance testing;

[152] Digital-ready Policymaking, https://joinup.ec.europa.eu/collection/better-legislation-smoother-implementation/digital-ready-policymaking

[153] National Interoperability Framework Observatory, https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory

- Further development of the Joinup collaborative platform by transforming it into a comprehensive catalogue to gather essential information on the existing and future interoperability solutions, which could be clustered by type of issues occurring at national/local level;
- Further development of the Open Source Observatory Knowledge Centre[154] with new thematic areas;
- Further development of the Interoperable Europe Academy[155] to offer additional training activities;
- Semantic interoperability (SEMIC assets) integration into horizontal actions such as data spaces and high value datasets, Once Only Technical System, EBSI, Europass, ESCO and the European Learning Model etc. thus making them part of the corresponding infrastructure;
- Reports and studies on how emerging technologies – in conjunction with semantic models – can be used to improve digital service delivery and run proof of concepts (e.g., Artificial intelligence, Natural Language Processing, chatbots);
- Further development of the Observatory of Digital Innovative Public Services[156] (e.g., landscaping activities, exchanging best practices and knowledge, and provide policy recommendations to Member States).

Type of action	Procurement
Indicative budget	EUR 40,7 million
Indicative time	2023-2024
Indicative duration of the action	18 to 24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

5.2.2.2 Innovative and Connected Public Administrations

Objective

While Member States have been working on making public services available online, the eGovernment Benchmark consistently shows that cross-border public services still lag behind. The Digital Decade target expects all key public services to be online by 2030, these should however, also be available to citizens and businesses from other Member States, without discrimination.

The future Interoperable Europe Act will be a significant driver for this, supporting Member States' efforts in the field on interoperability and data exchange. Building on the European Interoperability Framework (EIF) and accompanying EIF toolbox, the Interoperable Europe Act aims to make interoperability assessments for public administrations mandatory and promotes the re-use of recognised Interoperable Europe solutions. This action will prepare the ground for the '*Interoperable Europe support measures*' put forward by the proposal for the Interoperable Europe Act.

[154] Open Source Observatory Knowledge Centre, https://joinup.ec.europa.eu/collection/open-source-observatory-osor/knowledge-centre

[155] Interoperable Europe Academy, https://joinup.ec.europa.eu/collection/digital-skills-public-sector/solution/interoperable-europe-academy Interoperable Europe Academy, https://joinup.ec.europa.eu/collection/digital-skills-public-sector/solution/interoperable-europe-academy

[156] Observatory of Digital Innovative Public Services, https://joinup.ec.europa.eu/collection/innovative-public-services

Scope

As foreseen by the proposal for the Interoperable Europe Act, various *'Interoperable Europe support measures'* should facilitate the implementation of the Act's objectives. This action will prepare proposals for the future Interoperable Europe Board to consider for implementation.

To this end, this CSA will bring together digital government ecosystems and relevant stakeholders to identify common 'Policy implementation support projects' and 'Innovation measures' relying on GovTech actors and regulatory sandboxes when appropriate. It will also foster training and peer reviews, when needs arise. It will also serve as a testbed for newly identified, re-usable interoperability solutions in the future. It should create a virtual environment where European public administrations can collaborate, share data, access cutting-edge tools and resources and facilitate the exchange of knowledge and data across borders for greater cross-border availability of digital public services.

The CSA should not cover any elements that would lead to an overlap with actions on the European Digital Identity and Trust Ecosystem.

To this end, the action is expected to include:

- capacity building of Member States' public administrations to implement the obligations of the future Interoperable Europe Act on the ground;
- coordination between with the future Interoperable Europe Board and Community as well as other relevant stakeholders;
- mapping existing interoperability solutions that may help with the implementation of policy requirements and identifying any missing interoperability solutions to be developed;
- identification of concrete actions and a roadmap for Interoperable Europe support measures.

Outcomes and deliverables

- A sustainable multi-stakeholder governance scheme, including a solid set of stakeholders and a collaborative framework for engaging new stakeholders in future, in full alignment with the Interoperable Europe Board and Community as well as the Interoperable Europe Solutions' labelling process;
- A roadmap for the envisaged Interoperable Europe support measures, based on a set of consultations, workshops, and meetings to gather requirements, concerns, and feedback from stakeholders;
- A detailed plan on how these support measures could be implemented (including investment and capacity needs).

Type of action	Coordination and Support Action grant
Indicative Budget	EUR 1 million
Indicative call planning	Third set of call
Indicative duration of the action	12 months
Implementation	European Commission
Type of beneficiaries	National, regional and local authorities as well as other relevant private and public organisations or any other organisation (such as academia or civil society) participating in digital government transformation and interoperability activities.

5.2.2.3 Interoperable Europe: GovTech Incubator

The GovTech Incubator[157] is a hub for knowledge sharing and collaborative delivery for all GovTech initiatives in the EU and aims to develop new common digital solutions, through experimentation, on the way governments deliver services to citizens.
Under WP 2021-2022, a Framework Partnership Agreement (FPA) was established to support an EU GovTech Incubator for 4 years, to be implemented through two separate Specific Grant Agreements (SGAs). The first SGA was launched in July 2023, is conducting 3 pilot projects on Innovative Public Services with possible involvement of the GovTech sector.
This action will implement the remaining elements of the FPA' s action plan by establishing a framework for experimentation on innovative interoperability solutions and lessons learned.

Objective

The GovTech Incubator's main objective is to promote cross-border interoperability experimentation with partners from different Member States and countries associated to the Programme, involving GovTech actors from the private sector and academia. It will support the participation and adoption of successful pilots to the partners-beneficiaries, as well as preparing the ground for future sustainability of the solutions. It also aims to ensure promotion and continuous engagement with the GovTech sector.

This action will continue the support and expand the work done under the first SGA. This will include the development of more pilots and the involvement of more partners. In addition, this action will support the participation and adoption of successful pilots from other partners-beneficiaries of the FPA[158] who did not participate in the first SGA.

Scope

The action aims to provide an environment to ensure continuous support to experimentation for the Public Sector and to open the public sector's technology market to ensure that governments use the best solutions that support cross-border interoperability in Europe. GovTech4all will focus on a broad spectrum of emerging technologies. This entails technologies such as Internet of Things, quantum computing, neural networks and machine learning, but also more mature applications such as interoperability building blocks. The pilots will be open to various stages of development and will include different tools that are more suitable for specific level of technology readiness. The common requirements for all pilots are innovation and cross-border interoperability. No pilot will include the simple implementation of existing solutions.

The action includes:

- identify challenges in the field of GovTech, concerning the use of emerging technologies for achieving public sector innovation, in particular cross-border interoperability;
- Identify GovTech related issues (including societal challenges);
- Attracting new participants (that did not sign the FPA);
- Continuing cross-border experimentation;

[157] All related activities of the GovTech incubator can be found online: Govtech4All | Joinup (europa.eu)

[158] In total, 21 organisations from 14 European countries participate in the GovTech4all FPA, the majority of them innovative agencies and digital-government institutions. 14 out of the 21 organisations of the FPA signed and participate in the first SGA.

- Promoting the interoperability of the solutions piloted under the two SGAs, and seek for further funding for their sustainability. This action does not include the sustainability of these solutions;
- Prepare the extension of the duration of the FPA to the full duration of DIGITAL
- Ensure the long –term sustainability of the GovTech activities. This may include promotion of new models of public sector innovation, delivery of common pilots, raising the profile of GovTech at EU level, raising awareness about GovTech, better mapping the GovTech ecosystem, and sharing lessons learnt among beneficiaries-partners and other EU players.

Deliverables

- A one-stop shop for stakeholders of the GovTech ecosystem (public and private sector)
- Scaling-up successfully executed pilots (including those from the first and the second SGAs)
- Complete the experimentation phase of the 3 new solutions developed under the first SGA
- Develop the experimentation of 4 to 6 new solutions (foreseen under the second SGA)
- At least 3 piloted solutions from the overall FPA should become candidates for the Interoperable Europe Catalogue
- Development of a communication strategy and its implementation throughout the whole duration of the project
- Sustainability plan for the GovTech activities for the longer term

Type of action	Specific Grant Agreement
Indicative budget	EUR 4 million
Indicative call planning	2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	The selected consortium of the GovTech4all FPA

5.2.3 Trans-European Services for Telematics between Administrations (TESTA)

Objective

This action aims to ensure continuity of the TESTA-ng communication network services until its migration to the next generation, the EU-secured Pan-European backbone network. TESTA provides European Public Administrations with a highly available and secure underlying trans-EU interoperable communication infrastructure. The Commission centrally regulates TESTA. The network runs on a private infrastructure separated from the Internet and is meant for sensitive information exchange between public authorities where the required network availability, performance and/or security (confidentiality, integrity, authentication, availability) has to be guaranteed.

Scope

This action covers the delivery of core services, and the core backbone to serve the 27 EU Member States, 3 EFTA Countries and 2 acceding Countries as well all European Institutions and European Agencies and Joint Undertakings.

Deliverables

- Refresh of the Eurodomain network access points of the secure and reliable communication infrastructure

- Operations, maintenance, monitoring and reporting of the secure and reliable communication infrastructure and central generic services;
- Support to the TESTA stakeholders

Type of action	Procurement
Indicative Budget	EUR 16 million
Indicative time	2023-2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of Beneficiaries	Not applicable

5.2.4 Justice and Consumers

In the area of justice and consumer protection, the activities foreseen for 2023 and 2024 under the Digital Europe Programme will primarily focus on ensuring the continued development, maintenance, operation and overall sustainability of all sectoral IT solutions developed/maintained in the period 2021-2022 or in previous years.

5.2.4.1 Core EU Justice and Consumers IT Systems

Objective

For 2023 and 2024, the objective under this topic is to continue ensuring the maintenance and development of the core EU IT systems in the justice and consumers area. In particular, this would cover the maintenance of the e-Evidence Digital Exchange System (eEDES), the European Central Platform (ECP) which includes the Business Registers Interconnection (BRIS)[159] and the Beneficial Ownership Registers Interconnection System (BORIS)[160] IT systems, the ODR system, and the crypto tool used in the context of European elections (actions already financed under WP 2021-2022).

Scope

The eEDES platform would be maintained and supported in 2023 with regard to the use cases it already enables (digital exchange of European Investigation Orders (EIOs) and Mutual Legal Assistance (MLA) requests and documents). Moreover, as the eEDES system will become the de facto user-facing component in the comprehensive digitalisation of 24 cross-border procedures in the area of EU civil, commercial and criminal matters[161] (e.g., the European Arrest Warrant, European Payment Order and other), horizontal requirements and improvements to the system in that context will also fall within

[159] Directive 2012/17/EU, now codified in Directive 2017/1132, requires the Commission to operate BRIS. The system provides two main functionalities: the exchange of messages between business registers related to cross-border branches and cross-border operations, and the provision of company information through BRIS for the users of the European e-Justice Portal. Directive (EU) 2019/1151 and Directive (EU) 2019/2121 require BRIS to provide additional company information free of charge (e.g., on cross-border operations), and to allow further exchanges of information between registers, e.g. on cross-border conversions and divisions.

[160] Directive (EU) 2015/849, as amended by Directive (EU) 2018/843, requires the Commission, by 10 March 2021 to ensure the EU-wide interconnection of national beneficial ownership registers for corporate and other legal entities; Central registers should be interconnected via the European Central Platform and certain types of information contained therein should be accessible to members of the general public. Due to unforeseeable delays the date for the interconnection of national beneficial ownership registers for corporate and other legal entities has been extended until 31 October 2021.

[161] Cf. sub-topic "Digitalisation of judicial cooperation in civil, commercial and criminal matters".

the scope of this action. In 2023, the specifications for extending the eEDES platform to new legal instruments in criminal matters have started.

Secondly, financing from the Digital Europe Programme will ensure the sustainability of the ECP in 2023 and 2024. In particular, the programme will ensure the operation and evolutive maintenance of the ECP, which includes the BRIS and BORIS IT systems. Among the new functionalities that will be introduced for BRIS, are those required by new Directives, e.g., on Company Law (Directive (EU) 2019/1151[162] and Directive (EU) 2019/2121[163]) and on anti-money laundering (Directive (EU) 2015/849[164]). Funding will also cover the design, development, testing and maintenance of a decentralised payment system for BRIS and further communication and stakeholder engagement activities, where needed.

The ODR digital service infrastructure and ODR functionalities will be maintained to facilitate consumer redress and dispute resolution.

The EP Crypto tool will be maintained and supported in 2023 and 2024. The tool will be subject to test campaigns and updates in the view of preparation of the release that will be used in the 2024 European Parliament elections.

Deliverables

- Analytical and design activities;
- Operational management, corrective and evolutive maintenance;
- Stakeholder management and outreach activities;
- Software outputs and source code;
- Implementation documentation (e.g. interface specifications, data models, use cases, architectural documents…);
- Other project artefacts;
- End-user documentation and support.

Type of action	Procurement
Indicative budget	EUR 7 million
Indicative time	2023-2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

5.2.4.2 Digitalisation of Service of Documents and Taking of Evidence in Civil and Commercial Matters

[162] Directive (EU) 2019/1151 of the European Parliament and of the Council of 20 June 2019 amending Directive (EU) 2017/1132 as regards the use of digital tools and processes in company law (OJ L 186, 11.7.2019, p. 80–104).

[163] Directive (EU) 2019/2121 of the European Parliament and of the Council of 27 November 2019 amending Directive (EU) 2017/1132 as regards cross-border conversions, mergers and divisions (OJ L 321, 12.12.2019, p. 1–44).

[164] Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC (OJ L 141, 5.6.2015, p. 73–117).

Objective

The objective is to ensure the development of the decentralised IT system established in the context of Service of Documents[165] and Taking of Evidence[166] (recast) regulations (action started under WP 2021-2022).

Scope

Complete the development of a first version of the system (focussed on critical functionality and main workflows) for the Member States to provide feedback on, and account for the upcoming change requests and system improvements during 2023 and 2024, with the goal of having the system ready by mid- 2024.

Deliverables

- Software outputs and source code;
- Implementation documentation (e.g. interface specifications, data models, use cases, architectural documents…);
- Other project artefacts;
- End-user documentation and support.

Type of action	Procurement
Indicative budget	EUR 2 million
Indicative time	2023-2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

5.2.4.3 Digitalisation of Judicial Cooperation in Civil, Commercial and Criminal Matters

Objective

The objective of the 1 December 2021 Commission proposal on the digitalisation of judicial cooperation and access to justice in cross-border civil, commercial and criminal matters[167] is to improve the efficiency of cross-border judicial cooperation and remove barriers to access to justice in a cross-border context. Inter alia, this will be achieved by: 1) mandating the use of digital communication channel between competent national authorities and 2) enabling electronic communication between natural/legal persons and the competent authorities. The digitalisation of judicial cooperation procedures will be implemented progressively, starting with the digitalisation of

[165] Regulation (EU) 2020/1784 of the European Parliament and of the Council of 25 November 2020 on the service in the Member States of judicial and extrajudicial documents in civil or commercial matters (service of documents) (recast).

[166] Regulation (EU) 2020/1783 of the European Parliament and of the Council of 25 November 2020 on cooperation between the courts of the Member States in the taking of evidence in civil or commercial matters (taking of evidence) (recast).

[167] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the digitalisation of judicial cooperation and access to justice in cross-border civil, commercial and criminal matters, and amending certain acts in the field of judicial cooperation COM(2021) 759 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0759

a first batch of five legal acts in civil, commercial and criminal matters[168] (subject to the outcome of the negotiations). The Commission is further developing e-EDES to support the procedures under the legal acts in the first batch, which Member States may choose to deploy instead of developing their own national back-end systems.

Scope

The Commission will adopt the first Implementing act establishing a decentralised IT system for the exchange of communication between competent authorities falling under the scope of the five legal acts mentioned above (subject to the outcome of the negotiations). In this context, in 2023 and 2024 the programme will finance the elaboration of stakeholder and technical requirements (including on interoperability), setting up the architectural blueprint of the decentralised IT system (including the reference implementation software) and commence software development activities towards the system's establishment. The planned work will also include the necessary adaptations on the European e-Justice Portal, which will host an EU-level access point allowing citizens and businesses to file claims and communicate with judicial and other competent authorities.

Deliverables

- In the context of the preparatory work for the first implementing act, covering the five instruments mentioned above - defined technical requirements and specifications, including information security objectives and standards;
- Reference implementation software supporting the five judicial procedures mentioned above (subject to the outcome of the negotiations);

Type of action	Procurement
Indicative budget	EUR 4.7 million
Indicative time	2023-2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

5.2.4.4 Common Platform for Online Investigations and Law Enforcement (EU eLab)

Objective

Provide for the maintenance of the EU eLab central platform and support activities to consumer protection and product safety market surveillance authorities (action started under WP 2021-2022).

Scope

The scope of this action in 2023 and 2024 would be on:

- Ensuring access to eLab of all participating authorities (onboarding started in 2022);

[168] These concern the digitalisation of the following instruments: Regulation (EC) No 1896/2006 of the European Parliament and of the Council of 12 December 2006 creating a European order for payment procedure, Regulation (EC) No 861/2007 of the European Parliament and of the Council of 11 July 2007 establishing a European Small Claims Procedure, Council Framework Decision 2002/584/JHA of 13 June 2002 on the European arrest warrant and the surrender procedures between Member States, Council Framework Decision 2008/909/JHA of 27 November 2008 on the application of the principle of mutual recognition to judgments in criminal matters imposing custodial sentences or measures involving deprivation of liberty for the purpose of their enforcement in the European Union and Directive 2014/41/EU of the European Parliament and of the Council of 3 April 2014 regarding the European Investigation Order in criminal matters.

- Maintenance of the secure, performant and user-friendly infrastructure, allowing detection of malpractices and collection of evidence to the highest level of integrity;
- Tools (commercial and open source) to streamline the investigative process and AI-support to detecting malpractices online.

Deliverables

- Deployment of licenced commercial tools or open-source tools, customisation outputs and custom development, where appropriate;
- Other project artefacts;
- End-user documentation and support.

Type of action	Procurement
Indicative budget	EUR 1.9 million
Indicative time	2023-2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Not applicable

5.2.4.5 Joint Investigation Teams collaboration platform (JITs CP)

Objective

This action aims to design and to start the development of the joint investigation teams collaboration platform (JITs CP) according to Regulation (EU) 2023/969[169].

Although JITs[170] are one of the most successful tools for cross-border investigations and prosecutions in the EU, the speed and efficiency of the exchange between the teams could be considerably improved by creating a dedicated IT platform to support their functioning. To this purpose, the EU adopted in May 2023 a Regulation establishing the JITs collaboration platform.
Currently, prosecutors and investigative judges involved in JITs cannot use any IT tool that would allow them to securely communicate and exchange information and evidence.

As per the Regulation, the platform shall be developed by the European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (eu-LISA). Its implementation should commence in 2024 and the platform should be operational in December 2025.

Scope

[169] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32023R0969

[170] Joint investigation teams (JITs) are a tool in international judicial cooperation in criminal matters, established for specific criminal investigations and for a limited period of time. A JIT can be set up, in particular, when a Member State's investigations into criminal offences requires difficult and demanding investigations having links with other Member States or third countries. It can also be set up when a number of Member States are conducting investigations into criminal offences in which the circumstances of the case necessitate coordinated, concerted action in the Member States involved.

The scope of the action, in 2024, is to initiate the implementation of the platform which will consist of the following modules:

- a centralised information system which will allow for temporary central data storage and will ensure that the parties involved in JITs can more easily share information and evidence collected in the course of their activities.
- communication software which will ensure that parties involved JITs can more easily and more safely communicate with each other in the context of the JIT activities.
- a technical connection between the centralised information system and relevant IT tools that support the functioning of JITs and that are currently managed and hosted by Eurojust.

Deliverables

In 2024, the deliverables will be related with the project's initiation, i.e.:

- Acquisition of resources required for the design, development, testing and implementation of the platform.
- Acquisition of the necessary infrastructure components for the development of the platform, such as hardware, software and network Design and implementation of the security architecture of the platform.

Type of action	Contribution agreement with eu-LISA
Indicative budget	EUR 3.6 million
Indicative time	2024
Indicative duration of the action	12 months
Implementation	eu-LISA
Type of beneficiaries	Not applicable

5.3 Confidence in Digital Transformation

5.3.1 Safer Internet

Making the internet a safer environment for children and young people is a priority of the EU. Since 2012 the Better Internet for Kids (BIK) strategy has played a key role in influencing child online protection and empowerment at European, national and international level. The updated strategy for a better internet for kids (BIK+), adopted in May 2022[171], will ensure that children are protected, respected and empowered online in the new Digital Decade. It will support the implementation of the provisions on protection of minors of the Digital Services Act (DSA).

The EU co-funded network of Safer Internet Centres (SICs) and the EU-funded portal betterinternetforkids.eu, the hub for child online safety, are key for the implementation of BIK+ in the Member States and at European level.

[171] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A Digital Decade for children and youth: the new European strategy for a better internet for kids (BIK+), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2022:212:FIN

Children create, play and interact online from an ever-younger age, using digital technologies for education, entertainment, social contact and participation in society.

Besides opportunities, harmful and illegal content, conduct, contacts and consumer risks are frequently present for children online. Digital services, from social media to interactive games, can expose children to risks such as unsuitable content, bullying, grooming, child sexual abuse, radicalisation or privacy violations. The COVID-19 pandemic highlighted the benefits of digital technology but also the crucial need for digital skills and competences including media literacy for all children.

Children can actively use technology to express themselves and influence the world around them. Children should be listened to more and included in the development and evaluation of digital products and services and digital policies.

5.3.1.1 Network of Safer Internet Centres (SICs)

Objective

The objective of the topic is to continue to support national SICs which may be composed of one or more NGOs, government bodies/agencies, private sector organisations in providing online safety information, educational resources, public awareness tools and counselling and reporting services (through dedicated helplines and hotlines) for young people, teachers, and parents. The activities performed by the SICs will help minors to tackle online risks and to become media-literate, resilient, digital citizens, and will allow citizens to anonymously report online child sexual abuse material (CSAM).

To reach all children, the Safer Internet Centres will pay particular attention to children with special or specific needs, including those from disadvantaged and vulnerable backgrounds.

Scope

The funding will ensure the continuation of the well-established European network of national SICs, by enabling the awarded consortia to provide at least:

- A centre for raising awareness among children, parents/carers, teachers and educators as well as other relevant professionals working with children about online opportunities and risks for the under 18s. The focus will be to identify and address:
  - specific and general emerging risks (e.g. new apps and games, but also AI, virtual, augmented and extended reality, the internet of things and other technological changes raising new social and ethical challenges that impact children);
  - issues such as mental and physical health risks related to the use of technologies (e.g. self-harm, cyberbullying, risky online challenges, promotion of eating disorders);
  - risks facing children as young consumers (e.g. nudges to spend money, aggressive marketing strategies, lootboxes) on which specific attention will be paid.
- A helpline to give advice and support to parents and children on issues related to children's use of digital technologies and services; to strengthen support to victims of cyberbullying, closer cooperation with the national Child Helpline 116111 service is required.
- A hotline for tackling CSAM (i.e., receiving, analysing, and processing reports of such material). Closer cooperation with law enforcement and the private sector should be further explored in the context of the EU strategy for a more effective fight against child sexual abuse and the proposed new legislation.

- A youth panel to engage directly with children from different demographic groups, including the organisation of regular youth participation activities, allowing them to express their views and pool their knowledge and experience of using online technologies. Adequate turnover and an open selection of participants is required.

SICs shall strengthen their support to children in vulnerable situations (such as children with disabilities, children from a minority, racial or ethnic background, refugee children, children in care, LGBTQI+ children, as well as children from a disadvantaged socio-economic background, who all may face additional challenges in the digital environment). For example, to address the digital divide, they should offer non-formal education and training to these groups and communities.

In addition, SICs will:

- support the monitoring of the impact of the digital transformation on children's well-being in cooperation with the BIK platform,
- support the implementation of relevant EU strategies,
- promote the distribution of relevant online training modules (MOOCs) for teachers,
- expand the role of BIK Youth Ambassadors and BIK Youth Panels to support peer-to-peer activities at national, regional and local level,
- provide trustworthy resources for and carry out campaigns targeting children, parents, carers and teachers, educators and other relevant contacts working with children (e.g. sports coaches, club leaders). Training on children's rights online should also be included in these initiatives to create a stronger awareness that children's rights online are the same as offline, as stipulated by UN General Comment No. 25 (2021) on children's rights in relation to the digital environment (CRC/C/GC/25).

Deliverables

- National SICs as a one-stop-shop for reliable and age-appropriate information.
- Digital literacy in Member States and associated countries in formal and informal education settings (e.g., youth participation activities, workshops, classroom visits, competitions, peer to peer activities).
- Support to parents, carers, teachers, educators and other professionals working with children to better understand the risks and opportunities of children accessing digital content and services (e.g., information sessions, train the trainers programmes, and online and offline material).
- Timely information to local, national, and European actors on emerging risks through the helpline service.
- Access to resources and services by public authorities, including law enforcement agencies, and exchanges with hotline analysts to develop better preventive measures and to remove online child sexual abuse material (CSAM).
- Increased cooperation of the private sector with the SICs, including those recognised in the future as "trusted flaggers" to assist the public, in particular children, when confronted with harmful and illegal content.

Type of action	Simple grant
Indicative budget	EUR 16,2 million
Indicative call planning	First set of calls

Indicative duration of the action	18 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	All entities

5.3.1.2 IT system supporting the removal of online child sexual abuse material (CSAM)°

Objective

The objective of this topic is to tackle the dissemination of online child sexual abuse material (CSAM) through the maintenance of an IT system that enables the cooperation of the network of INHOPE hotlines, thus contributing to the swift removal of such illegal material.

Scope

The funding will cover the maintenance of the IT tool that supports the back-office reporting functionalities of the hotlines hosted by the SICs. The tool facilitates also the collaboration with law enforcement agencies and relevant private sector stakeholders (e.g., hosting digital services). The tool must enable a secure environment for gathering, checking, and sharing reports of potential CSAM to support the hotlines' capability and capacity to analyse, identify, and remove the illegal online content.

Outcomes and deliverables

The funding will deliver an operational IT tool supporting the INHOPE hotlines to identify, track, and remove CSAM.

Type of action	Coordination and support action grant (100% funding rate) to identified beneficiary according to Financial Regulation Article 195 (f). INHOPE is the only organisation in the EU that has the competence to manage the IT tool which is used by the national hotlines (supported by DIGITAL grants) to handle reports of potential online child sexual abuse material (CSAM). Legal name and address: "INHOPE – The International Association of Internet Hotlines", Spuistraat 139F, 1012 SV Amsterdam, The Netherlands
Indicative budget	EUR 0,5 million
Indicative call planning	First set of calls
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Identified beneficiary INHOPE

5.3.1.3 Better Internet for Kids (BIK) platform – EU coordination

Objective

This action will continue to coordinate and support at EU level the national child online safety activities of the Safer Internet Centres (SICs) through a central hub: the Better Internet for Kids (BIK) platform. The platform will continue to provide access to a set of online tools, resources and services for the general public and for professionals dealing with child online safety. This action is key to support the

implementation of the Better Internet for Kids (BIK+) strategy, and the broader EU legal framework for child online protection and relevant EC priorities, such as the code of conduct on age-appropriate design and the implementation of the relevant Digital Services Act (DSA) obligations.

Scope

Evolutive maintenance and operation of the BIK platform as central access point to tools, resources, good practices, guidance, and awareness raising services on child online safety. This will include stakeholder management and outreach activities as well as support and coordination for the SICs and support to the Commission for the implementation of the BIK+ Strategy. Actions will consider outcomes of other relevant EU projects.

Deliverables

- a single entry point to online tools, resources and services for SICs to: collaborate on research-based resource development; assess and exchange good practices, materials and services in support of raising awareness of and teaching child online safety; compile statistics at European level to measure the impact of SICs' activities; facilitate and support youth participation by incorporating a safe, dedicated space for youth engagement;
- a central point of access for the general public to information, guidance and resources, including referrals to quality online content dedicated to children;
- capacity-building, including the development of tutorials, mentoring schemes and training opportunities for practitioners, including the educational sector;
- broad outreach to stakeholders by organising pan-European events, campaigns and meetings involving private sector, researchers, and NGOs.

Type of action	Procurement
Indicative budget	EUR 4 million
Indicative time	2024
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	All entities

5.3.2 European Digital Media Observatory

Objective

The European Digital Media Observatory (EDMO) has been created with the aim of supporting an independent multidisciplinary community to tackle the phenomenon of disinformation. EDMO is composed of the regional hubs and a central platform and governance structure which supports and coordinates them.

The objective of this topic is to finance the work of independent regional hubs for analysis of digital media ecosystems in order to ensure the coverage of geographical areas covered by the EDMO hubs for which the funding is ending at the end of 2024 and in 2025[172].

[172] Member States covered by the second set of 6 hubs for which the funding is ending in 2024 and in 2025: Bulgaria, Germany, Estonia, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Austria, Romania and Slovenia.

A hub involves organisations active in one or several Member State(s), that will provide specific knowledge of local information environments so as to strengthen the detection and analysis of disinformation campaigns, improve public awareness, and design effective responses relevant for national audiences. The activities of the hubs are carried out in full independence from third-party entities including public authorities.

Hubs will cover more than one Member State with similar media ecosystems within an EU region.

Scope

Building on previous work done by the existing hubs, in order to comply with these objectives, the EDMO hubs will:

- Actively participate in the governance of EDMO and the reinforcement of the EDMO network as well as contribute to the joint across-hubs projects.
- Detect, fact-check and disclose harmful disinformation campaigns, as well as conduct research on the impact of disinformation campaigns and tailor-made media literacy campaigns within their territory and/or linguistic area.
- Support the monitoring of online platforms' policies and implementation of the Code of Practice on Disinformation in their territory and/or linguistic area and provide insight about the (dis)information landscape of the territory/linguistic area covered.
- Support researchers' endeavours regarding obtaining more access to platforms' data and carry out research applying data-science methods.
- Pull together and foster the growth of a regional multidisciplinary independent community detecting and analysing disinformation campaigns.
- Communicate through various channels (e.g. traditional and online media outlets, podcasts, social media etc.) and carry out communication campaigns.

Deliverables

- Production of a continuous flow of fact-checks which will also be stored in the EDMO's repositories.
- Deliver analytical reports on specific disinformation campaigns and/or studies or investigations linked to relevant disinformation phenomena.
- Deliver media literacy events and/or campaigns at national/multi-national level to increase citizens' awareness and societal resilience.
- Supporting the monitoring of online platforms' policies and in particular of the implementation of the Code of Practice on Disinformation in the geographical area covered by the hub by targeted inputs and analysis and delivering overviews and reports providing insight about the (dis)information landscape of the geographical/linguistic area covered.
- Implementing a communication strategy building on the targeted use of various channels (e.g. traditional and online media outlets, podcasts, social media etc.) aiming to reach a broad audience (both professional audience and the general public).
- Delivering an annual report on the activities of the hub.

Type of action	SME support grant (75% co-funding rate for SMEs and 50% for all the other beneficiaries)
Indicative budget	EUR 18 million

Indicative call planning	First and Fourth set of calls
Indicative duration of the action	30-36 months
Implementation	Executive Agency HaDEA
Type of beneficiaries	European fact-checkers and academic researchers working on disinformation as well as the media practitioners, media literacy experts, IT experts

5.4 EU Energy Saving Reference Framework

Objective

The current context – Russia's invasion of Ukraine and the accompanying high inflation – compels us to accelerate the energy transition and save energy to ensure a sustainable, resilient, and fair economy. This entails making better use of the data that is generated all along the energy supply chain and to exploit the potential of digital technologies to reduce demand, eliminate wastage and reduce energy bills.

Smart meters and smart apps enable consumers to reduce and optimise their energy consumption and cut their energy bills. They provide greater consumer awareness and opportunities to monitor and control in real time the energy consumption of their appliances. Across the European Union, however, the functionality and availability of such meters and apps remain very fragmented.

The Digitalisation of Energy Action Plan adopted on 18 October 2022[173], sets out for the European Commission, working with Member States, to develop a common European reference framework, including an open-source reference implementation, for a consumer application that allows for voluntary reductions in energy consumption and thereby help reduce energy costs.

Scope

The scope of this action is to develop and deploy an EU Energy saving Reference Framework as a key tool to conserve electricity when there is an anticipated shortage of energy supply. Alerts are to be based on energy generation data and real time energy consumption. Clear messages are to guide consumers to adopt the right measures to ensure a good energy supply for all. For example, following an alert, consumers can voluntarily reduce their electricity consumption and thereby contribute to avoiding possible power blackouts.

Deliverables

- An EU Energy saving Reference Framework that should lead to a standardised reference application that will be developed in close collaboration with energy providers and will draw from applications and services already available in the market.
- The deployment of the EU Energy saving Reference Framework across the Union in close collaboration with energy providers.

Type of action	Simple grant
Indicative budget	EUR 5 million

[173] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Digitalising the energy system - EU action plan, COM/2022/552 final, https://energy.ec.europa.eu/communication-digitalising-energy-system-eu-action-plan-com20225522_en

Indicative call planning	First set of calls
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	Private entities

5.5 Support to the implementation of Multi-Country Projects (MCPs)

Objective

Multi-Country Projects (MCPs) are large scale projects facilitating the achievement of the targets for digital transformation of the Union and industrial recovery. They involve at least three Member States and typically include the Union's and Member States' financing.

The topic aims to facilitate the implementation of Multi-Country projects, including where the European Digital Infrastructure Consortia (EDICs)[174] have been chosen as implementation mechanism. The selected projects should be implemented either by an EDIC or through another mechanism listed in the DDPP Decision, including a consortium which includes at least three Member States [175] .The projects selected for funding under this topic are expected to:

- address one of the key areas in which the Digital Europe Programme supports critical EU capacity building through large scale deployments;
- represent a high level of engagement from various Member States and a long-term sustainability for the project implemented;
- pool EU, national and/or private resources to achieve progress that no Member State could do on its own;
- reduce digital divides within and between Member States;
- prove a clear EU added value through their impact that no single entity nor Member State could achieve on its own;
- contribute to bridge the gap between large scale piloting and full deployment;
- support the consolidation of an interconnected, interoperable, and secure Single Market, considering to the extent possible the interests of public and private sectors.
- to the extent possible, support interoperability of data and digital infrastructure amongst the MCPs. Digital infrastructure might include data, high-performance computing, quantum computing, AI and connectivity;

[174] EDICs are a new instrument for the deployment and operation of MCPs that should allow for large-scale intervention in key areas necessary for the achievement of the objectives and digital targets set out in Digital Decade Policy Programme (DDPP) decision, such as developing secure, resilient, performant and sustainable digital infrastructures. They shall also aim to achieve one or more specific goals outlined in the DDPP, including increasing the availability, and promoting the best use, of safe digital solutions in areas of public interest and the private sector. The EDICs are meant to facilitate the deployment of such large-scale projects and facilitate the digital transformation of the Union. The EDICs should involve several Member States to achieve the necessary scale and have a long-term perspective to provide for sustainability of the projects. Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030, https://eur-lex.europa.eu/eli/dec/2022/2481/oj

[175] Any Member State may be represented by one or more public entities, including regions or private entities with a public service mission.

- where relevant, support common operating models that promote fair data economy, cross-border services, digital public services, new business models, trust-based ecosystems, digital identity and a high level of personal data protection.

Scope

The awarded proposals are expected to ensure that:

- they contribute to the achievement/pursue one of the operational objectives outlined in the Regulation (EU) 2021/694 (Articles 4-8);
- they have a high potential to contribute to digital priorities of the Union provided for in the Digital Decade Policy Programme;
- the level of maturity of the project proposed is ready for deployment;
- consolidate available capacities at EU and Member State level by building on existing initiatives and developing widely agreed frameworks and/or tools;
- coordinate between participating partners existing and future initiatives relevant for the project;
- coordinate with other relevant projects funded through Digital Europe Programme (e.g. Data Spaces Support Centre);
- have in place a long-term sustainability plan, which may include the setting up of an EDIC;
- address interoperability concerns that could hamper an EU wide deployment.

The funding can cover the following categories of activities:

- Deployment and use of common EU digital infrastructures, including the underlying technologies, blueprint architecture, standards, tools and applications;
- Deployment and use of advanced EU wide services targeting their large-scale adoption including through industry and/or SMEs, and/or public administrations;
- Use of computing and processing capacities;
- Data generation, collection, aggregation and sharing;
- Creation, optimization of large data models;
- Normalisation and certification of services, digital infrastructures and/or data models;
- Deployment of trustworthy AI capacities and resources;
- Dissemination and exploitation of project results;
- Stakeholder engagement;
- Capacity building, including on legal and competitiveness matters.

Priority will be given to projects that present a broader Member States support, and a higher level of maturity.

Outcomes and deliverables

Deployment of a few MCPs delivering fully functional digital infrastructure(s) or operational service(s) with a clear a long-term sustainability plan. The projects are expected to prove a clear EU added value through their impact that no single entity or Member State could achieve on its own.

Type of action	Simple grant
Indicative budget	EUR 25 million
Indicative call planning	Fourth set of calls
Indicative duration of the action	36 months
Implementation	European Commission
Type of beneficiaries:	Public and private entities such as (but not limited to): public administrations (national, regional and local level), EDICs, economic actors (SMEs, large organisations), as well as other relevant private and public organisations contributing to the implementation of Multi-Country projects.

6 Programme Support Actions

6.1 Support to Dissemination and Exploitation (D&E)

Objective

Maximise the impact of the Digital Europe Programme and the take up of its results through a Dissemination and Exploitation (D&E) conceptual and operational framework, including the delivery of a number of practical actions.

Scope

The action will address, at least, the following dimensions:

- the overall programme, its Specific Objectives (SO) and areas therein, down to topics and projects where appropriate;
- the capacity building and use strands of Digital Europe Programme;
- the different stakeholders;
- the stages of the project lifecycle and the reporting obligations;
- coordination within EU and beyond when relevant, taking into account the policy priorities and initiatives;
    - between projects of Digital Europe Programmes and other programmes (e.g. Horizon Europe);
    - within Digital Europe Programme itself, identifying and exploiting complementarities of projects among SO and topics;
    - between Digital Europe Programme and EU member states national/regional programmes;
    - of the different programme implementing bodies, e.g. European Commission, Health and Digital Executive Agency (HaDEA), JU and similar bodies.

The action will consider means that can help delivering its objective, including the pertinence of leveraging already existing tools, e.g. of other EU programmes like Horizon Europe. The action will consider innovative approaches to D&E and how to improve the uptake of Digital Europe Programme results beyond the entities directly involved in the projects.

Deliverables

- A conceptual and operational framework for D&E taking into account the elements mentioned under "scope" and offering solid methodological and practical approaches.
- A proposal for a set of actions to be implemented by the different stakeholders and a plan to deliver on the framework, with monitoring and evaluation metrics.
- The implementation of relevant actions aiming at e.g., supporting and complementing individual projects efforts in their D&E activities.
- The analysis of possible means and tools to support the delivery of the framework, including a proposal for the functionalities of the Digital Europe Programme Results Platform (see the Digital Europe Programme Model Grant Agreement Art. 17 and its Annex 5) in the light of the Horizon Europe Results Platform.

Type of action	Coordination and support action grant
Indicative budget	EUR 0.3 million
Indicative call planning	First set of calls
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	All entities

6.2 Supporting the Network of National Contact Points (NCPs)

Objective

This action will support the coordination between different National Contact Points (NCPs) for the Digital Europe Programme, the preparation and execution of actions that maximise awareness and the impact of the programme and the long-term dissemination and exploitation of results.

The selected project will provide support for all specific objectives of Digital Europe Programme.

Scope

Proposals will contribute to the development of a specific NCPs network for Digital Europe Programme.

Proposals should facilitate trans-national co-operation amongst NCPs, encouraging cross-border activities, sharing good practices and raising the general standard of support to programme applicants. The consortium will facilitate participation of new players in the programme.

The selected proposals will provide adapted support for Digital Europe Programme communication (including info days), dissemination and exploitation activities, including, for instance, the preparation of material and organisation of events.

Special attention should be given to enhancing the competence of NCPs, including helping less experienced NCPs rapidly acquire the know-how built up in other countries. Where relevant, synergies should be sought with existing networks to organise matchmaking activities.

Deliverables

The action is expected to contribute to the following outcomes:

- Improved and professionalised NCP services across Europe, supporting access to Digital Europe Programme calls, lowering the entry barriers for newcomers, and raising the average quality of proposals submitted;
- Robust NCP support services across Europe that are adapted to specific objectives of Digital Europe Programme, including:
  - more participation of new players in the programme;
  - matchmaking activities to connect potential participants from widening countries with emerging consortia in this thematic area using a variety of tools;
  - dissemination of information about security and ownership control rules in Digital Europe Programme for applicants.

Type of action	Coordination and support action grant
Indicative Budget	EUR 2 million
Indicative call planning	First set of calls
Indicative duration of the action	24 months
Implementation	European Commission
Type of beneficiaries	All entities

6.3 IT Systems for the enforcement of the Digital Services Act and the Digital Markets Act

Objective

The Digital Services Act (DSA) is a recent flagship regulatory initiative of the European Union aimed at providing a coherent regulatory framework for online intermediaries, including online platforms (such as social media sites, search engines, or online marketplaces) operating in the EU, in view of ensuring safe online environment where fundamental rights of users are protected. The Digital Markets Act (DMA) aims to restore and ensure contestability in digital markets by addressing problematic and unfair practices by large digital gatekeepers The objective of this action is the development and operation of an IT system that will support the enforcement of the DSA and DMA.

Scope

An integral part of the DSA enforcement framework is an easy to use, reliable and secure IT system that would support the time-critical, day-to-day cooperation and exchange of information between Digital Services Coordinators (DSCs), the Commission and the Board (composed of all DSCs and chaired by the Commission). In addition, the Commission needs to develop a transparency hub covering online platforms, Case Handling to facilitate investigations by the Commission covering Very Large Online Platforms (VLOPs) and Very Large Online Search Engines (VLOSEs) as well as cooperation and exchange of the information with the DSCs, where relevant, and a Data Science module to gather data and insights.

With regard to DMA, an enforcement framework case handling, supported by the CASE@EC system, to facilitate investigations by the Commission, complemented by a strong registry and a data science module to gather data and insights, will be crucial to ensure the success of the implementation of the DMA.

Deliverables

The main deliverables of the project are the following modules:

- **Collaboration**: enabling secure communication via messaging, notifications and documents exchange, as well as collaboration between Member States, the Commission and the Board to ensure effective enforcement of the DSA
- **Transparency hub**: covering the statements of reasons database in accordance with art 17 and 24(5) DSA.
- **Case Handling**: facilitating investigations by the Commission covering-for the DSA- Very Large Online Platforms (VLOPs) and Very Large Online Search Engines (VLOSEs) and for the DMA gatekeepers, leveraging the corporate case management solution, CASE@EC.
- **Data Science**: facilitating the gathering, research, and analysis of available data, and supporting monitoring obligations.

Type of action	Procurement (for the DSA co-financed with the fee to be leveraged on Very Large Online Platforms)
Indicative budget	EUR 7.8 million
Indicative time	2023 and 2024
Indicative duration of the action	Each procurement less than 12 months
Implementation	European Commission
Type of beneficiaries:	Not applicable

6.4 Other Support Actions

Other programme support actions with indicative budget of EUR 25.5 million are aimed at maximising the impact of the EU intervention and will be implemented through procurement and other means, e.g, administrative arrangement with the JRC. Horizontal actions will cover costs including preparation, evaluation, monitoring and studies. An amount of funding will be set aside to cover awareness and dissemination as it is crucial to effectively communicate about the value and benefits of the Digital Europe Programme. As an indicative list, other programme support actions funded under this WP may cover:

1. External expertise:

- The use of appointed independent experts for the evaluation of the project proposals and where appropriate, the monitoring of running projects.
- The use of individual independent experts to advise on, or support, the design and implementation of the underpinning policy including on DSA and DMA.

2. Studies, Events and publications

- Events, dissemination of Programme results etc.
- Publications
- Communication e.g., about calls and Digital Europe Programme results
- Studies and expertise e.g. through administrative arrangement with the JRC

3. Other

- Support for the continuous operation of the IT system and/or evolution of the central gateway based on the EU Digital COVID Certificate standards and specifications.
- Service Level Agreement between the European Commission and CERT EU for their contribution to the Cyber Analysis and Situation centre for up-to-date and strategic-level situation analysis, risk scenarios and overviews of the threat landscape.
- Contribution agreement with OECD in the context of the monitoring of the implementation of the EU coordinated plan on Artificial Intelligence[176].

7 Financial Instruments

7.1 Investment Platform for Strategic Digital Technologies

The objective is to continue with the implementation of the Investment Platform for Strategic Digital Technologies under the InvestEU programme. The Investment Platform will provide improved dedicated financial support to innovative digital start-ups and SMEs at all stages of their development (early stage and scale-up phases) through equity and quasi-equity by combining funding from Digital Europe Programme with InvestEU guarantee. It will provide improved financing for strategic digital technologies, with a special focus on cybersecurity. The platform aims to (i) pool financial resources from the European Commission (through the Digital Europe Programme, InvestEU programme and other EU programmes), International Financial Institutions, including the European Investment Bank and the European Investment Fund, as well as seek synergies, including exchange of good practises, and complementarity with the EIC Fund of the European Innovation Council; (ii) leverage EC funding to enable additional investments from private investors and; (iii) provide efficient risk sharing mechanisms between different investors. The platform will include an Investment Support Programme: (i) to raise awareness among investors about companies and project promoters; (ii) carry out a series of market consultations with a broad range of stakeholders from the strategic digital technology ecosystem, governments and private investors; and (iii) facilitate the match-making between project promoters, innovative SMEs, start-ups and private investors. The Investment Support Programme will build up on the advisory services on strategic digital technologies carried out by the InvestEU Advisory Hub as included in the Digital Europe Programme WP 2021-2022.

Type of action	Financial Instrument
Indicative budget	EUR 10 million
Indicative duration of the action	2 years

[176] European Commission Communication Fostering a European approach to Artificial Intelligence (COM(2021) 205 final)T

Implementation	Indirect management with the European Investment Fund

7.2 Chips Fund

The semiconductor industry is known for its high barrier to entry due to the significant investment required before returns are generated. Therefore, easier access to finance for SMEs and greater prospects for investment are essential. To tackle this challenge, the Pillar 1 of the Chips Act[177] foresees a dedicated investment facility, the Chips Fund.

For high-potential start-ups in the area of semiconductor technologies and quantum chips, requiring support to validate their technology and transform it into innovation, a thematic Challenge offering equity and grants is available in the Accelerator programme of the EIC (European Innovation Council) of Horizon Europe.

For SMEs in the area of semiconductor technologies, requiring support to bring their innovation to market, a thematic product offering venture debt and equity-based financing is offered under the InvestEU programme through a top-up from Digital Europe. The EIB Group, through the European Investment Fund (EIF), will deploy the Digital Europe funding directed towards InvestEU under the joint RID-SME window and will earmark a dedicated, ringfenced budget, matching the top-up with own funds, in effect doubling the EU budget guarantee to facilitate private investments.

The InvestEU programme is expected to leverage EU funding by crowding-in private investment by financial intermediaries, such as venture capital or private equity funds, achieving a multiplier effect in terms of funding for selected beneficiaries in the area of semiconductors.

The activities being considered for support under the InvestEU thematic product include:

- **Semiconductor technologies and solutions for development and production of microelectronics and photonics components and systems.** Activities may focus in particular on:
    - Analog, digital, mixed-signal and photonic modules, IP, components and systems;
    - Semiconductor solutions contributing to increasing energy efficiency and/or reducing greenhouse gas emissions;
    - Semiconductor materials, wafers, IP, process design kits, design tools, handling and processing tools and equipment, for front-end or back-end manufacturing.
- **Development, production and commercialization of new semiconductor chips for digital applications**. These activities comprise, but are not limited to, design and deployment of electronic and photonic integrated circuits (chips) and integrated systems for applications such as AI, edge computing, IoT, 5G/6G, HPC, quantum computing/sensing/communication, cybersecurity, blockchain/DLT and other digital technologies.

Type of action	Financial Instrument
Indicative budget	EUR 67 million
Indicative duration of the action	2 years

[177] Regulation (EU) 2023/1781 of the European Parliament and of the Council of 13 September 2023 establishing a framework of measures for strengthening Europe's semiconductor ecosystem and amending Regulation (EU) 2021/694 (Chips Act), https://eur-lex.europa.eu/eli/reg/2023/1781/oj

Implementation	Indirect management with the European Investment Fund

8 Implementation

This Work Programme uses two main implementation modes: direct management (procurement, administrative arrangement with JRC and grants), as well as indirect management (contribution agreement, European Investment fund).

The different nature and specificities of the actions indicated in the previous chapters require distinctive implementation measures. Each of these will therefore be achieved through various implementation modes.

Proposers are strongly encouraged to follow green public procurement principles and take account of life cycle costs[178].

The implementation of grants is articulated through different types of actions that are indicated for each topic. More details on each type of action are described in Appendix 2.

8.1 Procurement

Procurement actions will be carried out in compliance with the applicable EU public procurement rules. The procedures will be implemented either through direct calls for tenders or by using existing framework contracts. IT development and procurement strategy choices will be subject to pre-approval by the European Commission Information Technology and Cybersecurity Board.

8.2 Grants

8.2.1 Evaluation process

The evaluation of proposals will be based on the principles of transparency and equal treatment. It will be carried out by the Commission services and an Executive Agency with the assistance of independent experts.

Admissibility conditions

Proposals must be submitted before the call deadline and only through the means specified in the call for proposals. The call deadline is a deadline for receipt of proposals.

Proposals must be complete and contain all parts and mandatory annexes and supporting documents specified in the call for proposals. Incomplete proposals may be considered as inadmissible.

Eligibility criteria

Proposals will be eligible if they are submitted by entities and/or consortiums compliant with the requirements set out in this Work Programme and the relevant call for proposals. Only proposals meeting the requirements of the eligibility criteria in the call for proposals will be evaluated further.

Exclusion criteria

Applicants which are subject to EU administrative sanctions (i.e. exclusion or financial penalty decision)[179] might be excluded from participation. Specific exclusion criteria will be listed in the call for proposals.

Financial and operational capacity

[178] http://ec.europa.eu/environment/gpp/index_en.htm

[179] See Article 136 of EU Financial Regulation 2018/1046.

Each individual applicant must have stable and sufficient resources as well as the know-how and qualification to successfully implement the projects and contribute their share. Organisations participating in several projects must have sufficient capacity to implement all these projects. Applicants must demonstrate their financial and operational capacity to carry out the proposed action.

Award criteria

The three sets of criteria are listed in Appendix 1 of this Work Programme. Each of the eligible proposals will be evaluated against the award criteria. Proposals responding to a specific topic as defined in the previous chapters of this Work Programme will be evaluated both individually and comparatively. The comparative assessment of proposals will cover all proposals responding to the same topic.

Proposals that achieve a score greater than or equal to the threshold will be ranked within the objective. These rankings will determine the order of priority for funding. Following evaluation of award criteria, the Commission establishes a Selection Decision taking into account the scores and ranking of the proposals, the programme priorities and the available budget.

The coordinators of all submitted proposals will be informed in writing about the outcome of the evaluation for their proposal(s).

8.2.2 Selection of independent experts for evaluation and reviews

The Commission and the Executive Agency will select independent experts to assist with the evaluation of proposals and with the review of project results as well as for other purposes where specific expertise might be required for implementation of the Programme. Experts are invited to register themselves on the Funding & Tender Portal180 or update their profile in the database with their expertise in the areas funded by the Digital Europe Programme. Experts will be selected from this list on the basis of their ability to perform the tasks assigned to them, taking into account the thematic requirements of the topic, and with consideration of geographical and gender balance as well as the requirement to prevent and manage (potential) conflicts of interest.

8.2.3 Indicative implementation calendar

The indicative calendar for the implementation of the Digital Europe calls for proposals in 2023 and 2024 is shown in the table below. Four sets of calls with a common deadline are planned to deliver the topics of this Work Programme. Topics are bundled into calls as specified in the respective call document. The table below does not prevent the opening of additional calls if needed. More information about these calls will be available on: Funding & tenders (europa.eu).

[180] http://ec.europa.eu/research/participants/portal/desktop/en/experts/index.html

Table 11: Tentative call timeline for topics in this WP

Milestones	First set of calls of WP 2023-2024 with common deadline	Second set of calls WP 2023-2024 with common deadline	Third set of calls of WP 2023-2024 with common deadline	Fourth set of calls of WP 2023-2024 with common deadline
Call Opening [181]	Q2-2023	Q3-2023	Q1-2024	Q3-2024
Deadline for submission [182]	Q3- 2023	Q1-2024	Q2- 2024	Q4-2024
Evaluation	Q4-2023	Q1-2024	Q2-2024	Q1-2025
Information to applicants on the outcome of the call	Q4-2023	Q22024	Q3-2024	Q1-2025
Signature of contracts	Q1/Q2-2024	Q3/Q4-2024	Q1Q2-2025	Q3/Q4 2025

Topics that will be included in the first and the second set of calls are listed in tables 7 and 8 and those in the third and fourth set of calls in tables 9 and 10.

[181] The Director-General responsible for the call may delay the publication and opening of the call by up to three months.

[182] The Director-General responsible for the call may delay this deadline by up to three months.

9 Appendices

9.1 Appendix 1 – Award criteria for the calls for proposals

Proposals are evaluated and scored against award criteria set out for each topic in the call document. The general award criteria for the Digital Europe calls are as follows:

Relevance:

- Alignment with the objectives and activities as described in the call for proposals
- Contribution to long-term policy objectives, relevant policies and strategies, and synergies with activities at European and national level
- Extent to which the project would reinforce and secure the digital technology supply chain in the EU*
- Extent to which the project can overcome financial obstacles such as the lack of market finance*

*This might not be applicable to all topics

Implementation

- Maturity of the project
- Soundness of the implementation plan and efficient use of resources
- Capacity of the applicants, and when applicable the consortium as a whole, to carry out the proposed work

Impact

- Extent to which the project will achieve the expected outcomes and deliverables referred to in the call for proposals and, when relevant, the plans to disseminate and communicate project achievements
- Extent to which the project will strengthen competitiveness and bring important benefits for society
- Extent to which the project addresses environmental sustainability and the European Green Deal goals, in terms of direct effects and/or in awareness of environmental effects*

*This might not be applicable to all topics and in only exceptional occasions and for duly justified reasons may not be evaluated (see specific topic conditions in the call for proposals).

9.2 Appendix 2 – Types of action to be implemented through grants

The descriptions below of the types of actions to be implemented through grants under the Digital Europe Programme is indicative and should help the (potential) applicants to understand the expectation in each type of action. The call for proposal will define the objectives and scope of the action in more detail.

SIMPLE GRANTS

Description: The Simple Grants are used by a large variety of topics and can cover most activities. The consortium will mostly use personnel costs to implement action tasks, activities with third parties (subcontracting, financial support, purchase) are possible but should be limited.

Funding rate: 50% of total eligible costs for all beneficiaries.

SME SUPPORT ACTIONS

Description: Type of action primarily consisting of activities directly aiming at supporting SMEs involved in building up and the deployment of the digital capacities. This type of action can also be used if an SME needs to be in the consortium and make investments to access the digital capacities.

Funding rate: 50% of total eligible costs except for SMEs where a rate of 75% applies.

COORDINATION AND SUPPORT ACTIONS (CSA):

Description: Small grants with the primary goal to promote cooperation and/or provide support to EU policies. Activities can include coordination between different actors for accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure. CSA may also include complementary activities of strategic planning, networking and coordination between programmes in different countries.

Funding rate: 100% of eligible costs.

GRANTS FOR PROCUREMENT

Description: Grants where most of the costs consist of buying goods or services and/or subcontracting tasks. Contrary to the grants for procurement of advanced capacities (PAC grants) (see below), for these there are no specific procurement rules (i.e. usual rules for purchase apply), nor is there a limit to 'contracting authorities/entities'. Personnel costs should be limited in this type of action; they are used to manage the grant, coordinate between the beneficiaries and prepare the procurement.

Funding rate: 50% of total eligible costs for all beneficiaries.

GRANTS FOR PROCUREMENT OF ADVANCED CAPACITIES (PAC)

Description: Grants awarded only to beneficiaries that are "contracting authorities or contracting entities" as defined in the EU public procurement Directives (Directives 2014/24/EU[183], 2014/25/EU[184]

[183] 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 (OJ L 94, 28.3.2014, p. 65–242).

[184] Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC (OJ L 94, 28.3.2014, p. 243–374); Contracting authorities
1. For the purpose of this Directive 'contracting authorities' means State, regional or local authorities, bodies governed by public law or associations formed by one or more such authorities or one or more such bodies governed by public law.

and 2009/81/EC[185]) aiming at buying in innovative digital goods and services (i.e. novel technologies on the way to commercialisation but not yet broadly available).

Funding rate: 50% of total eligible costs.

GRANT FOR FINANCIAL SUPPORT

Description: Grants with a particular focus on providing financial support to third parties. The majority of the grant will be distributed via financial support to third parties with special provisions in the grant agreement, maximum amounts to third parties, multiple pre-financing and reporting obligations.

Annex 5 of the model grant agreements foresees specific rules for this type of action regarding conflict of interest, the principles of transparency, non-discrimination and sound financial management as well as the selection procedure and criteria.

In order to assure the co-financing obligation in the programme, the support to third parties should only cover 50% of third-party costs.

Funding rate: 100% of eligible costs for the consortium, co-financing of 50% of total eligible costs by the supported third party.

FRAMEWORK PARTNERSHIP AGREEMENT (FPA) AND SPECIFIC GRANT AGREEMENT (SGA):

FPAs:

Description: An FPA establishes a long-term cooperation mechanism between the granting authority and the beneficiaries of grants. The FPA specifies the common objectives (action plan), the procedure for awarding specific grants and the rights and obligations of each party under the specific agreements. The specific grants are awarded via identified beneficiary actions (with or without competition).

Funding rate: no funding for FPA.

SGAs:

Description: The SGAs are linked to an FPA and implement the action plan or part of the action plan. They are awarded via an invitation to submit a proposal (identified beneficiary action). The coordinator of the FPA has to be the coordinator of each SGA signed under the FPA and will always take to role of interlocutor with the granting authority. All the other partners of the FPA can participate in any SGA. There is no limit to the number of SGAs signed under one FPA.

Funding rate: 50% of total eligible costs.

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2. 'Regional authorities' includes all authorities of the administrative units, listed non-exhaustively in NUTS 1 and 2, as referred to in Regulation (EC) No 1059/2003 of the European Parliament and of the Council.
3. Local authorities' includes all authorities of the administrative units falling under NUTS 3 and smaller administrative units, as referred to in Regulation (EC) No 1059/2003.
4. Bodies governed by public law' means bodies that have all of the following characteristics:
(a) they are established for the specific purpose of meeting needs in the general interest, not having an industrial or commercial character;
(b) they have legal personality; and
(c) they are financed, for the most part, by the State, regional or local authorities, or by other bodies governed by public law; or are subject to management supervision by those authorities or bodies; or which have an administrative, managerial or supervisory board, more than half of whose members are appointed by the State, regional or local authorities, or by other bodies governed by public law.

[185] Directive 2009/81/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of procedures for the award of certain works contracts, supply contracts and service contracts by contracting authorities or entities in the fields of defence and security, and amending Directives 2004/17/EC and 2004/18/EC (OJ L 216, 20.8.2009, p. 76–136).

LUMP SUM GRANT

Description: Lump Sum Grants reimburse a general lump sum for the entire project and the consortium as a whole. The lump sum is fixed ex-ante (at the latest at grant signature). The granting authority defines a methodology for calculating the amount of the lump sum. There is an overall amount, i.e., the lump sum will cover the beneficiaries' direct and indirect eligible costs. The beneficiaries do not need to report actual costs, they just need to claim the lump sum once the work is done. If the action is not properly implemented only part of the lump sum will be paid.

Funding rate: 50% of total eligible costs.

9.3 Appendix 3 – Implementation of Article 12(5) and 12(6)

As indicated in this document and detailed in the call document, for duly justified security reason, legal entities established in associated countries[186] and legal entities that are established in the Union but are controlled from third countries can be excluded from actions falling under section 3 of this Work Programme or, with respect to actions under section 2 of this Work Programme, may be eligible to participate[187] only if they comply with the requirements/conditions indicated below.

EEA EFTA countries are fully associated to the Digital Europe Programme and benefit from a status equivalent to that of the Member States. Other formally associated countries can participate under conditions described below.

The assessment of the foreign control is part of the eligibility criteria. For this, participants will be requested to fill in a self-assessment questionnaire to determine their control status during proposal submission. They will also be requested to submit supporting documents in order for the Commission to determine that the entities are not controlled from a third country.

Entities controlled from a third country and entities from associated countries can participate in topics where Article 12(6) of Regulation (EU) 2021/694 applies, provided that they comply with certain conditions set out below. Those participants will be asked for guarantees approved by the eligible country in which they are established. The validity of these guarantees will be later assessed by the European Commission.

Conditions for foreign controlled entities

The applicants that are established in an associated country and applicants that are established in the Union but are controlled from third countries shall be required to provide information demonstrating that:

(a) control over the applicant's corporate structure and decision-making process is not exercised in a manner that restrains or restricts in any way its ability to perform and complete the action;

(b) the access by non-eligible third countries or by non-eligible third country entities to classified or non-classified sensitive information[188], such as e.g. know-how and business secrets relating to the action will be prevented;

(c) the persons involved in the action will have national security clearance issued by a Member State where appropriate;

(d) the results of the action shall remain within the beneficiary and shall not be subject to control or restrictions by non-eligible third countries or other non-eligible third country entities during the action and for a specified period after its completion.

(e) For the topic data space for security and law enforcement, other entities will also have to prove that they will only perform specific and clearly defined tasks.

(f) For applicants established in the EU and controlled from a third country and established in Associated Countries that they are not subject to export restrictions to EU Member States on results, technologies, services and products developed under the project for at least 4 years after the end of the action, in order to ensure the security of supply.

[186] Participation is further limited to associated countries that meet specific conditions. In order to be eligible, a third country must be formally associated to Digital Europe Programme and meet specific conditions (eligibility depending on the outcome of the assessment of replies to the questionnaire provided by relevant associated countries to meet these specific conditions) at the time of signature of the grant agreement.

[187] See Article 12(5) and 12(6) of the Regulation (EU) 2021/694.

[188] Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

More information about the procedure, the conditions and the guarantees will be detailed in the call documents and the online manual in the EU Funding & Tenders Portal.

Procurement actions will also be subject to these restrictions (Articles 12(5) and 12(6)) and, when applying Article 12(6), will use the same conditions as calls for proposals (a, b, d and e). More information will be published in the Funding and Tenders Portal and in the procurement-related document.

9.4 Appendix 4 – The initial list of areas of activity for Multi-Country projects, as per Path to the Digital Decade Policy Programme Annex

Non-exhaustive areas of activity:

(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 EuroHPC;

(e) Developing and deploying an ultra-secure quantum and space-based communication infrastructures;

(f) Deploying a network of security operations centres;

(g) Connected public administration;

(h) European blockchain services infrastructure;

(i) European digital innovation hubs;

(j) High-tech partnerships for digital skills through the Pact for Skills;

(k) Skills and training in cybersecurity;

(l) Other projects which meet all the criteria of Article 12 of this Decision and which become necessary to the achievement of the objectives of the Digital Decade policy programme over time due to emerging social, economic or environmental developments.

9.5 Appendix 5 - Abbreviations and Acronyms

Abbreviation/ Acronym	Definition
1+MG	1+Million Genomes initiative
ADR	Alternative Dispute Resolution
AI	Artificial Intelligence
AIA	Artificial Intelligence Act
API	Application Programming Interface
B1MG	Beyond 1 Million Genomes
B2G	Business-to-Government
BDTI	Big Data Test Infrastructure
BIK	Better Internet for Kids
BORIS	The Beneficial Ownership Registers Interconnection System
BRIICS	Brazil, Russia, India, Indonesia, China, and South Africa
BRIS	The Business Registers Interconnection
BSc	Bachelor of Science
CAP	The Common Agricultural Policy
CEF	The Connecting Europe Facility
CELT	Centre of Excellence for Language Technologies
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
CHI	Cultural Heritage Institution
CIRPASS	The Ecosystem Digital Product Passport
CSA	Coordination and Support Action grant
CSAM	Online Child Sexual Abuse Material
D&E	Dissemination and Exploitation
DDPP	The Digital Decade Policy Programme
DEI	The Digitizing European Industries initiative
DESI	Digital Economy and Society Index
DestinE	Destination Earth
DIGITAL	The Digital Europe Programme
DMA	The Digital Markets Act
DoEAP	The Digitalisation of Energy Action Plan
DPP	Digital Product Passport
DSA	The Digital Services Act

DSCs	Digital Services Coordinators
DSO	Distribution Network Operators
DTO	Digital Twin Ocean
EBP	The European Blockchain Partnership
EBSI	The European Blockchain Services Infrastructure
EBSIC-EDIC	European Blockchain Services Infrastructure Consortium as a European Digital Infrastructure Consortium
ECCC	The European Cybersecurity Competence Centre
ECMWF	The European Centre for Medium-Range Weather Forecasts
ECP	The European Central Platform
ECTS	The European Credit Transfer System
EDIC	The European Digital Infrastructure Consortium
EDIHs	European Digital Innovation Hubs
EDMO	European Digital Media Observatory
EEA EFTA	European Economic Area and the European Free Trade Associat (Iceland, Liechtenstein, and Norway)
eEDES	e-Evidence Digital Exchange System
EEHRxF	European Electronic Health Record Exchange Format
EFTA	The European Free Trade Association
EHDS	The European Health Data Space
EHR	Electronic Health Record
eID	European Digital identity
eIDAS	Electronic Identification, Authentication and trust Services
EIF	European Interoperability Framework
EIOs	European Investigation Orders
EIT	European Institute of Innovation & Technology
eLab	Common Platform for Online Investigations and Law Enforcement
ELSI	Ethical Legal and Social Implications
EMDS	European Mobility Data Space
ENISA	The European Union Agency for Cybersecurity
ENSO	The El Niño-Southern Oscillation
ERDF	The European Regional Development Fund
ERIC	The European Research Infrastructure Consortia
ESA	The European Space Agency
ESAP	The European Single Access Point
ESAs	European Supervisory Authorities

ESMA	The European Securities and Markets Authority
ESPD	The European single procurement document
ESPR	Ecodesign for Sustainable Products Regulation
ESTEAM	Entrepreneurship, Science, Technology, Engineering, Arts and Mathematics
EU DCC	European Union Digital Covid Certificate
eu-LISA	The European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice
EUMETSAT	The European Organisation for the Exploitation of Meteorological Satellites
EuroHPC JU	The European High Performance Computing Joint Undertaking
EuroQCI	The European Quantum Communication Infrastructure
FPA	Framework Partnership Agreement
GDDS	Green Deal Data Space
GDI	Genomic Data Infrastructure
GDP	Gross Domestic Product
GDPR	The General Data Protection Regulation
GoE	The Genome of Europe
HaDEA	European Health and Digital Executive Agency
HDABs	Health Data Access Bodies
HPC	High-Performance Computing
HR	Human Resources
HVD	High Value Datasets
ICT	Information and Communications Technology
ICU	Intensive Care Unit
IHI	Innovative Health Initiative
IMI2	Innovative Medicine Initiative 2
INATBA	International Association for Trusted Bockchain Association
INHOPE	International Association of Internet Hotlines
IoT	Internet of Things
IP	Intellectual Property
IPCEI	Important Projects of Common European Interest
IPCEI-CIS	Important Project of Common European Interest on Next Generation Cloud and Edge Infrastructure and Services
ISCED	The International Standard Classification of Education
JITs CP	The Joint Investigation Teams Collaboration Platform
JRC	The Joint Research Centre

JU	Joint Undertaking
KPI	Key Performance Indicators
LDS	Language Data Space
LDT	Local Digital Twin
LSPs	Large Scale Partnerships
MCPs	Multi-Country Projects
ML	Machine Learning
MLA	Mutual Legal Assistance
MOOCs	Massive Open Online Courses
MSc	Master of Science
NCAs	National Competent Authorities
NCCs	The Network of National Coordination Centres
NCPs	National Contact Points
NCPeH	National Contact Points for eHealth
NIS Directive	The Directive on Security of Network and Information Systems
NIS2 Directive	Revised NIS Directive
NLP tools	Natural Language Processing tools
OAM	Officially Appointed Mechanisms
ODR	Online Dispute Resolution
OECD	Organisation for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OJEU	Official Journal of the European Union
OOTS	Once Only Technical System
PAC	Procurement for Advanced Capacities
PPDS	Public Procurement Data Space
RACI	Role, Accountability, Consulted and Informed
RTOs	Research and Technology Organisations
SAREF	Smart Applications REFerence
SDGR	Single Digital Gateway Regulation
SEMIC	Semantic interoperability community
SGA	Specific Grant Agreement
SIC	Safer Internet Centre
SICs	Network of Safer internet Centres
SIMPL	Smart Middleware for a European cloud federation and for the European data spaces
SLA	Service Level Agreement

SMEs	Small and Medium-sized Enterprises
SOs	Specific Objectives
STEM	Science, Technology, Engineering, and Mathematics
TED	Tenders Electronic Daily
TEFs	Testing and Experimentations Facilities
TESTA	Trans-European Services for Telematics between Administrations
TRL	Technology Readiness Levels
TSO	Transmission System Operators
UX	User experience
VAT	Value Added Tax
VET	Vocational and Educational Training
VHT	Virtual Human Twin
VLOPs	Very Large Online Platforms
VLOSEs	Very Large Online Search Engines
VR/AR	Virtual Reality and Augmented Reality
WGS	Whole Genome Sequencing
WP	Work Programme
XR	Extended reality