DIGITAL EUROPE

Work programme 2021-2022

DRAFT

 *16 November 2020*

DISCLAIMER

All the budget figures in this document are purely indicative and
DO NOT REPRESENT the final budget allocation

Introduction

Digital technologies are profoundly changing our daily life, our way of working and doing business, the way we understand and use our natural resources and environment and the way people interact, communicate and educate themselves. The von der Leyen’s Commission has presented an ambitious strategy in its digital package of February 19th 2020. The [Council conclusions on shaping Europe’s digital future adopted on the 9th of June 2020](https://www.consilium.europa.eu/register/en/content/out?typ=SET&i=ADV&RESULTSET=1&DOC_TITLE=&CONTENTS=&DOC_ID=8711%2F20&DOS_INTERINST=&DOC_SUBJECT=&DOC_SUBTYPE=&DOC_DATE=&document_date_from_date=&document_date_from_date_submit=&document_date_to_date=&document_date_to_date_submit=&MEET_DATE=&meeting_date_from_date=&meeting_date_from_date_submit=&meeting_date_to_date=&meeting_date_to_date_submit=&DOC_LANCD=EN&ROWSPP=25&NRROWS=500&ORDERBY=DOC_DATE+DESC) confirmed this ambition.

The COVID-19 crisis has further highlighted the critical role of digital technologies and infrastructures in our lives and demonstrated how our societies and economies rely on digital solutions. The crisis confirmed how important it is for Europe not to be dependent on systems and solutions coming from other regions of the world.

The efforts needed are not limited to Research and Development. The EU must drastically improve its digital capacities. This includes digital technologies, as well as the necessary digital skills for EU workers. Europe must also develop key digital infrastructures and strengthen its industrial base, enhance its resilience and flexibility both in terms of technologies and supply chains. Delivering this will require massive public and private investment and common efforts that no Member State alone could secure. In that context, the European data strategy has announced a High Impact project on European data spaces, encompassing data sharing architectures and governance mechanisms, as well as the European federation of energy-efficient and trustworthy cloud infrastructures and related services. This document sets out the work programme for part of the actions implemented in the first two years of the Digital Europe Programme.

The work programmes follows the extensive consultation with Member States, stakeholders and the public on drafts of the strategic orientations for the programme. It uses as reference point the Annex1 of the Digital Europe Programme’s regulation.

The programme objectives

The Digital Europe programme will reinforce EU critical digital capacities by focusing on the key areas of artificial intelligence (AI), cybersecurity, advanced computing, data infrastructure, governance and processing, and their deployment and best use for critical sectors like energy and environment, manufacturing, agriculture and health. The Digital Europe programme will actively encourage proposers to include Horizon Europe / Horizon 2020 digital innovations that are ‘market mature’ and/or demonstrate disruptive potential (as per indicator systems of the JRC’s Innovation Radar[[1]](#footnote-2) methodology). The programme also targets upskilling to provide a workforce for these advanced digital technologies. It supports industry, SME’s, and public administration in their digital transformation with a reinforced network of European Digital Innovation Hubs. Digital Europe will accelerate the recovery and drive the digital transformation of Europe.

The twin transitions to a green and digital Europe remain the defining challenges of this generation. This is reflected throughout the Commission’s proposals. Digital Europe will deliver on the goals set out in the European Data strategy of creating a true European data economy. It will help bring European human centred AI-solutions as set out in white paper on AI and it will unleash the powers of digital to reach Europe’s common goal of being climate neutral in 2050 as set out in the European Green Deal.

Actions in this work programme will support technologies that are strategically important for Europe’s future, and will deliver on the following areas, being High Performance Computing, Cybersecurity and the EDIH implemented with independent work programmes, as explained above:

* Digital Europe will unleash the potential of data with EU-wide common data spaces build on cloud technology and promote the testing and adoption of AI technologies with a European AI platform and world-class testing and experimentation facilities boosting the development of artificial intelligence and use it to respond to critical issues of our time like climate change or health. Europe is facing harsh global competition and needs to invest in key European digital capacities, so that it can become a world leader in digital transformation with a view to solving societal and global challenges. Digital Europe actions are to support the Union digital strategic autonomy. The actions proposed for building essential capacities will be achieved by co-investing with Member States in new high-end infrastructures, and by upgrading and consolidating available capacities at EU and national level.
* Digital Europe will support specialised Master’s programmes in advanced digital technologies, deploying cutting-edge technologies to address the shortage of digital experts, particularly in key technological areas
* Digital Europe will contribute to address challenges such as protecting the environment and fighting climate change through high impact deployments. It will accelerate the uptake of blockchain in Europe, enable interoperable digital public services centred on users, facilitating the sharing of data across borders in areas like, justice and security and promote an inclusive and trustworthy digital space.

Indicative Budget and implementation

At the time of writing the final budget is not decided yet. The budget brackets (in current prices) per topic are indicative, adding up to the amount included in the overall MFF agreement of 10 November 2020 (based on EUCO July 2020 agreement i.e. with a cut of 17,4 % to the original Commission proposal of EUR 9,2 billion in current prices). The cut is applied linearly to the Strategic Objectives. However, as MFF negotiations are still ongoing the budget figures in this document might be subject to change.

Digital Europe is implemented by means of multiannual work programmes. There are independent work programmes for those parts which are implemented under indirect management (High Performance Computing and Cybersecurity), and for the European Digital Innovation Hubs (EIDH), which need a longer duration for the financing decision than this work programme. Activities in this work programme are implemented in direct management[[2]](#footnote-3). Synergies and complementarities of the activities in the various work programmes will be ensured.

Participation in selected calls funded from the budget lines of Specific Objective 1, 2, and 3 may be restricted on the basis of art 12 of the Digital Europe Programme Regulation.

Contents

[1 High Performance Computing 7](#_Toc56441458)

[2 Cloud, data and Artificial Intelligence 8](#_Toc56441459)

[2.1 Cloud Federation 8](#_Toc56441460)

[2.1.1 Federated cloud-to-edge-based service marketplaces for Europe 9](#_Toc56441461)

[2.1.2 Cloud-to-edge-based services 10](#_Toc56441462)

[2.1.3 Smart middleware platforms with embedded business intelligence services and underlying cross-cutting low power software enabled services 12](#_Toc56441463)

[2.2 Data for EU 13](#_Toc56441464)

[2.2.1 Data Spaces 13](#_Toc56441465)

[2.2.1.1 European Green Deal Data Space 14](#_Toc56441466)

[2.2.1.2 Data Space for Mobility 15](#_Toc56441467)

[2.2.1.3 Data Spaces for Manufacturing 16](#_Toc56441468)

[2.2.1.4 Data Space for Agriculture 18](#_Toc56441469)

[2.2.1.5 Data Space for Cultural Heritage 19](#_Toc56441470)

[2.2.1.6 Data Space for Health 23](#_Toc56441471)

[2.2.1.7 Data space for Media 26](#_Toc56441472)

[2.2.1.8 Data Spaces for Public Administrations 27](#_Toc56441473)

[2.2.2 Support for Data for EU 30](#_Toc56441474)

[2.2.2.1 Data Spaces Support Centre 30](#_Toc56441475)

[2.2.2.2 Public Sector Open Data for AI and Open Data Platform 32](#_Toc56441476)

[2.2.2.3 Incubators 33](#_Toc56441477)

[2.3 Artificial Intelligence 34](#_Toc56441478)

[2.3.1 AI on demand platform 34](#_Toc56441479)

[2.3.2 AI Testing and Experimentation Facilities 35](#_Toc56441480)

[2.3.2.1 Testing and Experimentation Facility for Manufacturing 36](#_Toc56441481)

[2.3.2.2 Testing and Experimentation Facility for Health 38](#_Toc56441482)

[2.3.2.3 Testing and Experimentation Facility for Agri-Food 39](#_Toc56441483)

[2.3.2.4 Testing and Experimentation Facility for Smart Communities 41](#_Toc56441484)

[2.3.2.5 Testing and Experimentation Facility for Edge AI 42](#_Toc56441485)

[3 Cybersecurity 45](#_Toc56441486)

[4 Advanced Digital Skills 46](#_Toc56441487)

[4.1 Specialised education programmes or modules in key capacity areas 46](#_Toc56441488)

[4.2 Job placements in key capacity areas 47](#_Toc56441489)

[4.3 Advanced digital skills analysis 48](#_Toc56441490)

[4.4 Short term training courses in key capacity areas 49](#_Toc56441491)

[4.5 Maintaining and populating the platform for Skills and Jobs 50](#_Toc56441492)

[4.6 Promoting European excellence in educational innovation 51](#_Toc56441493)

[5 Accelerating best use of technologies 53](#_Toc56441494)

[5.1 Initiatives in support to the European Green Deal 54](#_Toc56441495)

[5.1.1 Destination Earth Initiative (DestinE) 54](#_Toc56441496)

[5.1.1.1 Destination Earth Horizontal Core Platform 54](#_Toc56441497)

[5.1.1.2 Digital Twins (DTs): 56](#_Toc56441498)

[5.1.2 Data ecosystem for climate-neutral and smart communities 57](#_Toc56441499)

[5.1.2.1 Deployment of Urban Digital Platforms 58](#_Toc56441500)

[5.1.2.2 Establishment of a data ecosystem for climate-neutral and smart communities 59](#_Toc56441501)

[5.1.2.3 Capacity building, coordination and governance of the Living-in.eu community’s governance 61](#_Toc56441502)

[5.1.2.4 Large Scale Pilots to validate the data ecosystem for climate-neutral and smart communities 61](#_Toc56441503)

[5.1.2.5 AI-powered Urban Digital Twins 62](#_Toc56441504)

[5.1.3 Digital Product Passport: sustainable and circular systems 64](#_Toc56441505)

[5.2 Blockchain - European Blockchain Services Infrastructure (EBSI) and Regulatory Sandbox 65](#_Toc56441506)

[5.2.1 EBSI and sandbox– Core activities 65](#_Toc56441507)

[5.2.2 EBSI and sandbox – Deployment of services 67](#_Toc56441508)

[5.3 Deployments of Public Services 68](#_Toc56441509)

[5.3.1 European Digital Government Eco System (EDGES): cross-border services and interoperability 68](#_Toc56441510)

[5.3.1.1 Common Services Platform 68](#_Toc56441511)

[5.3.1.2 eArchiving- Core Services 70](#_Toc56441512)

[5.3.1.3 Once-Only Principle implementation 71](#_Toc56441513)

[5.3.1.4 Interoperability and GovTech 72](#_Toc56441514)

[5.3.2 Justice and consumer protection 74](#_Toc56441515)

[5.3.2.1 Maintenance and evolution of the core EU justice and consumers systems 74](#_Toc56441516)

[5.3.2.2 e-Justice Communication via Online Data Exchange (e-CODEX) 77](#_Toc56441517)

[5.3.2.3 Digitalisation of justice 78](#_Toc56441518)

[5.3.2.4 Common platform for online investigations and enforcement (EU eLab) 79](#_Toc56441519)

[5.3.3 Health 80](#_Toc56441520)

[5.3.3.1 Digital Transformation of Health and Care 80](#_Toc56441521)

[5.3.3.2 An ecosystem for digital twins in healthcare 81](#_Toc56441522)

[5.3.4 Security and law enforcement 82](#_Toc56441523)

[5.3.4.1 Pilot(s) using AI for law enforcement 82](#_Toc56441524)

[5.4 Enhancing confidence in Digital Transformation 84](#_Toc56441525)

[5.4.1 Safer Internet 84](#_Toc56441526)

[5.4.1.1 Better Internet for Kids (BIK) - EU coordination 84](#_Toc56441527)

[5.4.1.2 Safer Internet Centres 85](#_Toc56441528)

[5.4.2 European Digital Media Observatory (EDMO) 86](#_Toc56441529)

[5.4.2.1 EDMO - central infrastructure and governance 86](#_Toc56441530)

[5.4.2.2 EDMO - centres of digital media 87](#_Toc56441531)

[6 Programme Support Actions 89](#_Toc56441532)

[7 Implementation 90](#_Toc56441533)

[7.1 Main implementation measures and EU financial contribution 90](#_Toc56441534)

[7.2 Procurement 90](#_Toc56441535)

[7.3 Grants – Calls for proposals 90](#_Toc56441536)

[7.3.1 Evaluation process 90](#_Toc56441537)

[7.3.2 Selection of independent experts for evaluation and reviews 91](#_Toc56441538)

[7.3.3 Indicative implementation calendar 91](#_Toc56441539)

# High Performance Computing

Digital Europe’s aim is to provide the EU with the world-class HPC capabilities, infrastructures and know-how at the level necessary to our economic and social relevance. The EuroHPC Joint Undertaking (JU) is the instrument to implement a pan-European vision in HPC for realising the EU’s ambition for leadership and technological sovereignty in the digital economy.

The Governing Board of the implementing body EuroHPC will prepare a dedicated work programme for activities to be supported, as specified in the EuroHPC legislation[[3]](#footnote-4) and in Article 4.2 of the Digital Europe Regulation. In accordance with the Annex 1 of the Digital Europe Regulation, for first two years of implementation, it is proposed that the activities could focus on following three main work strands:

* First it will aim to build capacities towards exascale supercomputing, through the acquisition and deployment of new supercomputing capabilities.
* Secondly, it aims to federate national and European HPC resources into a common platform to ensure the widest access to HPC infrastructure.
* Finally, investments will target the wide deployment of essential HPC capabilities in Europe fostering wide HPC uptake for a variety of user communities.

Indicative budget envelope

The budget share proposed is only indicative, depending also on the total budget allocated to the Specific Objective 1 and still subject to final negotiation:

* Approx. 77% of Specific Objective 1 budget for the first two years, which corresponds to approx. EUR 550 million

# 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 industry and also of the public sector. The EU strategy on data[[4]](#footnote-5) outlined the importance to build thriving ecosystem of private actors to create economic and societal value from data. 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 and Artificial Intelligence ecosystems.

As a result, three main work strands are foreseen in the first two years of implementation of the Digital Europe programme:

* In order to ensure the EU technological and data sovereignty, sustainability and security, the data spaces will rely on a federated cloud-to-edge infrastructure and services.
* Data for EU will offer businesses and the public sector access to AI tools and components, as well as data resources in key industrial and societal sectors, based on a cloud federated infrastructure. Focus will be on the deployment of data spaces for Green Deal, mobility, manufacturing, agriculture, cultural heritage, health, public administrations and media. Data spaces will be supported by a coordination centre that will enable the reuse of data across sectors.
* The AI activities will focus on deploying reference testing and experimentation facilities in five prioritized application sectors (i.e. health, smart and green communities, manufacturing, agriculture and edge AI HW). These facilities will provide common, highly specialised resources to be shared at European level. In addition, the “AI on demand platform” will be consolidated as a central toolbox of AI resources needed for industry and public sector use.

Indicative budget allocation

The budget share proposed is only indicative, depending also on the total budget allocated and subject to discussion and refinement.

* For actions supporting the deployment of the Cloud Federation: a budget of about EUR 80-100 million
* For actions deploying the Data Spaces and the related support activities, including the High Value Data Sets: a budget of more than EUR 250 million
* For actions implementing the AI-on-demand platform and the Testing and Experimentation Facilities: a budget of about EUR 200-225 million

## Cloud Federation

The EU Data Strategy and the Joint Member States’ Declaration on Cloud acknowledges the strategic role of cloud-to-edge infrastructures and services to seize the EU data opportunity via the set-up of the Cloud Federation. Such project aims at equipping Europe with the next generation of interconnected (i.e. federated), competitive, trusted, interoperable and sustainable cloud to edge capabilities (infrastructures, platforms, marketplaces and services) to the benefit of its citizens, businesses and public entities. Equipping the EU with the next generation of data processing capacities will also be indispensable to host common data spaces, and enable a swift uptake of emerging technologies such as artificial intelligence, blockchain, IoT, HPC and big data and ultimately strengthen the competitiveness of companies - including start-ups and SMEs - in time of post pandemic recovery. The next generation of cloud-to-edge infrastructures, platforms and services are also essential for public entities - including cities – to accomplish their critical missions of delivering public and economic services of general interest across the European Union.

The EU Data Strategy also highlights the strategic importance of reinforcing the competitive advantage of the cloud-to-edge industrial basis in Europe to foster technological sovereignty and data leadership. This responds to public and private users' expectations in the sustainable digital age and enables an energy-efficient and secure hosting of common data spaces in the EU. The deployment of secure, resilient, sustainable and distributed European cloud-to-edge capacities based on resilient competitive computing and data industrial ecosystems in Europe is thus necessary to build the next generation advantage for the European economy in data processing. This will be done in line with the objectives of the Green Deal by supporting the energy efficiency of the cloud and edge sector itself.

The raise of new, diverse and highly specialized private and industrial users’ demands towards cloud-to-edge services are also to be met with care to enable European economic actors to compete in a differentiated manner into the sustainable digital age. Secured interoperable middleware platforms, data visualisation and predictive analytics services, workflow management and building block software services need to be deployed at scale across the EU by a resilient computing ecosystem. Such European cloud-based services would then be available for purchase on European marketplaces to the benefits of the public sector, all European economic sectors including SMEs and the ecosystems of the European Data Spaces.

Therefore, the first Digital Europe work programme will co-invest in reinforcing and deploying across the EU coherently the next generation of European business cloud-to-edge advanced services and smart middleware platforms that will be provisioned for the benefits of private and public entities (sections 1.1.2 and 1.1.3). It will also co-invest into the building of two pan-European marketplaces in which these innovative cloud to edge services will become available to public entities, private companies including SMEs and the actors of the Common European Data Spaces (section 1.1.1).

### Federated cloud-to-edge-based service marketplaces for Europe (NOT an SME action but building an infrastructure for SMEs to use)

Objective

To deploy and operate cloud-to-edge-based service marketplaces ensuring easy access and transparent purchasing of sustainable and secure cloud based services for EU industries, SMEs, public entities and actors of the Common Data Spaces. This will enable cloud and edge technologies to support in particular the green digital transformation of the different European economic sectors including the public sector that will buy sustainable cloud based services from the marketplaces. This will also stimulate the emergence of robust European ecosystems in cloud, edge, computing and data. The actions will contribute to the common European sustainability goals of the Green Deal by unlocking the full benefits of the digital transformation based on the cloud to enable the ecological transition of the European economy.

Scope

The chosen projects shall:

* Deploy the platforms;
* Make available on the platform an online catalogue of existing cloud-to-edge-based service offerings (such as predictive analytics, data visualisation, HPCaaS, edge services, AI services and language technology services ...) accessible across the entire EU;
* Ensure a vendor-neutral technical architecture and reference framework;
* Develop a specific European procurement framework to simplify the access to the platform, in particular by public entities, SMEs and the actors of European Data Spaces;
* Run the platform according to security, energy efficiency, data protection and portability requirements.

The use of open source software as foundation to the design of the marketplaces and main functionalities is encouraged.

Outcomes and deliverables

Outcomes:

* Strengthen the competitiveness and the innovation of the economic and public sectors of the European economy and of Common Data Spaces to compete in the green digital age.
* Foster cloud to edge service uptake among public entities and among the Common Data Spaces in areas of public interest
* Foster cloud-to-edge service uptake among industries including SMEs and start-ups and among the Common Data Spaces in areas of economic interest.

Deliverables:

* Deploy at large scale and operate one interoperable European marketplace for cloud based services to the use of public entities across the EU and of the Common Data Spaces in areas of public interest (infrastructure)
* Deploy at large scale and operate one interoperable European marketplace for cloud based services to the use of private entities including for SMEs and of the Common Data Spaces in areas of private interest (public sector and private industry)

|  |  |
| --- | --- |
| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [ 10 – 30 MEUR ] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution) | 10-15 MEUR |

### Cloud-to-edge-based services

Objective

The aim is to offer at large scale European innovative, sustainable, secure and cross-border cloud-to-edge-based services to enable a swift provision of European services of general interest. Priority will be given to services provisioned by the public sector including by smart cities as well by the healthcare, manufacturing, mobility, tourism, logistics, construction, agriculture, energy and financial services sectors. Services provisioned by Common Data Spaces will also be prioritized.

European cross-border, hybrid, competitive, portable, secure, energy-efficient and interoperable cloud-to-edge-based services will be rolled out at large scale across the EU to the use of public entities, industries, including SMEs, and to the actors of Common Data Spaces. Emphasis will be given to *energy-efficient* cloud-to-edge service offerings that will contribute to the green transition of the computing industry itself and; of other European economic sectors, including the public sector, making use of these services. The action will thus directly contribute to the common European sustainability goals of the Green Deal.

Scope

To rollout at large scale at least the following sustainable 'cloud-to-edge' services across the EU and associated complementing frameworks to the benefit of both the general public and economic interest including the ones of Common Data Spaces:

* Low power consumption and secured common data storage service;
* Predictive analytics and data visualisation services;
* An ultra-fast data workload optimization service between central and edge clouds;
* An ‘HPC as a Service’ business service;
* Local edge services highly secured, low latency running on green infrastructures and;
* A scalable blockchain based service for ultra-secured data management.

The project will also ensure that the following complementing frameworks are also implemented:

* A common reference governance framework to allow the reuse of federated cloud-to-edge-based services by other actors including the ones of the Common Data Spaces;
* a monitoring system for the uptake of the cloud-to-edge-based services and their associated data flows by public entities, private companies and the actors of the Common Data Spaces;
* an environmental performance tracking system for services designed and rollout in the context of the project.

The use of services and platforms based on open source software is encouraged.

Outcomes and deliverables

* Enhance technological sovereignty in computing by fostering a resilient, competitive, distributed, green and secure cloud-to-edge European supply to build the next generation competitive advantage of the European economy in computing.
* Enhance access, time-to-delivery and sustainability of public and economic services provisioned to citizens, SMEs and companies of the European economy across the entire EU.
* Contribute to the competiveness and sustainable-functioning of Common Data Spaces.

Deliverables are aimed to offer at large scale across the EU a set of six innovative European cloud to edge business offerings including: (building and delivering an infrastructure)

* A Low power consumption and secured common data storage service;
* Predictive analytics and data visualisation services;
* An ultra-fast data workload optimization service between central and edge clouds;
* An ‘HPC as a Service’ business service;
* Local edge services highly secured, with low latency, running on green infrastructures that could enable federated AI;
* A scalable blockchain based service for ultra-secured data management.

|  |  |
| --- | --- |
| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [ 25 – 45 MEUR ] |
| Indicative time of call opening  | First call + second call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution) | [10-30 MEUR] |

### Smart middleware platforms with embedded business intelligence services and underlying cross-cutting low power software enabled services

Objective

The aim is to deploy at large scale across the EU, modular and interoperable European industrial smart middleware platforms with embedded business intelligence services for multi uses based on underlying cross-cutting, low power, software-enabled services. This will directly stimulate the emergence of new dynamic operating models as key innovative competitive business offerings. It will also supports the improvement of the energy efficiency of the software, computing and system integration industries themselves while enabling a low power operating model for the functioning of the Common Data Spaces across the EU. The action will thus directly contribute to the common European sustainability goals of the Green Deal.

Scope

To deploy at large scale, across the EU, industrial smart middleware platforms with embedded business intelligence services for multi-uses based on cross-cutting, low power, software-enabled services to the benefits of business operations including the ones of the Common Data Spaces:

1. The deployment of secure, sustainable, competitive, interoperable industrial middleware platforms with embedded business intelligence servicesincluding the following:
* Low power, modular and interoperable European industrial middleware platforms seamlessly integrated along the entire computing continuum from HPC to edge via centralized cloud;
* Sustainable and ultra-low latency digital twins business applications,
* Highly specialized hosting applications for complex business activities simulation, forecasting and modelling tools.
1. The deployment at large scale of low power and secured cross-cutting software enabled services including the following:
* Secured communication, productivity and collaboration services;
* Workflow management services;
* Identification and security management services;
* Data anonymization and masking services and;
* Data mapping services;
* Common services, reusable across-sectors, for the deployment of common data spaces defined in collaboration with the Data Spaces Support Centre (see 1.2.2.1).

The re-use of building blocks deployed under the Common Services Platform (see 3.3.1.1) and other solutions developed through EU funded projects (e.g. CEF programme) is encouraged where appropriate.

1. The set-up of:
* an environmental tracking performance system to ensure services operate in a low power mode,
* a monitoring system to track services that use open source and;
* a guide to foster uptake of smart industrial middleware platforms, among business users including from the Common Data Spaces.

The use of services and platforms based on open source software is encouraged.

Outcomes and deliverables

* Deploy industrial reusable and sustainable smart computing platforms and software capabilities across the EU including for the use of the Common Data Spaces.
* Foster the emergence of a resilient, competitive, end-to-end and sustainable software, data and system integrator ecosystems.
* Develop a robust European cloud-to-edge platform supply to enhance the European competitiveness in the digital sustainable age.

Deliverables a built infrastructure

* Deploy at large European modular and interoperable middleware platforms as new European business cloud platform offerings
* Deploy, intelligent, secure and low power European software enabled services as new European business software offerings
* Deploy European ultra-low power and latency business and digital twin applications as new data processing business offerings.

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| --- | --- |
| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [25-45 MEUR] |
| Indicative time of call opening  | Second call + fourth call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution) | [10-20 MEUR] |

## Data for EU

### Data Spaces

The aim of the European data strategy is to create a genuine single market for data, where private and public entities can fully control the use of the data they generate and where both businesses and the public sector have easy access to a large pool of high quality data. Ultimately, Europe aims to capture the benefits of better use of data, including greater productivity and competitive markets, but also improvements in health and well-being, environment, transparent governance and convenient public services. In order to operationalise and speed up the emergence of such data market, the Commission has announced it will invest in a High Impact Project on European data spaces and federated cloud infrastructures in order to strengthening Europe’s capabilities and infrastructures for hosting, processing and using data. Sectoral common European data spaces will be funded as a means to make relevant data available for the implementation and continuous improvement of artificial intelligence systems. Such data spaces will offer a secure and trusted mean to make available data, for both the private and public sector, based upon voluntary agreements (or legal obligations where such obligations are in force).

The programme will support the deployment of the underlying technologies, processes, standards and tools for the operationalization of the data spaces, namely: (i) the necessary IT systems (digital industrial and personal data platforms, based on competitive and seamless access to and use of cloud infrastructures and services through the deployment of pan-European cloud federations); (ii) technical data governance frameworks establishing enabling schemata (consisting of a definition of actors and their roles, of standards and interoperability protocols) both at sector or domain level and for cross-sector data use; (iii) incubating activities for data use by SMEs and start-ups.

#### European Green Deal Data Space

Objectives

Building on priorities set out in the Data Strategy, the European Green Deal Data Space aims at exploiting the major potential of data in support of the European Green Deal priorities.

It will allow both the private and public sector communities to share, access and use large pools of currently fragmented and dispersed data and integrate these with the other sectoral data spaces when relevant.

By making available the most relevant data for enabling climate change mitigation and adaptation and the protection of natural resources and restoration of ecosystems and biodiversity, the dataspace will also enable the testing of AI solutions and the roll out re-usable data-services on a large scale.

A number of initiatives will benefit from the Green Deal Data Space while at the same time contribute to enrich the number and quality of data sets available.

Building the infrastructure! During the first two years of the programmes the set-up of the Green Deal Data Space will be started and it will consist of data (including real time) for both public and private sector sustainable applications. It will include High Value Datasets (section 2.2.2.2) from the geospatial, earth observation and environment, meteorological and statistics domains and datasets federated from currently dispersed private sector and public platforms, such as the cities’ urban platforms and the ~~Member States~~ INSPIRE platforms (e.g. the INSPIRE conform EMODNET[[5]](#footnote-6) platform in the maritime domain, the European Geological services EGD[[6]](#footnote-7) platform). Two main initiatives will contribute to this work: Destination Earth and the data ecosystem for climate-neutral and smart communities. At the same time, it will provide a source of information for the development of services and applications.

The data layer of the Destination Earth initiative will contribute by bringing the connection or integration with the Earth Observations and derived data/information products generated by the EU Space Copernicus and Galileo/GNNS programme which are fundamental for EU to global wide monitoring and location services. A full description of the Destination Earth initiative activities in the first two years of the Digital Europe programme is in section 5.2.1.1 of this document.

The local data ecosystem for climate-neutral and smart communities (section 5.2.2) will contribute to the Green Deal Data Space by making data available across domains relevant to communities such as data related to mobility, data to facilitate climate change adaptation, data for the management of energy flows as well as data for pursuing the zero pollution ambitions.

To complement the work during the first two years, a Coordination Action on Digital Product Passport (section 5.2.3) will prepare the ground for a future common European data space for smart circular applications.

The datasets will increase in numbers and areas covered over the duration of the programme. Data holders contributing to the dataspaces will require support to align with already existing or future commonly agreed (notably at federated level) standards and principles. Such support will be stimulated through the ICT private sector, notably SMEs.

In addition to these activities, other data spaces, like e.g. mobility (section 1.2.1.2), manufacturing (section 1.2.1.3) and agriculture (section 1.2.1.4) will contribute with data sets which are relevant for the Green Deal. These will be made available and interoperability will be ensured by the common provisions specified in the Data Space Support Centre (section 1.2.2.1).

Scope

This action will contribute to the achievement of a fully functional Green Deal data space through the identification of synergies that could reinforce the activities funded under the programme and other national and local initiatives that could be integrated in the Green Deal data space. This action will help in avoiding the creation of silos. It will also contribute to the identification new use cases scenario and the data needs.

Outcomes and deliverables

Fully interoperable, secure Green Deal data ecosystem to enable public and private stakeholders such as SMEs and others to develop applications and to port them from community to community.

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| Type of action | CSA |
| Indicative Budget | [ 3 MEUR] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 24-36 months |

#### Data Space for Mobility

Objective

The objective is to contribute to the further development of the common European Mobility data space announced in the data strategy and in the strategy on sustainable and smart mobility, which will be build and operated in full compliance with existing EU legislation in the mobility and transport sectors. Sustainable urban mobility indicators and real-time traffic and travel information in urban areas will be made available for reuse for policy making purposes and the development of innovative services and applications.

Scope

During the first two years of the programme one projects will be funded to make information available and accessible in machine-readable format in order to allow building a big amount of accurate and reliable data that could be used by artificial intelligence. They will have the following tasks and characteristics:

* support sustainable urban mobility planning and management by making available and accessible in machine-readable format data for EU sustainable urban mobility indicators[[7]](#footnote-8), such as greenhouse gas emissions, congestion, commuting travel times and modal split.

or

* make traffic and travel information at urban level available and accessible in machine-readable format in line with Intelligent Transport Systems (ITS) Directive 2010/40/EU and in particular the Delegated Regulation 2015/962 on real-time traffic information services and delegated regulation 2017/1926 on multimodal travel information services.

Projects will have to demonstrate a clear European dimension and should involve at least cities or regions in 3 different Member States sharing common purposes. Projects will have to assure a close collaboration with the Data Spaces Support Centre for the definition of cross-sector services and common components such as building blocks, data and metadata standards, interoperability mechanisms, as well as for their later adoption in view of guaranteeing interoperability across sectors and in particular between the different sectoral data spaces.

Outcomes and deliverables

* Public transport authorities will make use of compiled data to better plan and measure their achievement of the European Green Deal objective, strengthening policy monitoring capacities, and thus serve the interests of the public goods.
* Industry, in particularly SMEs, will benefit from larger sets of data to broaden their offers in terms of products and services.
* Improved monitoring/measuring the change of emissions eventually leading to increased environmental performance.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [ 5-15 MEUR] |
| Indicative time of call opening  | Third call |
| Indicative duration of the action | 24-36 months |
| Indicative budget per Grant (EU contribution)  | [ 3 MEUR] |

#### Data Spaces for Manufacturing

Objective

Data sharing among manufacturing companies and with (service) providers will be increased by the implementation of two data spaces, which will serve as a model to show how sharing industrial data improves company operations, enhances business opportunities, and supports the transition towards a circular economy.

Scope

Manufacturing data spaces and their AI-based analytics and optimisation applications can influence company-internal processes as well as processes across organisations. The main objective is to build and **deploy two operational data spaces** for specific value chains in the manufacturing sector, which enable companies in different user roles (supplier, client, service provider,…) to interact with large amounts of industrial data across their organisational borders. The first data space will address agile supply chain management and execution, and the second one dynamic asset management and predictive/prescriptive maintenance.

Such data spaces will offer a secure and trustworthy way of making data usable between companies on the basis of voluntary agreements. Starting from existing ‘embryonic’ data spaces with manufacturing companies, their data sharing will be completed, deepened, expanded, and/or enlarged with other organisations (e.g. repairing, refurbishing or recycling companies in order to improve circularity).

The topic targets four specific purposes for data sharing:

* Performing 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 forecasts, raw materials and energy supply, etc. across the value chain. End users are different tiers in a supply chain (suppliers, OEMs, and customers).
* Carrying out dynamic asset management and predictive/prescriptive maintenance by continuously monitoring and exchanging data on machine status, breakdowns, service orders, etc. End users are machine users, machine vendors, maintenance service providers, and remanufacturers.
* Bringing together relevant stakeholders to industrial data agreement(s) on design, reuse, recycling, and environmental impact and indicators for continuous monitoring and exchange of data on product usage, feedback to design, product recycling, product remanufacturing, etc. The work should demonstrate data-based sustainable business models and the benefits of data sharing for the organisations participating in the value chains).
* Carrying out further actions needed for the digital product passport (see action 2.2.3) from a manufacturer’s perspective. Actions should preferably target data sharing for circularity in sectors identified by the Circular Economy Action plan (COM(2020) 98 final).

Projects will have to assure a close collaboration with the Data Spaces Support Centre for the definition of cross-sector services and common components such as building blocks, data and metadata standards, interoperability mechanisms, as well as for their later adoption in view of guaranteeing interoperability across sectors and in particular between the different sectoral data spaces.

Outcomes and deliverables

At the end of the two projects, more and more industrial data is shared among manufacturing companies and with (service) providers, thanks to agreements on common rules for access to data and fair compensation. Particularly SMEs will benefit from larger sets of industrial data to broaden their offers in terms of products and services.

Projects will address one of the following expected outcomes:

* Supply chain operations are more flexible, effective and efficient, with reduced inventory levels, more timely deliveries between organisations, better resilience to interruptions of delivery channels, and reduced costs.
* Maintenance operations are better timed, with reduced overall downtimes and maintenance costs, extended machine usage periods, new service models, and improved future machine designs.

As part of the projects addressing a) and b) mentioned above, stakeholders have also to agree on approaches and ideas for circularity, on how to improve design, reuse, recycling, and environmental impact by data sharing and demonstrate benefits of first generation of product passport for all involved stakeholders as well as for sustainability.

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| Type of action | SME support grant (75% co-funding rate for SMEs and 50% for all the other beneficiaries) |
| Indicative Budget | [ 15-25 MEUR ] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution)  | [6-15 MEUR] |

#### Data Space for Agriculture

Objective

The main objective of this action, is to set up, populate and operate secure and trusted data space in order to enable the agriculture sector to share and access data relevant for agriculture, and thus to allow for an increase in the environmental and economic performance of the sector. For instance, an enhanced data sharing considered in the production process can allow more precise and tailored application of production approaches at farm level. The data space may also serve common good interests, such as Research and Innovation for the sector and the generation of policy relevant information.

The data space is expected to facilitate the processing and analysis of inter alia *production data* (which might be collected through e.g. Farm Management Systems (FMS) or similar applications) and *open data* and other public data, if deemed relevant, (such as satellite images, weather data, soil maps that are for public use). it is also expected to increase transparency in data flows along the value chain. Production data supplemented by open data will present new opportunities for monitoring and optimising the use of natural resources and, as such, it will contribute to achieve the objectives of the Green Deal (incl. Farm-to-Fork-Strategy) and of the Common Agricultural Policy and other sustainability related goals as well as to the objectives of the overall ambition of achieving an economy that works for all.

Scope

The action aims to create a platform (a federated systems) implementing a common European agricultural data space. The data space may not be established from scratch but may combine existing data platforms and data sets. As such, the European data space might be seen as a distributed system comprising different data platforms, which have implemented common interoperability mechanisms. The data sources could come from open data, different data platforms such as Farm Management Systems (FMS), or from existing data platforms supported by ecosystems where stakeholders already share data and public administrations.

The implementation of the European data space will require key players/suppliers of the data space to agree on a set of interoperability mechanisms such as architecture of a distributed or similar system, specification on a reference API, meta-data, etc. The definition of the interoperability mechanisms will be elaborated in close cooperation with the Data Spaces Support Centre. The support centre will be set up and will coordinate all relevant actions on sectorial data spaces (see 2.2.2.1).

The selected project shall:

* Implement a specific design approach in line with the multi-stakeholder governance scheme elaborated by the first action
* Leveraging on the Support Centre common building blocks, define and develop the needed interoperability mechanisms like but not limited to reference architecture of the data space, specification of a reference API, meta-data definitions concerning the private and public input data
* Procure any additional data-space specific needed building blocks identified in the reference architecture.
* Deploy and customise the platform supporting the common agriculture European data space.
* Run the platform and demonstrate it with several use cases. Effort should be spent to reach multiple audiences from farmer representatives to policy officials with effective communication and outreach expected.
* Ensure the sustainability of the data platform safeguarding the rights of the various users.

Outcomes and deliverables

This action will deploy a common European data space enabling the following :

* Farmers and cooperatives will have access to a range of new services, make use of compiled data for different farming systems and high value data sets and possibly other public data sets.
* Private sector, in particularly SMEs, which do not have a critical of mass of reference farms, and suppliers will benefit from larger sets of data to broaden their offers in terms of services to the farmers.
* Decrease of emissions/ increased environmental performance. The project will be asked to identify suitable KPIs in terms of emissions/environment and demonstrate how they will achieve them.
* The compilation of the open data will form a basis for strengthening agri-environmental and policy monitoring capacities, policy evaluations, impact assessment of policy proposals, and can form an input to e.g. the proposed Horizon Europe partnership Agriculture of Data, and thus serve the interests of other stakeholder/ the public goods.

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| Type of action | Simple Grant |
| Indicative Budget | [ 5-15 MEUR] |
| Indicative time of call opening | Fourth Call |
| Indicative duration of the action | 36 months |
| Indicative budget per grant (EU contribution) | [ 5-15 MEUR] |

#### Data Space for Cultural Heritage

This action will create the European Common Data Space for Cultural Heritage – Europeana21, a new flagship initiative to provide full support to the digital transformation of Europe’s cultural heritage sector. The Europeana21 PLATFORM, DATA and TRANSFORMATION projects will work in close synergies, through a Steering Group (established under PLATFORM) where all relevant projects and initiatives will regularly exchange ideas and results, and plan the collaboration between the various activities. Each pillar targets a data space dimension: infrastructure, databases and support to the digital transformation.

##### Europeana 21 – Platform

*Objective*

This action will build upon the current Europeana platform and will vastly expand the current functionalities, in particular in relation to 3D digitisation, re-use of digitised cultural resources and cross-sector cross-border cooperation.

Scope

The Europeana21 large-scale project will set up and run the first European Common Data Space for Cultural Heritage. Europeana21 will provide citizens and professionals with efficient, trusted, easy-to-use and attractive access to digitised European cultural heritage assets. It will be based on the current Europeana platform, encapsulate and links to various initiatives and provide access to databases all over Europe.

The platform will aim at:

* significantly strengthening the Europeana portal’s technical capabilities, improving findability and interconnectivity of content and browsing features for end users, including offering, visualising and increasing 3D content, access to data, links to other infrastructures
* developing a mobile app, 5G-ready, with full access to a maximum of the Europeana21 platform facilities
* improving the quality of service for data providers and aggregators on Europeana21 (shared aggregation infrastructure and services, statistical dashboard, Application Programming Interfaces (APIs), multilingualism of searches and metadata)
* further enlarging, coordinating and supporting the network of data partners (museums, galleries, libraries, and archives across Europe), accredited aggregators (organised in the form of the Europeana Aggregator Forum) and professionals (experts working in the field of digital heritage, organised in the form of the Europeana Network Association), also exploring links with economic actors such as the creative and content industries (in particular SMEs)
* promoting high quality content overall on Europeana Collections; investing in a high quality curatorial thematic approach in order to fully use Europeana potential as a powerful platform for storytelling, building narratives with a European perspective across cultural and national borders and thus inspire a sense of shared history and identity among European citizens. Special attention will also be given to tourism, in the context of the post COVID-19 crisis and slow return to normal for tourism and travels.
* continuing setting standards, best practise and common solutions for digital cultural heritage, improving the Europeana Publishing Framework and its wider take up
* setting up 3D standards, guidelines and providing storage facilities and links to visualisation and re-use on the Europeana21 platform

The project will closely collaborate with the other two work strands of Europeana21. It will establish a Steering Group where all relevant projects and initiatives will regularly exchange ideas and results, and plan the collaboration between the various activities.

Outcomes and deliverables

Europeana21 targets the 21st century needs and opportunities of the cultural heritage sector. It will facilitate the digital transformation of the cultural heritage sector and capacity building. In addition to a complete step-up of the platform, it will also include specific actions on 3D technologies and emerging technologies, cloud services, multilingualism, and sharing and re-use of data.

The funding will enable:

* a pan-European innovative data platform infrastructure (e.g. viewers for all types of content, storage, handling/management of content, re-use, interlinking and interoperability with other platforms, types of computing services provided such as access to cloud computing resources including AI capabilities);
* easy online access to European cultural heritage (including curated content, conducting scientific research, re-use by the Cultural and Creative sector);
* numerous digital opportunities for the cultural heritage sector, ranging from virtual visits of museums, libraries, galleries and heritage sites to history reconstruction and education;
* a window to Europe’s history and diversity (raising European soft power, values and unity, and offering a (re)discovery of European heritage);
* potential applications for preservation, restoration, conservation, research, sustainable tourism (including post COVID-19 support to institutions) and education;

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| Type of action | Procurement – open call |
| Indicative Budget | [ 5-15 MEUR] |
| Indicative time of call opening | 2021 |
| Indicative duration of the action | 48 months |

##### Europeana 21- Data

Objective

This topic will contribute to Europeana21, the European Common Data Space for Cultural Heritage –Europeana21, by supporting stakeholders in creating, storing, managing and exploiting data in the field of cultural heritage. The work on this work strand will be done in close collaboration with the Europeana21 PLATFORM.

Scope

The Europeana21 DATA will provide citizens and professionals with efficient, trusted, easy-to-use and attractive access to digitised European cultural heritage assets. The project will make use of cascading funds to subsidy smaller targeted projects.

The project will aim at:

* defining or selecting a set of standards for the provision of data and datasets related to cultural heritage; including standardised interfaces for data provision
* creating, managing and supporting high-value datasets of digital cultural heritage objects of any kind, size and nature (digitised cultural artefacts, digital twins of monuments and sites, born-digital documents), for research and the development of innovative new applications for cultural heritage, and for re-use both in the cultural heritage sector and in other relevant areas, especially tourism, education and other cultural and creative industries. Particular attention will be given to 3D models, their creation, archiving process and access.
* linking existing initiatives, clouds facilities and storage facilities in the field of cultural heritage at European level
* strengthening national and regional infrastructures and further support to cultural heritage institutions and aggregators for providing to Europeana engaging curated digital cultural content and its metadata of high quality.

Outcomes and deliverables

The support will provide

* an increased amounts of high-value datasets available for re-use;
* access to European cultural heritage data (including for conducting scientific research, preservation and restauration purposes, re-use by the Cultural and Creative sector).

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [2-8 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 36 months |
| Indicative budget per Grant (EU contribution)  | [2-8 MEUR] |

##### Europeana 21 - Transformation

Objective

This action will accompany the European Common Data Space for Cultural Heritage –Europeana21, by testing and deploying services supporting the digital transformation of the cultural heritage sector.

This action will work in close collaboration with the Europeana21 PLATFORM and DATA projects.

Scope

The Europeana21 TRANSFORMATION projects will cover one of the following topics:

* making use of existing Artificial Intelligence and machine-learning systems to support the end-users in accessing and using the platform and the data (such as for automatic translation of content or automatic metadata enrichment tools, improving multilingual aspects, or for any other purpose);
* offering services on the platform such as technological tools, technical know-how references, 21st century skills and values, knowledge sharing, consultancy and other services supporting and steering cultural heritage institutions in their efforts towards achieving digital transformation;
* facilitating the capacity building of cultural heritage institutions to enable them to share their data according to standards and to use advanced digitisation techniques for better and faster digitisation, preservation and online presentation of digital cultural heritage objects.

Projects will include full implementation, testing and deployment of the tools and services on the Europeana21 platform.

Projects will link with other relevant EU-funded initiatives, such as the European Competence Centre for the preservation and conservation of Monuments and Sites, as well as with relevant national and regional initiatives in the Member States.

Funding will reach at least one project for each one of the three lines of activities above.

Outcomes and deliverables

Europeana21 targets the 21st century needs and opportunities of the cultural heritage sector. It will facilitate the digital transformation of the cultural heritage sector and capacity building, supporting stakeholders in using and exploiting the Europeana PLATFORM and DATA.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [2-8 MEUR] |
| Indicative time of call opening  | Forth call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution)  | [2-3 MEUR] |

#### Data Space for Health

The data space for health will be enabled by actions aimed to achieve sustainable cross-border linkage of and access to a multitude of interoperable health datasets across Europe. Activities funded from Digital Europe aim to ensure their integration with HPC services and AI testing centres, alongside support to deploy the necessary cybersecurity and interoperability measures. Digital Europe programme actions are complementary to those taking place in Member States, and under the Horizon Europe and EU4Health programmes, to support the deployment of digital infrastructures for secure cross border access and federated/distributed analysis of health data (for example clinical and genomic data), as well as pooling of anonymised health data such as medical images and biochemical and clinical information, with the aim of more precise and faster clinical decision-making, diagnostics, treatments and predictive medicine.

##### Genomics

Objective

The main objective of this topic is to achieve sustainable cross-border linkage of and access to a multitude of genomic datasets across Europe, eventually bringing together genomic and gene activity data. It will be used by agreed users (on certified inscription), including clinicians, researchers and innovators, with the ultimate aim of more precise and faster clinical decision-making, diagnostics, treatments and predictive medicine that will benefit citizens, healthcare systems and the overall economy. The resulting genomic data space will be inter-operable with the other components of the European Health Data Space, e.g. data lakes of cancer images (section 2.2.1.6.2), electronic health records and rare disease registers planned to be funded under the EU4Health programme. In order to maximise the societal benefits of health data use, the genomic data space should be supported by advanced IT tools and capacities, e.g. AI, HPC, blockchain, as appropriate for enabling secure access to and distributed analysis of complex datasets. Moreover, the measure will support the creation and extension of genomic datasets.

Scope

This action will support the deployment of the infrastructure needed to make genomic data securely accessible across EU borders. The infrastructure will consist of a central node, a federated network of connected FAIR-conform genomic databases, querying and appropriate computing capacities for distributed data analysis, a platform that enables data discovery, and a minimum of core services to facilitate the operation of the federated network. The data space may combine existing data platforms via FAIR-compliant interfaces and should facilitate creation of new data sets. To ensure maximum data protection, the data will be in principle stored locally and analysed using distributed data analysis and AI learning techniques, while fully taking into account the applicable data protection requirements.

The federated system will comprise nodes with data and/or high performance computing capacities and data access control, secure authorisation and authentication services, single entry points for data queries and output delivery, and a common platform offering a (meta)-data catalogue and access to other relevant services. Data transfer across national borders and/or central storage, if and when needed, may take place (only on a voluntary basis) in accordance with applicable EU legal requirements.

The system comprising different data sources must be based on FAIR principles, including common interoperability mechanisms. Therefore, the implementation of the genomic data space should build on the progress achieved and agreements made within the 1+ Million Genomes initiative (and outcomes of the Horizon 2020 CSA project ‘Beyond 1 Million Genomes’) regarding the relevant interoperability mechanisms and architecture that supports distributed and hybrid system, specifications on reference APIs, meta-data, data structure and quality, legal requirements etc. It should also take into account and use the outcomes of other relevant H2020 projects, in particular exploring specific use cases / disease areas, and synergise with projects in the related Horizon Europe topics.

The project shall, throughout its lifetime, inform and consult the representatives of Member States. It shall lead to defining a sustainable coordination entity that will supervise the activities, run and maintain the system and its services, ensure the necessary agreements within the project and with Member States, and monitor the implementation of such agreements. The governance structures shall ensure that the rights and duties of both public and private participants are duly respected.

Outcomes and deliverables

The following elements shall be delivered by the selected project:

* Deployment of an interoperable, FAIR-compliant and secure federated infrastructure and data governance needed to enable sustainable cross-border linkage of genomic data sets in compliance with EU legal, ethical, quality and interoperability requirements and agreed standards.
* Platform enabling the application of appropriate high-end computing, AI and simulation resources to analyse the data.
* Support for the establishment or upgrade of the necessary local infrastructure, and for the creation, extension and adaptation (e.g. FAIRification) of genomic data sets.
* Business model including an uptake strategy for a sustainable genomics data space.

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| Type of action | Grant for Support to Third Parties – *cascading grants*  |
| Indicative Budget | [15 – 25 MEUR] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 48 months |
| Indicative budget per grant (EU contribution) | [ 15-25 MEUR] |

##### Cancer images

Objective

The main objective of this measure is to establish and deploy a pan-European digital infrastructure facilitating access to cancer images and related patient data. It will be used by clinicians, researchers and innovators with the ultimate aim of more precise and faster clinical decision-making, diagnostics, treatments and predictive medicine that will benefit citizens, patients, healthcare systems and the overall economy. The resulting data space will be inter-operable with the other components of the European Health Data Space, in particular the genomic data space (section 1.2.1.6.1). It contributes to the Europe's Beating Cancer Plan and to the cancer mission under Horizon Europe, while building on relevant research projects under Horizon 2020. In order to maximise the societal benefits of health data use, the data space should be supported by advanced IT tools and capacities, e.g. AI and HPC. Moreover, the measure will support creation of new cancer image datasets and further extension of the existing ones.

Scope

This action will support the deployment of the infrastructure needed to link and explore fragmented European databases of medical images of different types of cancer, with a solid governance and clear business model for ingestion of data and its exploitation by public and private organisations in member states and associated countries (controllers of data), industry and innovators. The infrastructure should consist of a central coordination entity, a federated network of FAIR-conform connected data sources, a platform enabling data discovery, quering and capability to access appropriate computing capacities for distributed data analysis. The data space may combine existing data sources and creation of new data sets. To ensure maximum data protection, identifiable data will in principle be stored locally and analysed using distributed data analysis and AI learning techniques, while fully taking into account the applicable data protection requirements. Central storage may take place if the data are anonymised and in accordance with applicable legal requirements.

The infrastructure comprising different data sources must be based on common interoperability mechanisms. Therefore, the implementation of the data space should build on the progress achieved and broad agreements made in the relevant research projects (under Horizon 2020) regarding the relevant interoperability mechanisms such as system architecture, specifications on reference APIs, meta-data, data structure and quality, legal requirements etc. The project should also enable linking and analysing cancer image data together with other types of health data (in particular electronic health records, repositories of molecular and clinical information and genomic-phenotypic data).

Outcomes and deliverables

The following elements shall be delivered by the selected project:

* Deployment of interoperable, FAIR compliant and secure infrastructure and data governance needed to enable sustainable cross-border connection of cancer image data sources for use by clinicians, researchers and innovators in combination with technologies and tools necessary for data analysis, in compliance with EU legal, ethical, quality and interoperability requirements and standards.
* Support for actions aiming to create or extend cancer image data sources (including image annotation) and/or to adapt existing data (legacy data) in accordance with agreed data quality standards and legal requirements.
* Use of high-end computing and simulation resources for data analysis, and a federated AI learning system, as well as deployment of a secure authentication system.
* Business model including uptake strategy explaining the motivation and incentives for all stakeholders at the different levels (national, European, global) to support the data space towards its sustainability, including data controllers (hospitals/municipalities, research institutes, patients), data users (clinicians, researchers, policy makers, companies), service providers (e.g. IT industry, medical imaging companies), healthcare systems and public authorities at large.

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| Type of action | Grant for Support to Third Parties – *cascading grants*  |
| Indicative Budget | [ 15-25 MEUR] |
| Indicative time of call opening  | Forth call |
| Indicative duration of the action | 36 months |
| Indicative budget per Grant (EU contribution) | [15-25 MEUR] |

#### Data space for Media

Objective

The objective is to mobilize the media industry and provide a strong support for the creation of a European data space able to foster the competitiveness of the European media sector. Such a data infrastructure will be used to boost the use of data for innovative content (entertainment, education and news), and for innovative production and distribution.

That data should be available to both public service media and commercial media operators, whether large or small, start-ups or established players. In this context, establishing European media data spaces can change the way in which creators, producers and distributors can collaborate.

The data space will be open to companies from other sectors for mutually advantageous data based cooperation which could open new opportunities for the media sector. This will enable media companies join forces, regain competitiveness face to online platforms.

Scope

The data space will provide the whole media value chain with an advanced and shared data infrastructure. This data infrastructure will be tested by means of the creation of innovative solutions for the production, curation, circulation and distribution of media content, and in particular through new platforms for quality content, across the Union.

The key elements for data spaces are the sharing of a wide variety of data such as content, user consumption and audience data, 3D animation models, or production meta-data. The data spaces will also facilitate access to computing resources for creative SMEs. Furthermore, data can provide valuable insight to services aiming at increasing the findability of media content (news and entertainment content) across borders. Such services can play a pivotal role in providing new resources for the media industry and supporting the creation of a European public sphere. Likewise, further creative industries and other industrial sectors (such as retail or automotive) could potentially make use of the media data space to generate additional value and open new markets for the media.

Synergies with the work done by the European Digital Media Observatory and its national hubs for online content distribution and findability will also be established. The data space will provide a sandbox environment and interface services to foster pilots for and host innovative media services developed through initiatives other than Digital Europe such as Horizon 2020 and Horizon Europe.

Outcomes and deliverables

The project will deliver an infrastructure hosted in cloud spaces where data are securely stored. Tools for media data transaction preserving data ownership, tools for data analytics and services for financial transactions based on the data usage (e.g. using blockchain) and services for MR, AR, VR content creation (including AI elements) should also be included as well as tools enabling European citizens to find media content available online based on their preferences and interests and to better understand sentiments and perspective of other Europeans.

The data infrastructure for media will enhance Europe’s digital autonomy and strengthen forms of citizens’ participation in the public sphere. It will boost the use of data for innovative content (both entertainment and news), production and distribution.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [5 -15 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 36 months |
| Indicative budget per Grant (EU contribution) | [5 – 15 MEUR] |

#### Data Spaces for Public Administrations

Building on priorities set out in the Data Strategy, the Public Administration Data Spaces aim at exploiting the major potential of data, while acknowledging the role of the Public Administrations to both produce and use considerable amounts of data. Two main actions will support to the creation of the European Data Spaces for Public Administrations.

The Public procurement data space (Section 1.2.1.8.1) will connect and use European databases, including the comprehensive TED data on Public Procurement and national procurement data sets available in national portals. This action will ultimately improve transparency and accountability of public spending and spending quality.

The Security Data Space (Section 2.2.1.8.2) will lay the foundations of a federated data infrastructure by deploying a data ecosystem specific for the needs of the security and immigration stakeholders, including national authorities, EU agencies in charge of European security and justice representatives.

Other topics in this Work Programme will also contribute to the deployment of the Data Spaces for Public Administrations. In particular, the Pilots using AI for law enforcement (Section 5.3.4.1) will enable the final validation and foster the uptake of AI systems for law enforcement by running large scale pilots in Law Enforcement Authorities (LEAs) premises. Topics under the European Digital Government Eco System (EDGES): cross-border services and interoperability (Section 4.3.1) will increase efficiency of cross border interoperable public services including support to the digital transformation of Public Procurement. The support to the digitalization and deployment of interoperable public services will increase accessibility of Digital Government data through seamless and secure data flows. This will ultimately empower an innovative ‘gov tech’ ecosystem, legal interoperability as well as other services of public interest.

##### Data Space for Public Procurement

Objective

This action is based on “A European strategy for data” from February 2020[[1]](https://euc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en-us&rs=en-us&wopisrc=https%3A%2F%2Feceuropaeu.sharepoint.com%2Fteams%2FGRP-MC476%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fc45215ea72b2432cb7219f5faf910a57&wdenableroaming=1&mscc=1&hid=b65e2e6d-3b73-25db-3c04-f0864b3cfac7-969&uiembed=1&uih=teams&hhdr=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Fteams.microsoft.com%22%2C%22pmshare%22%3Atrue%2C%22surl%22%3A%22%22%2C%22curl%22%3A%22%22%2C%22vurl%22%3A%22%22%2C%22eurl%22%3A%22https%3A%2F%2Fteams.microsoft.com%2Ffiles%2Fapps%2Fcom.microsoft.teams.files%2Ffiles%2F1737967457%2Fopen%3Fagent%3Dpostmessage%26objectUrl%3Dhttps%253A%252F%252Feceuropaeu.sharepoint.com%252Fteams%252FGRP-MC476%252FShared%2520Documents%252FGeneral%252FDigital%2520Europe%2520wp%2520-%2520draft%2520to%2520MS%252020201016_G4.docx%26fileId%3Dc45215ea-72b2-432c-b721-9f5faf910a57%26fileType%3Ddocx%26messageId%3D1605182170026%26ctx%3Dchiclet%26scenarioId%3D969%26locale%3Den-us%26theme%3Ddefault%26version%3D20201007007%26setting%3Dring.id%3Ageneral%26setting%3DcreatedTime%3A1605188685156%22%7D&wdorigin=TEAMS-ELECTRON.teams.chiclet&wdhostclicktime=1605188685073&jsapi=1&jsapiver=v1&newsession=1&corrid=eb3d9ba1-7e85-4cde-bea0-5523c3569a2b&usid=eb3d9ba1-7e85-4cde-bea0-5523c3569a2b&sftc=1&sams=1&accloop=1&sdr=6&scnd=1&hbcv=1&htv=1&hodflp=1&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush&rct=Medium&ctp=LeastProtected#_ftn1) which envisages the establishment of a Data space that would cover both the EU dimension (EU datasets, such as TED) and the national ones. Currently data on public procurement available at European level comes mainly from TED covering essentially procedures above EU thresholds. On the other hand, Member States invest in developing their own solutions to generate public procurement data in an open data format for below EU threshold procurement. The objective of this action is to increase the interoperability and interconnection of existing open data sets to facilitate a more comprehensive overview of public procurement in the EU, including many key policy areas, such as the Green Deal, digitisation maturity, innovation, SME support, single market, etc. The difficult phase that the EU went through during the lockdown came to demonstrate the value of having data in real-time and the need to make decisions in a short period of time..

Scope

This action will lay the foundation of a federated data infrastructure needed to connect and use European databases, including the comprehensive TED data on public procurement and national procurement data sets available in national portals. The semantic data model will be based on Core Vocabularies and the eProcurement Ontology, developed under the former ISA2 programme. The infrastructure will likely consist of a central coordination organisation, a federated network of connected data sources, a platform enabling data discovery, querying and capability to access appropriate computing capacities for distributed data analysis. Wherever possible, it will re-use and integrate the other common services for its purposes. Where necessary, data will be anonymised. A complimentary governance framework will define the management of the Open Data Space for Public Procurement.

At the same time while setting up the data space, within this initiative the Commission will engage with Member States to connect their trusted national databases to the infrastructure and to share best practices to enhance data quality. This is necessary to reap all the benefits of such a system.

Outcomes and deliverables

The project will deliver an Open data space developed with and intended for Public Administrations that connects European public procurement data with national procurement databases. It will be based on an existing pilot project, which combines data sets on Public Procurement from different Member States and data from TED: the mapping will be done using the ontology on eProcurement funded under the current ISA2 programme. This activity is closely followed by Member States.

The Public Procurement Open Data Space will be supported by the Public Procurement Data Strategy that will frame this system in the set of interlinked and complimentary initiatives related with the data management and digital transformation.

A public procurement open data space will close remaining gaps gathering data from TED and from national solutions, that already provide open data. It will help to address data integration needs and will enable a better overview of the recovering and resilience of the Public Sector. As Public Procurement accounts for roughly 14% of GDP, this data space on Public Administration has all the potential to support Europe to buy more strategically and achieve its recovery and resilience objectives.

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| Type of action | Procurement – Framework contract |
| Indicative Budget | [1 MEUR] |
| Indicative year  | 2021 |
| Indicative duration of the action | 24 months |

##### Data space for security (law enforcement)

Objective

The objective is to deploy a common European Security data space allowing research, development, testing, training and validation of algorithms for AI-based systems for law enforcement and security based on various different types of datasets, including pseudo operational and anonymized datasets.

Technological sovereignty of MSs and the EU in the field of fighting crime and terrorism in the digital age is a fundamental public interest as well as a matter of national security, and can be strengthened by creating high quality and trusted datasets that would enable MS’ LEAs to develop and validate their own digital tools.

A dedicated common European Security data space will satisfy both principles set in the “A European strategy for data”[[8]](#footnote-9): (1) that actions under data spaces for public administrations will also focus on data use for improving law enforcement in the EU in line with EU law, and (2) that data for the public good can serve to ensure more efficient fight against crime.

Namely, this data space would serve the interests of all stakeholders in charge of public or internal security, and in particular, the MS’ law enforcement authorities, authorities in charge of border security as well as the relevant European Agencies, such as Europol, the European Border and Coast Guard Agency, and EU-LISA.

Scope

This action will lay the economic, organisational and technical foundations of a federated data infrastructure. Specifically, it is expected that at the end of the project a system and a model of the data governance will be available, thus the project will include the following tasks:

1. to develop a reference architecture, to define data standards and to determine criteria for certifications and product quality while addressing ethics and data protection concerns. Standardisation of data should be proposed and the framework may be defined based upon the UMF (uniform message format) project defining data models in a number of areas, such as data on persons, firearms and vehicles;
2. to collect and make interoperable data suitable to test, train and validate algorithms, which should be available for security research as well as for the development and deployment of tools using AI technologies. There should be a monitoring process to ensure the quality of the data and the validation of the results. It would focus in particular the technical standard and the content, i.e. that the data is not biased.

The deployment of this data space will benefit from and will contribute to the “common building blocks”, the standardisation activities and any other “horizontal component” defined by Data Space Support Centre. Through this concept of a federated data infrastructure, we enable European security stakeholders to develop their potential in data economy with a dynamic security ecosystem.

Outcomes and deliverables

The creation a common data platform, including the national components and a communication infrastructure, with trusted datasets to train, test and validate algorithms was pointed by the Member States as one of the most useful and necessary initiative to create sufficient quantity of data to research and develop AI technologies, with the main objective to gather and analyse automatically big number of various types of information (pictures, reports, video etc.). The European Security Data Space will create a data ecosystem specific for the needs of the security and immigration stakeholders, including national authorities, EU agencies in charge of European security and justice representatives. Private sector representatives may benefit from a dedicated section of the Security Data Space containing anonymous datasets provided that they are carrying out security research under the European Framework programmes for Research.

A common European Security Data Space will substantially foster security research and development of AI technologies, which will constitute a very important contribution to combat crime, enhance border security and facilitate legal migration.

It will also improve the European strategic autonomy by allowing the national and European law enforcement authorities to develop and validate their own digital tools so to (i) eliminate the threat of malicious interference of third countries/parties; (ii). reduce the dependence on third-country vendors and allow for setting quality standards at EU level and (iii) increase the technological capabilities of MS LEAs.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | 5 - 15 MEUR  |
| Indicative time of call opening  | Third call |
| Indicative duration of the action | 36 months |
| Indicative budget per Grant (EU contribution)  | [5 -15] MEUR  |

### Support for Data for EU

#### Data Spaces Support Centre

Objective

The objective of this action is to set up and operate a Support Centre which coordinates all relevant actions on sectorial data spaces and makes available technologies, processes, standard and tools that will allow reuse of data across sectors by the public sector and European businesses, notably SMEs.

Scope

The creation of the Support Centre will take place through two complementary actions.

The first action will support the creation of a network of stakeholders that will have the following main tasks:

* Support the creation of a community of practice in the field of data sharing.
* Identify architecture and technical data governance frameworks establishing enabling schemata both at sector or domain level and for cross-sector data use;
* Identify the common building blocks essential for the creation of the sectoral data spaces and define technical specifications. These will include: identification & authentication of parties, access rights management and access control, mechanisms for recording consent including portability of such consent, standards and interoperability protocols, data analytics technologies including natural language processing technologies, metadata and data models for sharing data across sectors and data exchange mechanisms.
* Identify common standards, including semantic standards and interoperability protocols – both domain-specific and crosscutting.
* Identify and promote data governance models, business models and strategies for running data spaces;
* Identify and address legal issues and other market-relevant barriers

The second action will aim to create a platform to support the knowledge exchange between all actors in the data economy and provide support for the deployment of the common building block necessary for implementation of sectoral common data spaces and. The platform will have the following main tasks:

* Offer and promote the use of common architecture and technical data governance especially those identified by the network of stakeholders.
* Publish good practices for standards, technical tools such as APIs, and advise on other practical and legal questions.
* Give access to model contract clauses tested in previous data transactions and backed by public authorities.
* Liaise with the actions under “Cloud Federation” to foster the deployment of common building blocks to be used by data spaces, pool data provision and demand for the cloud and to promote the competitive and seamless access and use of cloud infrastructures and services.
* Liaise with all relevant activities in the programme including concurrent data space initiatives, to facilitate access to data for AI, with Advanced Digital Skills actions and with European Digital Innovation Hubs to support the participation of SMEs.
* Support the establishment of a European data innovation board for the coordination of data sharing practices and policies related to problems common to all data-sharing situations irrespective of a sector.
* Support to the preparation of new data spaces as indicated in the Data Strategy.

Outcomes and deliverables

The outcome of this action will be the creation of a Support Centre which will promote and coordinate all relevant actions on sectorial data spaces and makes available technologies, processes, standard and tools that will allow reuse of data across sectors.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [ 3-9 MEUR] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 24-36 months |

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| Type of action | Procurement – open call  |
| Indicative Budget | [ 5-15 MEUR] |
| Indicative time of call opening  | 2022 |
| Indicative duration of the action | 36 months |

#### Public Sector Open Data for AI and Open Data Platform

Objective

The objective is to increase the easy availability, quality and usability of public sector information in compliance with the requirement of the Open Data Directive[[9]](#footnote-10), in order to boost the re-use and combination of open public data across the EU for the development of information products and services, including AI applications.

Scope

Actions will support public administrations at local, regional and national level in increasing semantic, technical and legal interoperability and data portability of the High Value Datasets (HVDs) identified by the implementing act and selected in specific categories indicated in Annex 1 to the Open Data Directive namely: Geospatial, Earth observation and environment, Meteorological, Statistics, Companies and company ownership, Mobility. In addition, the applicable data sharing rules for selected HVDs belonging to Geospatial, Earth observation and environment, Meteorological domains will complement the provisions of the INSPIRE Directive, further supporting the Green Deal related activities.

In addition, the Open Data infrastructure[[10]](#footnote-11) will continue to be supported and further expanded. Funding will be provided for:

* Consolidation and expansion of the European Data Portal; including the integration with the EU and Member States Open data and INSPIRE geoportals
* Maintenance and further expansion of the Context Broker Building Block (access to multiple sources of real-time data);
* 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.

Both building blocks will contribute to Green deal applications in providing a test platform and tools for accessing multiple sources of data, data which the European Data Portal, extended to include the High Value Datasets, will provide as a harmonised single entry point.

Outcomes and deliverables

High Value Datasets held by the public sector will be available via APIs in machine readable format for the creation of data products and services and for their use by the participants in the common European data spaces. This will help more companies, in particular SMEs and start-ups to use cross-EU data to scale up and offer EU-wide services, benefiting from the size of the EU’s digital market. The easy availability of machine-readable data in bulk or via APIs will also greatly facilitate machine learning based on public data, especially in the data-demanding areas such as climate change, pollution or weather predictions.

The Open Data infrastructure will continue to facilitate and improve access and re-use by private and public sector of the datasets generated by European public administrations.

* Public Sector Open Data for AI

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [25 -35 MEUR] |
| Indicative time of call opening  | Third call |
| Indicative duration of the action | 24-36 months |
| Indicative budget per Grant (EU contribution)  | [ 5-10 MEUR] |

* Open Data Platform

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| Type of action | Procurement – use of Framework Contract  |
| Indicative Budget | [ 2-9 MEUR] |
| Indicative time of call opening  | 2022 |
| Indicative duration of the action | 24-36 months |

#### Incubators

Objective

The objective is to strengthen Europe’s data economy by supporting SMEs in using and combining data sources from different sectors and communities (e.g. retail, tourism, manufacturing, finance and insurance, media, healthcare, consumer support, transport, energy, public administration) and developing innovative products and services.

Scope

Several projects will be supported to build supply chains and support use for data assets (open data, data from common data spaces and from personal and industrial platforms). They will have the following tasks and characteristics:

* Aggregate demand for data assets to build critical mass for particular types of data
* Liaise with data spaces and platforms to channel demand (and requirements) to them
* Address solutions for consent and portability concerning personal data
* Liaise with the European Digital Innovation Hubs network to expand the basis of demand aggregation
* Offer Financial Support to Third Parties (FSTP) to open new supply chains and promote different uses for data assets across sectors.

One of the selected incubators will have a specific focus on Business-to-Government (B2G) data sharing for the common good. It will provide technical /legal/organisational support for the sharing and use of business data with public sector bodies, piloting and showcasing new ways of using data for the common good.

Outcomes and deliverables

Substantial increase in the total amount of data shared and exchanged through the data spaces. At least 150 SMEs and web entrepreneurs, including start-ups, participating in the action, with an average 30% annual increase in the sales of the incubated companies.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [2-9 MEUR] |
| Indicative time of call opening  | Third call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution)  | [2-9 MEUR] |

## Artificial Intelligence

In the White Paper on Artificial Intelligence[[11]](#footnote-12), the European Commission presented its twin objective of promoting the uptake of AI and of addressing the risks associated with certain uses of this new technology.

To achieve the greater uptake of AI, the Commission seeks to build an ‘ecosystem of excellence’ along the entire value chain. Working together with the private and public sector, the policy framework seeks to align efforts and mobilise resources at European, national and regional level as well as to create the right incentives to accelerate the adoption of solutions based on AI, including by SMEs. The European Commission will also build an ‘ecosystem of trust’ with the help of a regulatory framework. It should give citizens the confidence to take up AI applications and give companies and public organisations the legal certainty to innovate using AI.

The Digital Europe Programme contributes towards greater AI uptake in Europe by supporting deployment. First, the “AI on demand platform” will be consolidated as a central toolbox of AI resources needed for industry and public sector use. Second, the Digital Europe Programme’s AI funding will focus on reference testing and experimentation facilities in five prioritized application sectors (i.e. health, smart and green communities, manufacturing, agriculture and edge AI hardware). These facilities will provide common, highly specialised resources to be shared at European level.

The Digital Europe Programme complements the research and innovation activities under Horizon Europe: results from Horizon Europe can receive the necessary help from Digital Europe to go to market, thereby filling an important gap. Furthermore, these AI activities will also provide significant support to the ‘ecosystem of trust’, in particular contributing to certification and providing regulatory sandboxes.

### AI on demand platform

Objective

The objective of the AI on demand platform funded under this activity is to provide a central access point to all AI-resources needed for users industries or public sector. This is the central AI toolbox, providing easy and simple access to all the tools needed, which will then be distributed locally by the European Digital Innovation Hubs or used directly by the user industry or public sector.

Scope

The platform will gather all the AI resources (algorithms and tools), in particular those provided by European developers, and make them available to the potential users, with the necessary service to facilitate their integration. Activities shall take into account and promote relevant outcomes of project funded under H2020 and Horizon Europe. This platform should become the reference for any user (industry or public service), a one stop-shop to access AI tools to integrate into solutions, products, and services: a common good and market place for AI resources.

The platform would fill the gap between the latest developments issued from the research centres and university and their exploitation in new services, products or processes. Such platform will help the technology transfer of tools validated in laboratories.

Besides playing the role of a marketplace for AI tools, and a service layer providing support to users for integration of AI solutions, an important activity will be to bring latest AI tools and solutions to the level of industrial standard requirements (code validation, quality check), connect to computing resources (e.g.: HPC, cloud from this programme), data resources (e.g. data spaces from this programme), promote trustworthy AI development and deployment, as well as raise awareness about best practices and success stories of AI applications in various domains. Specific attention will be given on guaranteeing that the resources on the platform respect the ethics guidelines issued by the High Level Expert Group on AI and the European AI Alliance.

Outcomes and deliverables Results of the project, infrastructure that is then ready for use

* Become the reference platform for AI tools in Europe, boosting competitiveness of European AI industry, raising awareness in the user community of existing European AI tools and resources.
* Gradually develop the reference European Ai-on demand platform boosting the European AI developers community and industry in facilitating their access to market, and offering visibility, essential, in particular for SMEs and start-ups.
* Boost European Industry, Services, and public administration, in providing an easy-to access, and easy to integrate AI tools, and optimising the needs/tools matchmaking.
* Bridge the gap between R&D funding and exploitation of the results in real-world deployment, and essential step to exploit the R&D investments and capitalise on the European S&T strength in AI.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [ 15-35 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 48 months |
| Indicative budget per Grant (EU contribution)  | [15-35 MEUR] |

### AI Testing and Experimentation Facilities

Experimenting and testing state-of-the art technology in real-world environments is an important step in bringing technology to market and it is the part in the innovation chain where Europe’s AI ecosystem needs significant support to remain globally competitive. The crucial role of the Testing and Experimentation Facilities (TEF) have been confirmed by the current crisis, as many good solutions to address the current needs, which had already been prototyped or tested in labs, could not be deployed due to the lack of testing in real environment for proving the capability to efficiently address the needs of the users, or to the lack of certification. The Testing and Experimentation facilities are also expected to play a key role to implement the regulatory framework for AI[[12]](#footnote-13).

The facilities should be easy to use, work under real conditions, and closely involve end-users. TEFs should be used by technology developers, especially by enterprises, in particular SMEs. Open standards, open data, and open software platforms are important.

An efficient interplay between TEFs and data spaces is fundamental for creating a level playing field and ensuring market access. This would be achieved by teaming up the data spaces and TEFs in mutual areas of interests, e.g. dealing with technical capacities and regulatory requirements. Furthermore, as work on data spaces and TEFs could start at the same time, both could benefit from exchanges of data and AI applications. Therefore the TEF projects will be required to define ways to interact with parallel initiatives on the European AI-on-demand platform. For instance: AI-based applications that have been tested and validated in TEFs can be used in sector-specific data spaces to process and analyse the data pooled in the data space. Data pooled, shared, and exchanged via sector-specific data spaces can be used to train and validate AI technologies in TEFs, provided that data owners agree to share their data for such purpose.

The TEFs, in particular on Manufacturing, Agri-Food, Smart Communities are expected to contribute to the green deal, as AI is a tool for resource optimisation and minimisation of any kind of waste (energy or any resources in general), Robotics and AI can be used for circular economy, recycling, and precision farming for instance. The potential contribution of AI to environmental sustainability is high[[13]](#footnote-14) and the TEFs are expected to greatly boost such potential.

#### Testing and Experimentation Facility for Manufacturing

Objective

The world-class large-scale reference sites for testing and experimentation of AI-powered solutions will enable integrating state-of-the-art AI and robotics technologies in the manufacturing domain, support the transformation of manufacturing in Europe, strengthen its technological base and will foster the deployment of trustworthy, transferable and scalable Industrial AI in Europe. An accelerated transition towards AI-driven manufacturing industry shall improve quality and sustainability of the production.

Scope

The manufacturing TEFs will provide physical and virtual access to real-life manufacturing resources that can be used for testing and experimenting with AI solutions. Examples of such manufacturing resources are model factories that combine different technologies such as additive manufacturing, machine tools, intelligent conveyor systems, automated warehousing, IoT infrastructure and more, covering multiple industrial processes.

The manufacturing TEFs will address the manufacturing sector’s needs for Industrial AI, taking into account domain-specific requirements in terms of time criticality, safety, security and effective interaction and collaboration between robots, AI solutions and humans being in control. The TEF sites will offer support and best practices in AI solution implementation, testing and training of algorithms including: full integration, industrial validation and demonstration up to pilot manufacturing in dedicated assembly lines and production cells. The TEFs need to support testing and experimentation of main AI-related services, which cover areas of machine learning, robotics, planning and scheduling, optimisation, self-configuration, computer vision, formal methods, natural language processing, automated reasoning, game theory, multi-agent systems, complex systems, system verification, bioinformatics and others.

The TEF sites need to define and establish European test and training data sets in cooperation with Manufacturing Data Spaces.

The scope and resources of manufacturing TEFs will be driven by use cases of significant economic value and will provide adequate coverage of activities allowing the deployment of latest AI-based technologies in real manufacturing environments. TEFs have to be relevant to both large scale industrial production as well as SMEs that could benefit from deploying partial solutions, allowing them to test and demonstrate these and support business development, standardization, certification and benchmarking. Aspects such as ethics, cybersecurity and data protection are taken into account, where appropriate. The manufacturing TEFs may include regulatory sandboxes, i.e. areas where regulation is limited or favourable to testing new products and services.

When required by the use cases, Testing and Experimentation Facilities also need to cater for edge computing. In manufacturing context, this means that AI tools are brought to sensors and devices, i.e. there where data is produced. These AI tools need to deal with manufacturing requirements related to latency, throughput, stream processing, etc.

Manufacturing TEFs will address one of the following key areas in an agile setup. Proposers have to indicate their centre of gravity. The Commission will ensure proper coverage by selecting at least 1 TEF per key area as follows:

* Factory-level optimization (flexible production in high-throughput and high variety environments, rapid prototyping); testing and assessment of AI technology for autonomous decision making within the real world, i.e. interaction with and decision for humans and other machines; supporting e.g. to rearrange the manufacturing process dynamically (incl. choice of manufacturing techniques and logistics);
* Collaborative robotics (mobile, intelligent AI-powered robots enabling safe human-robot collaboration, also in teams; also in new sectors like textiles, tourism or construction);

Circular economy: minimise resource consumption, optimize supply chains in uncertain environments, use of substitute material, collection, sorting and treatment of products that have become waste (making available secondary raw materials and maximum extraction of value), reverse logistics, remanufacturing.

Outcomes and deliverables

Using new AI and data ecosystems for improvement of quality and sustainability of the production.

Replicate full scale manufacturing process focused on new manufacturing sectors.

Addressing pressing technological challenges and effects of an aging workforce through deployment of AI and robotics technologies across the manufacturing domain.

Contribution to innovation capacity, competitiveness improvement and value-based development in the European manufacturing sector.

Supporting the training, testing and validation of AI applications that respect European values and are compatible with open frameworks that support data sharing, being a focal point for a certification ecosystem.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [20-40 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 60 months |
| Indicative budget per Grant (EU contribution)  | [ 10-15 MEUR] |

#### Testing and Experimentation Facility for Health

Objective

The demand for high-quality health and care by European citizens is increasing. At the same time, there is an urgent need for cost-effectiveness in view of demographic changes, including an ageing society and growing numbers of chronically-ill patients. Technologies based on Artificial Intelligence (AI)and robotics have the potential to improve the efficiency, security, and quality of the prevention, detection, diagnosis, treatment, care, rehabilitation and monitoring of European citizens’ health, as well as to promote healthy lifestyle. The awarded projects will develop reference Testing and Experimentation Facilities (TEFs) with a focus on full integration, testing and validation of advanced AI-based and robotics technologies for health and care. The crucial need for such facilities was made obvious during the COVID-19 crisis, as many potential solutions to address the current needs were already prototyped or tested in labs but could not be deployed in emergency situations because of the lack of testing in real environments and the lack of certification. The objectives of the TEFs are to accelerate the testing by mutualising the infrastructures as well the administrative, medical and ethical procedures and certifications as well as to advance personalised medicine and person-centred care, with the aim to increase the effectiveness, resilience and sustainability of European health and care systems and reduce healthcare delivery inequalities in Europe.

Scope

The TEFs will operate as multidisciplinary settings having a common collaboration framework. They will provide physical and digital access to large resources and will offer support, research partners, clinical expertise, expertise in AI and robotics, data and training. They should be close to where healthcare services are provided but also cover multiple healthcare processes within the realm of research, innovation and regulation (hospitals, health centres, universities, RTOs, innovation ecosystems - like incubators, clusters, accelerators, public health or certification agencies, healthcare companies of any sizes when relevant). They will gather researchers, medical and clinical professionals, patients, industrial developers and end-users, and they may include regulatory sandboxes. These facilities could be centralised or distributed across several locations around a central node in order to reflect the sector diversity, and possibly support some remote operations.

Activities supported by this scheme will cover the demonstration, testing and validation in real application environment, possibly with real patients, but also ethical and data protection reviews, certification, market analysis, IP protection, incubation and business development, as well as the contribution to the regulation and standardization effort, when relevant. The infrastructures established within these facilities will include both the hardware (e.g. high-performance computers, 3D printing, robots, IoT) and the software necessary to provide the different services. They should allow for large-scale in-silico, in vitro, ex-vivo and in vivo testing, when relevant. Links should be made to existing structures and networks as appropriate.

The facilities may include a range of use cases in different fields such as:

* Treatments in various fields including cancer and paediatrics;
* Monitoring the progress of long‑term conditions in function of treatment (e.g. diabetes mellitus, neurodegenerative diseases etc.)
* Support to doctors’ decision-making, including personalised, predictive and gender-sensitive treatments;
* Logistics, management of flows and process efficiency in hospitals;
* Robotics surgery, assistance and rehabilitation;
* Detection of tumours from imaging;
* Active and Assisted Living technologies for elderly or disabled persons.

Outcomes and deliverables

The TEFs will foster the integration of state-of-the-art AI and robotics technologies in the healthcare domain. They will boost European healthcare industry by focusing on the applicability and facilitate the complex and lengthy process of AI innovation. They will contribute to position EU as a leader in AI and robotics for healthcare by promoting the generation of new companies, retaining talent, and creating new jobs. Expected outcomes include:

* Validation in real conditions of innovative AI and robotics technologies in healthcare applications,
* Efficiency and safety of treatments,
* Improved operational and clinical workflows,
* Better clinical outcomes,
* Enhanced patient experience,
* Enhanced professional experiences, including education and training opportunities,
* Acceleration of the adoption of AI and robotics technologies in the healthcare sector,
* Innovation capacity and competitiveness improvement in the European healthcare sector,
* Better compliance with relevant regulations that govern the marketing authorisation of healthcare products.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [20-40 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 60 months |
| Indicative budget per grant (EU contribution)  | [ 10 MEUR] |

#### Testing and Experimentation Facility for Agri-Food

Objective

The principal objective of this measure is to further the development of the agri-food sector by enabling the full benefit of the digital transformation with AI and robotics technologies for a more sustainable, efficient and competitive production under high standards.

Scope

The selected project(s) will develop reference testing and experimentation facility/ies with a focus on full integration, testing, validation, and where appropriate certification, of advanced AI-based and robotics technologies for precision farming solutions. Several sub-sector and production types can be considered as well as various variables as it regards crop- livestock types/soils/climatic and environmental conditions/farm structure. The facilities may include a range of use cases in different fields such as precision weeding/ fertilisation / seeding, sensor data management, multifunctional autonomous robotics applications (and its long-time continuous use), arable farming, greenhouses, livestock/chicken management, beef quality, irrigation, virtual food, lower use antibiotics and pesticides. Depending on the topical scope, these facilities can be distributed across several locations based on a node model – core facilities linked to smaller testing sites – to reflect the diversity of the sector due to the different biogeographic and climatic conditions in the EU and/or cropping cycles.

The infrastructure established within this activity will have physical and digital resources available to the facilities users for the testing and experimentation of their hardware and software solutions. These physical and digital resources include high-power-computing, labs, cloud computing, connectivity technologies such as 5G, sets of (labelled) high quality data and AI toolkit solutions. Professional services support in areas such as business, compliance, R&D and verification/certification, including for a possible requirement from the future regulatory framework for AI, is also provided directly or via the EDIHs. Regulatory sandboxes are provided where relevant. The facilities are linked to relevant EU projects such as EDIHs and data-spaces, especially for agriculture. Projects are also encouraged to establish links to relevant projects funded by Horizon 2020 or Horizon Europe, whenever feasible and meaningful. Supported activities will also cover validation and demonstration in real application environment, prototyping, pilot manufacturing, business development, standardization, certification, ethics, cybersecurity and data protection.

The work of the TEF for the agri-food sector will follow the approach to bring AI and robotics technology from the lab to the market, described in the EC Communication Coordinated Plan on AI with the Member States, as well as with the declaration “a smart and sustainable digital future for European agriculture and rural areas”, signed on 9th of April 2019: Set up infrastructure for digital innovation in agriculture.

Outcomes and deliverables

Expected outcomes would include increased food and nutrition security, higher agri-food sector resilience, mitigation of the environmental impact of agricultural activity to soil, water and biodiversity, greater resource and cost efficiency and competitiveness in agricultural production, helping to optimise the use of natural resources supporting digitally the irrigation, fertilizers, pesticides and disease management with decreased input to the environment, climate mitigation and adaptation of the sector.

On the technological solutions side outcomes include reaching long time robotics autonomy levels at faster pace, boosting the adaption of digital technologies in agriculture, increasing awareness of new digital farming technologies, validation in real conditions of next generation AI-powered agricultural robotics and AI-based decision making tools, enabling large-scale data collections and data sharing. The solutions should aim to be also affordable for smaller farms and to avoid to contribute to a greater consolidation in the agricultural sector.

The selected project(s) will develop and, if necessary adapt over time, a long term plan over 60+ months 1) to build up or upgrade facilities with a resources and service offering, 2) offer and extend the use of facilities to promising future AI and robotics solutions providers, and 3) to achieve long-term financial sustainability after EU funding stops.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [20-40 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 60 months |
| Indicative budget per Grant (EU contribution)  | [10 MEUR] |

#### Testing and Experimentation Facility for Smart Communities

Objective

Development of large-scale reference testing and experimentation facilities in AI for the Application sector Smart Cities and Communities, in urban and rural areas, focused on sector-specific and cross-sector services in Mobility, Environment and Energy. They are intended for testing and validation of AI and robotics technologies on existing datasets, with collection of new data not a direct objective.

These testing facilities are part of the strategy to bring technology from the lab to the market, described in the EC Communication entitled Coordinated Plan on Artificial intelligence.

The facilities will focus on testing and experimenting with AI-based sector-specific and cross-sector services in the areas of smart cities, with focus on mobility, energy and environment, while aiming at improving sustainability (economic, social and environmental) and inclusion of marginalised communities.

The facilities will also be used in some cases for certification of products, solutions and services for use in smart communities’ environment, in case that a requirement for this arises from the future regulatory framework or in support of other Digital Europe programme and/or EC funded activities.

The low-carbon and sustainable infrastructure established within this activity does not only concern the hardware available to provide different services, but resources are also to be used for software development and application, for instance for the generation and use of input data in automation, decision-support and decision-making.

The testing and experimentation facilities may benefit from the creation of regulatory sandboxes enabling the creation of new solutions based on AI and robotics and supporting SMEs.

Each of the projects will focus on a subset of topic areas within the smart cities and communities context.

Scope

These will be large projects with long duration (at least 5 years), as some time will be needed to develop the facilities (based on access to existing physical or digital facilities), and then the facilities should be operated for a long period of time, and it will take some time before it becomes sustainable.

Supported activities will also cover validation and demonstration in real application environment, prototyping, pilot manufacturing, business development, regulation, standardization, certification, ethics, cybersecurity and data protection.

The facilities will be compliant to the technical requirements and the minimum interoperability mechanisms of the commercially deployed urban digital platforms and to the data ecosystem for climate-neutral and smart communities in other parts of the Digital Europe Programme in order to enable the commercialisation of the results of the TEFs on a large scale. Communal administrations and public service companies will be able to participate in the consortia to ensure consideration of social and administrative aspects, where appropriate.

Outcomes and deliverables

Expected outcomes would include increased integration of various digital systems in smart communities and linking new smart infrastructure into these systems, which will contribute to environmental goals such as carbon neutrality, increased robustness, security, and agility of smart community infrastructure, further increases in efficiency and smart communities, increased resilience of the communities as well as increased competitiveness of service providers in these communities.

On the technology side: reaching autonomy levels at faster pace, boosting the adaption of green digital technologies in smart communities, increasing awareness of new AI and robotics technology and solutions, validation in real conditions of next generation AI-powered robotics and AI-based automation, decision-support and decision-making tools, enabling and benefitting from large-scale data collection and data sharing.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [20-40 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 60 months |
| Indicative budget per Grant (EU contribution)  | [10 MEUR] |

#### Testing and Experimentation Facility for Edge AI

Objective

While AI currently runs mostly on cloud platforms, where Europe mostly depends on foreign technology, the focus is gradually shifting to the edge of the network, where data is generated. By 2025, 80% of data is expected to be processed at the periphery and the edge AI market is booming[[14]](#footnote-15). Edge computing offers many benefits including real-time operations, efficient use of energy and bandwidth, low costs, embedded security and privacy of data. In the cloud, AI programs are rather hardware-agnostic, whereas edge AI, being embedded in the edge devices, is strongly tied to the hardware characteristics, with a wide diversity of implementations that will spur innovation in many sectors. The race for dominance in Edge AI, regarded as a key strategic market, is witnessing massive investments by the world's leading tech companies in US and Asia. It is crucial for Europe to make every effort to capture this opportunity by leveraging on its R&D know-how and competence in embedded systems.

The overall aim of the Edge AI TEF is to ensure the availability in Europe of trusted, high-performance, low-power edge components and technologies to support the massive data-processing requirements of AI and the digital transformation. The emergence of novel computing paradigms, such as neuromorphic, provides an opportunity for the European industry to take the lead in a new generation of edge and distributed computing systems.

The Edge AI TEF will also contribute to societal challenges, in terms of:

* supporting the implementation of the Green Deal, by reducing energy consumption versus centralised computing solutions, also thanks to ground-breaking ultra-low power operation (100 to 1000 times more efficient) and very limited use of the data infrastructure (data transmission consumes even more energy than computing);
* protection of personal data and privacy by local processing;
* security and resilience avoiding or limiting dependency on network;
* safety and efficiency by reducing latency to near-real-time (e.g. for automotive or manufacturing applications).
* European sovereignty in data generation and management with trusted, secure “made in EU” components;
* technological autonomy by reducing dependencies on foreign components which expose the EU to supply chain disruptions and security vulnerabilities, or not respecting European values in terms of safety, privacy, AI explainability, ethics or environmental aspects.

Scope

This project aims at delivering a European platform that will enable companies to develop, test and experiment AI product prototypes based on advanced low-power computing technologies, custom-designed for their application environment. It involves the set-up of integration and fabrication facilities employing leading-edge equipment with advanced semiconductor process and fabrication technologies. Such a platform will be able to bring novel technologies to high TRLs, delivering prototypes for field validation that can significantly accelerate industrialization and time-to-market for edge AI components, resulting in a competitive advantage for the European ecosystem.

The TEF will involve EU centres of excellence in advanced computing technologies and key industrial actors of the microelectronics such as integrated device manufacturers and foundries. The platform will be open to exploitation by EU industries or SMEs through direct support or through projects funded by other European or National programmes. In particular a strong cooperation is envisaged with the Joint Undertaking on Key Digital Technologies, that may support projects in close coordination with the TEF on Edge AI. Through the collaboration of a network of European Digital Innovation Hubs, the Edge AI TEF will provide also SMEs and Start-ups with fast and simple access to world-class testing facilities, rich networks of stakeholders and potential customers.

In cooperation with the sectorial TEFs in Manufacturing, Agri-food, Healthcare, Smart communities, the AI components delivered by the Edge AI TEF can be implemented in connected autonomous objects to be integrated in a distributed AI platform for applications such as: industrial IoT, precision agriculture, self-driving vehicles, implanted/wearable medical devices.

The selection of projects to be supported by the Edge AI TEF will be based on the character of innovation, on the business potential and on the strategic dimension for Europe.

The TEF infrastructure will put in place advanced semiconductor equipment that may also serve as a basis for quantum computing technologies, therefore opportunities for synergies with related Digital Europe actions on quantum computing infrastructure will be evaluated.

The first phase of the project will focus on the procurement, installation and preparation of the infrastructure, developing the necessary interfaces and testing of existing solutions. In the following phases, the project will develop innovative prototypes employing the most advanced architectures and technologies beyond the state-of-the-art, incorporating energy efficiency, operational trust and security, which will be tested and validated in the respective field of application, before transfer for industrialization and production by IDMs or foundries.

The activities planned for the first phase (2021-2022) are the following:

* Procurement and preparation of the infrastructure - Equipment installation, design tool finalisation, definition of devices with users, distribution;
* Production of System Exploration Platform software for emulation of hardware;
* Progress of key building blocks (such as sensing, in-memory computing, 3D architectures) to higher TRLs and validation of their design kits;
* Integration of building blocks into solutions, testing and transfer to industry.

The project is planned to continue for the full duration of the work programme.

Outcomes and deliverables

* Boosting the competitiveness of the European industry, including SMEs, in edge AI applications, a domain of high strategic relevance;
* Creation of European IP and products based on European technology;
* Creation of world-class experimentation facilities in Europe, exploiting synergies between organizations (required know-how is not available in a single country);
* Improving data privacy and security;
* Contributing to European technology sovereignty;
* Contributing to the Green Deal by tackling energy efficiency / power consumption.

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| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [55-75 MEUR] |
| Indicative time of call opening | First call |
| Indicative duration of the action | 60 months |
| Indicative budget per Grant (EU contribution)  | [55-75 MEUR] |

# Cybersecurity

Cyber security is at the heart of the digital transformation of the European Union. The Digital Europe programme will strengthen the capabilities of the Union to protect its citizens and organisations aiming –amongst others- to improve the security of digital products and services. The European Cybersecurity Industrial, Technology and Research Competence Centre and the Network of National Coordination Centres (CCCN), as soon as the Regulations establishing them will enter into force, will take care of the implementation.

Supported Cybersecurity activities are specified in a dedicated work programme. This work programme will finalised by the Governing Board of the implementing body as soon as established, as specified in the CCCN legislation and in Article 6.2 of the Digital Europe Regulation. In accordance with the Annex 1 of the Digital Europe Regulation, for first two years of implementation, it is proposed that the activities could focus on following three main work strands:

* Support the implementation of relevant EU legislation and political initiatives: namely the NIS Directive, the Cyber Security Act, the European Cybersecurity Competence centre and network, the cyber Blueprint and Joint Cyber Unit, the 5G security toolbox;
* Support the deployment of cyber infrastructures (including EuroQCI);
* Support the capacity building, in particular for SME and sectors particularly affected by the Covid-19 pandemic and the ensuing economic crisis.

Indicative budget envelope

The budget share proposed is only indicative, depending also on the total budget allocated to the Specific Objective 3 and still subject to final negotiation:

* Approx. 35% of Specific Objective 3 budget for the first two years, to actions related to a Quantum secure EU communication infrastructure for Europe (the EuroQCI) corresponding to approx. EUR 175 million.
* Approx. 52% of Specific Objective 3 budget for the first two years, to support legislation compliance, cybersecurity infrastructure other than QCI and capacity building, corresponding to approx. EUR 260 million.

# Advanced Digital Skills

The Strategic Objective 4 will focus on the following main work strands in the first two years of implementation:

* On one hand it will provide training opportunities for the future experts in key capacity areas like data and AI, cybersecurity, quantum and HPC. The support will be provided for the design and delivery of specialised education programmes (such as Master degrees) as well as traineeships to acquire advanced digital skills needed for the deployment of a specific technology. In order to ensure relevance and detect emerging trends a detailed analysis will be conducted every two years.
* On the other hand, the investments will also target the upskilling of the existing workforce through short trainings reflecting the latest developments in key capacity areas, through the continued support to the EU digital platform for skills and1 Jobs, as well as a coordination action for the digital transformation of the education sector at European level.

Actions for advanced digital skills will contribute to implement actions such as the digital Crash Courses announced in the New Skills Agenda and SME strategy. They will be complementary with actions for digital skills development implemented by Erasmus+ and European Institute on Technology.

Notwithstanding the main focus on the Advanced Digital Skill, the programme will also address the digital transformation of the education sector in line with the strategic priority of the Digital Education Action Plan 2021-2027.

Indicative budget allocation

The budget share proposed is only indicative, depending also on the total budget allocated to the programme and subject to discussion and refinement.

* For actions related to Specialised education programmes or modules in key capacity areas a budget of EUR 110 -125 million
* All other actions under SO4 (upskilling, short term training, digital transformation of education etc.) a budget of EUR 40-65 million

## Specialised education programmes or modules in key capacity areas

Objective

The action aims at increasing the offer of EU education programmes and the number of students specialised in key capacity areas. The offer will be expanded in terms of geographical distribution, number of opportunities and relevance to latest technological developments. The action will benefit from the cooperation with the excellence centres funded in the other actions of the programme. This action will contribute to the implementation of the revised Digital Education Action Plan.

Scope

The chosen projects shall design and deliver a Master programme of 60, 90 or 120 ECTS. The calls in the first two years will address the following topics: Data, AI, Blockchain, cybersecurity, HPC, quantum.

Tertiary education institutions in consortia with relevant competence and excellence centres and industry will receive funding to set up and strengthen excellent courses in areas like data and AI, cybersecurity, quantum and HPC. Partners in these consortia will be encouraged to share expertise, facilities, staff and learning material. These courses need to reflect the latest state of the art of the technologies, provide opportunities to students to have access to laboratories and testing and experimentation facilities and making use of the EU data spaces. Particular attention shall be given to aspects such as green application and environmental impact of these technologies.

In addition, support will be granted for the design and implementation of specific courses in digital technologies for professionals in areas like health, agriculture or finance.

In particular, the action will fund the design and implementation of the education programme, the identification of the learning outcomes, with the aim to achieve excellence of the academic content, and the cooperation among partners. In addition, the action will encourage and support mechanisms to share expertise and resources among all partners, including industry if participating in the proposal (e.g. granting access to testing facilities, labs or other equipment, etc.).

 Finally, a number of scholarships will be provided by the university to encourage the participation of students.

Outcomes and deliverables

Gains from Investment in key capacities can only materialise if there are enough people to design, deploy and use them. At present, all Member States face shortages of digital specialists[[15]](#footnote-16) and the training opportunities in digital areas are missing in the EU, compared to other countries. Specialised courses, such as Master’s courses in domains like Artificial Intelligence are not available in all Member States and concentrated in some regions, with the UK having the highest concentration[[16]](#footnote-17).

The action will contribute to expand the education offer across the EU, by increasing the number of courses, jointly designed by universities from different Member States together with excellence centres and businesses active in the domain. The impact will be twofold: an increase of courses offer all over the EU. In addition, the availability of excellent courses in the EU could contribute to attract more talents to these disciplines, as well as from other geographical areas.

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| Type of action | Simple grant (50% co-funding rate)Lump Sums grant |
| Indicative Budget | [ 110-125 MEUR ] |
| Indicative time of call opening | First call |
| Indicative duration of the action | 48 months |
| Indicative budget per Grant (EU contribution) | 2-3 MEUR |

## Job placements in key capacity areas

Objective

The objective is to help young people to acquire the necessary advanced digital skills needed for the deployment of a specific technology, through a work experience in a competence centre or in a company. This will be not only an opportunity for the trainee to acquire valuable work experience, but also to become proficient and put in practice the advanced digital skills acquired during the studies.

Scope

The topic will provide allowances to people working in the excellence/competence centres and companies and being trained on-the-job.

The action will finance allowances to physical persons for carrying out working experiences in excellence centres in AI, or HPC or European cybersecurity competence centres, as well as businesses deploying digital technologies. This action builds on the successful pilot project “Digital Opportunity Traineeships”, but it will focus on highly specialised job placements in key capacity areas and it will not be related exclusively to the education curricula.

European Digital Innovation Hubs and other bodies involved in the implementation of the programme will contribute to the implementation of this action.

Outcomes and deliverables

The action will contribute to bridge the gap between education and labour market, providing people the opportunity to work in excellence environments, having access to the latest technological developments and valuable know-how. The ultimate goal is that, after the job placement, the person will be able to deploy technologies in the economy or continue working in the ecosystem of excellence.

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| Type of action | SME support grant (75% co-funding rate for SMEs and 50% for all the other beneficiaries) |
| Indicative Budget | [ 5 - 15 MEUR ] |
| Indicative time of call opening | third call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution) |  [5-15 MEUR] |

## Advanced digital skills analysis

Objective

The objective of this action is to support the roll out of initiatives for advanced digital skills development, by gathering inputs on the existing education offers in digital areas and the related needs of the labour market.

Scope

The chosen project shall deliver an analysis of the labour market needs and recommend priority areas for investment and give indication son the most appropriate delivery modes for training. In particular, funding will cover:

* A market analysis on gaps in the education/training offer in selected areas*.*
* Identifying the potential added value of EU actions in the Digital Europe programme, compared to what is offered in the market and propose adequate formats and duration of courses.
* Disseminate information about the skills actions funded by this porgramme in the relevant stakeholder communities.
* Detecting emerging trends in the application of certain technologies and the relative skills needs advising on the interconnection between the Digital Europe skills actions on advanced technologies.

Outcomes and deliverables

A refined knowledge of the market needs related to different digital technologies and insights to design relevant and high-quality learning opportunities, in line with the latest technological development.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [ 2 MEUR ] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 24 months |

## Short term training courses in key capacity areas

Objective

The aim of this action is to give the possibility to the current workforce to access trainings reflecting the latest developments in key capacity areas, such as HPC, Cyber and AI. These technologies evolve at such a fast pace that requires a constant update of the digital skills, also of the people already in employment. This investment will increase the number of people able to design, develop and deploy digital solutions in the economy and across sectors.

The project aims at expanding the existing offer for training and retrain existing workforce, with a particular focus that enables to meet the needs of SMEs.

Scope

The selected project shall design the content of these courses will be based on the companies, in particular SMEs needs in certain technologies together and provide the adequate degree of flexibility that is needed for the employees to attend. Training activities can take place at the SME premises, or remotely or at universities/training providers’ premises. EDIHs will act as intermediaries between SMEs and universities/training providers at the local level.

In particular, the action will support the design and delivery of the short-term training courses in advanced technologies for both people already in employment and jobseekers. Particular attention shall be given to aspects such as green application and environmental impact of these technologies. Funding will also cover targeted trainings to develop digital skills in key professions handling sensitive data, such as health and care professionals and managers, as well as the provision of the Crash Courses announced in the SME-strategy.

Funding will be provided to consortia of education and training providers, working together with relevant stakeholders with expertise in the digital area covered.

European Digital Innovation Hubs will have a particular role in disseminating and, when possible, delivering these courses locally.

Outcomes and deliverables

The EU has a significant and systemic gap between market needs and what is offered in terms of skills related to advanced digital technologies. EIB reports that the lack of staff with the right skills is the main obstacle to new investment for businesses. In addition, 53% of companies trying to recruit ICT specialists find it difficult. When looking at the digital skills of the current workforce, only 65% has digital skills which are “above basic”. This contribute refraining the uptake of digital technologies. The action aims at increasing the training offer, responding to the needs of both people in the workforce and job seekers who need to upskill. The objective is to (re)train 20.000 people in the firsttwo years of the programme*.*

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| Type of action | SME support grant (75% co-funding rate for SMEs and 50% for all the other beneficiaries) |
| Indicative Budget | [ 15-40 MEUR ] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 36 months |
| Indicative budget per Grant (EU contribution) | [ 2 MEUR] |

## Maintaining and populating the platform for Skills and Jobs

Objective

The objective is to consolidate the Platform and the activities started under CEF Telecom, by further deploying smart functionalities of the single point of access and enabling collaboration among National Coalitions.

Scope

The project selected will populate and maintain the website in line with EU priorities and showcasing all opportunities available for digital skills development from different sources. It will also will support creative proposals from the National Coalitions to deliver new services; will support the scaling up of the Digital Skills and Jobs Coalition.

The funding will facilitate the access to information and resources about digital skills and jobs in Europe for all type of users in a unique spot. Services cover digital skills training offers/traineeship, good practices, skills intelligence/data, skills strategies, training resources, funding opportunities, news, and events. The strategic evolutions of the platform foresees the progressive addition of smart functionalities, based on user profiles, interoperable with external databases.

Support will also be provided to the most active National coalitions to deliver advanced services to bridge the digital skills gap and scale up the Digital Skills and Jobs Coalition. The investment will also strengthen and scale up the National coalitions or partnerships between National coalitions to deliver new services such as original online courses, upskilling solutions for specific groups of people or providing insights about digital skills from specific sectors.

Outcomes and deliverables

The action will allow to overcome fragmentation and providing a single entry point for training in digital skills. This would help citizens, workers and businesses navigate through the wide offer of trainings, at different levels and in different areas, as well as having access to funding opportunities and national initiatives.

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| Type of action | Procurement – open call  |
| Indicative Budget | [ 5 MEUR ] |
| Indicative year of procurement | 2022 |
| Indicative duration of the action | 24 months |

## Promoting European excellence in educational innovation

Objective

This action will support the digital transformation of the education sector at European level in line with the strategic priority of the Digital Education Action Plan 2021-2027 and in full synergy with, and complementarity to, the objective of setting up a European Digital Education Hub and in line with the European Education Area framework.

Scope

The selected project will:

* Host a pan-European network to promote European excellence in educational innovation involving all relevant actors, linking start-ups, SMEs, technology providers, industry associations and investors to policy makers and ministries, schools, teachers, universities, research organisations, experts and NGOs, and linking this network to other existing pan-European networks/fora.
* Support cooperation between education stakeholders of a maximum number of Member States and Associated countries to exchange best practises, analyse successful applications of digital technologies in education and learning, and how these could be further extended, explore lessons learned during and after the Covid-19 crisis. This should be done in close cooperation with the development of the European Education Area.
* Support EdTech companies from pre-incubation to acceleration and growth with business and educational mentoring and training services and by gaining insights and understanding market trends and needs by collecting comprehensive and high-value up-to-date data.
* Contribute, in the context of the actions proposed under the Digital Education Action Plan 2021-2027, to the development of guidelines for the development of digital education methods and tools, especially in terms of technological needs (connectivity, platforms, interoperability, standardisation, security and privacy issues, use of emerging technologies such as AI or data) but also regarding pedagogical, societal and ethical implications, based on relevant scientific evidence and in consultation with European Education area stakeholders.
* Propose a roadmap towards promoting European excellence in educational innovation, focusing on digital technologies and the EdTech industry, including how local, regional, national and European efforts can be combined.

Outcomes and deliverables

The project will support closer collaboration in the digital education sector in Europe. It will foster the exchange of good practices at pan-European level, aiming at increased capacities of the national education systems and at distance, innovative, effective and inclusive learning. It will also promote a pan-European Digital Education Ecosystem, guaranteeing better the European ethical values regarding the use of educational technologies and data shared in Europe. It will contribute to increasing synergies and complementarity between initiatives in digital education, in particular in view of the Erasmus programme and Horizon Europe. It will also help the education sector to be better prepared for possible future crisis such as additional lock-downs to due to the Covid-19 pandemic.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [5 MEUR] |
| Indicative time of call opening  | Second call  |
| Indicative duration of the action | 36 months |

# Accelerating best use of technologies

The roll-out and best use of digital capacities will focus on priority areas such as the support to the Green Deal, to SMEs and public authorities in their digital transformation and will also provide resources to those activities started in previous programmes, for which the continuations of funding is essential not to disrupt the services provided.

In the first two years of implementation, the activities will be organised around five main strands:

* Deployment of a digital, multi-dimensional replica of the Earth (system), enabling different user groups to interact with vast amounts of natural and socio-economic information (Destination Earth- managing sustainability);
* The creation of an ecosystem of European climate-neutral and smart communities using digital technologies and intelligent solutions for to address European Green Deal priorities in cities;
* The deployment and enhancement of the European Blockchain Services Infrastructure (EBSI) and its use cases as well as a regulatory sandbox for Blockchain;
* The set up and enhancement of a European digital Government ecosystem for the digital transformation of public administrations. This will be achieved by providing Member states with a platform of common services available to all European administrations, by supporting the rollout of the of the ‘once-only’ principle and by deploying an interoperability incubator fostering the deployment of new digital services. Support will also be provided for the digitalization European judicial system and consumer protection and for piloting AI based law enforcement digital solutions;
* Building trust in the digital transformation by supporting the sustainability of the Better Internet for Kids (BIK) strategy[[17]](#footnote-18) and the European Digital Media Observatory deployed through the current CEF Telecom programme.

Indicative budget allocation

The budget share proposed is only indicative and subject to discussion and refinement:

* For actions supporting the Destination Earth initiative (part of the support to Green Deal): a budget of EUR 130-150 million
* For actions related to Data ecosystem for climate-neutral and smart communities (part of the support to Green Deal): a budget of EUR 70-90 million
* For actions deploying Blockchain: a budget of EUR 55-75 million
* For actions implementing, maintaining and operating the European Digital Government Eco System (EDGES): a budget of EUR 100-120 million
* For actions supporting the judiciary sector and consumer protection a budget of EUR 15-25 million
* For actions to enhance confidence in the Digital Transformation: a budget of EUR 35-55 million

## Initiatives in support to the European Green Deal

ICT has a crucial role to play in fulfilling the goals of the European Green Deal[[18]](#footnote-19). Recognising the transversal role played by digital technologies to achieve the EU’s climate objectives, some initiatives have been identified to start tackling the challenges ahead. Two of them will start in full within the first period (Destination Earth and the smart communities), while the third one (Digital Products Passport) is to prepare the ground for a larger-scale deployment in the next phases.

### Destination Earth Initiative (DestinE) Norsk romsenter

The objective of Destination Earth initiative (DestinE) is to develop a very high precision digital model of the Earth to monitor and simulate natural and human activity, and to develop and test scenarios for more sustainable development and for achieving both the green (Green Deal) and digital (Digital Strategy) priorities of the EU.

DestinE will be implemented gradually over the next 7 years. The activities in 2021-2022 will focus on the deployment of the core service platform and the first two digital twins that will be integrated to the platform. Additional digital twins and services will be provided through the platform in 2025-2027, and the full digital twin of the Earth will be completed by 2030. DestinE is initially aimed at professional public sector users, but it will evolve later to encompass wider user base from scientific communities and private sector.

#### Destination Earth Horizontal Core Platform

Objective

The main objective of the action is to build a cloud-based and secure core service platform that will provide public authorities and other users with an integrated toolset for evidence based policy- and decision-making in order to help them understand and tackle environmental challenges, for example, predict and manage environmental disasters.

The platform should federate the use of Earth system simulation and observation data, other environmental data and socio-economic information for predicting and managing the impact of environmental challenges on European, national and regional levels. It will integrate an increasing number of digital twins, as they become gradually available via related EU and national efforts, and key digital technologies, such as cloud-based supercomputing and AI, for providing extreme-scale modelling, simulation and prediction capabilities to users allowing them to customise the platform, integrate their own data and develop their own applications.

Scope

Deliver a user-friendly core service platform providing a large number of - initially - public sector users, with evidence-based policy and decision-making tools, applications and services, based on an open, flexible, scalable and evolvable secure cloud-based architecture.

The platform should follow an infrastructure-as-a-service (IaaS) approach and take advantage of existing and future High Performance Computing (HPC), storage and connectivity capacities. Existing key infrastructures in Europe will be enhanced and combined with new components for optimal efficiency and effectiveness. The architectural and technical requirements of the digital twins will be incorporated into the overall system design of the core platform from the onset to ensure their effective integration.

Main features and characteristics: Federation of existing and future data infrastructures under an IaaS model, ensuring scalable on-demand processing capacity. Efficient compute-intensive workflow management, (federated) identity and access management, data access and sharing policies, quality of service (QoS) and optimisation management, respective audit trailing services and the application of state-of-the-art cybersecurity policies and measures. User-driven service provisioning through (a) platform-as-a-service (PaaS) for access to resources for application and service development and to create users’ own work environments and adding data, and (b) software-as-a-service (SaaS) for “consuming” the functionalities of the digital twins as dedicated services through well-defined interfaces and APIs, with a potential evolution into a digital-twin-as-a-service (DTaaS). In both PaaS and SaaS service provisioning approaches, graphic user interfaces (GUIs) of high usability and user-friendly tools should be provided, abstracting away the implementation details of the interfaces from the users while complying with their needs.

Implementation modality: Indirect management through Contribution Agreement(s) with three global leaders in world-class Earth Observation systems, Earth-system modelling and data assimilation, data and services provision: 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). Through a joint work plan set out in the contribution agreement(s) they will procure widely in the European market for the necessary components and technologies, complementing their existing capabilities.

A first fully functioning core service platform should be available within maximum 30 months from the starting date of the action.

The main roles of each entity include:

* ESA: The core developer and system integrator and operator of the core service platform, responsible for providing: programmatic framework; design, implementation, integration and operation of the platform and dedicated Data Infrastructure and supercomputing Infrastructure elements, digital twins and other enabling Digital Technologies; management of large industrial procurements, link to ESA-managed Copernicus elements and other ESA EO domains, “AI-everywhere” approach.
* ECMWF: horizontal software layers enabling Earth-system modelling and data assimilation, digital twins and supporting digital technologies; extreme-scale computing and data handling; HPC and big-data hardware infrastructures; tools and datasets for AI, federated cloud computing and data management; support interfaces; synchronisation with Copernicus Services;
* EUMETSAT: provision of high value data sets and data tailoring services; technical expertise in design, implementation and operation of state of the art cloud and data federations.

Outcomes and deliverables

* New, easily accessible and manageable software infrastructure linking models and data, and enabling scenario-driven risk assessments, adaptation and mitigation strategy development and testing via interactive workflow management and cloud-based services linked to the digital twins for evidence-based policy development;
* Operationalisation of the users’ service through exploiting the data and computing capabilities made available through the core enabling platform;
* Digital core service cloud-based infrastructure built on essential digital technologies exploiting at the convergence of novel HPC capacities available in Europe, Earth observation data and Earth-system simulation models and data, and artificial intelligence methodologies.

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| Type of action | Contribution Agreement |
| Indicative Budget | [80 -100 MEUR] |
| Indicative year  | 2021 |
| Indicative duration of the action | 30 months |

#### Digital Twins (DTs):

Objectives

The objective of DestinE digital twins is to provide access to highly efficient and attractive knowledge discovery/organisation systems that deliver very high-precision and accurate modelling, simulation and prediction of environmental phenomena, supported by the core platform. Digital twins - digital replicas of various aspects of the Earth system, such as weather and climate variability and related long-term changes, food and water security or global ocean circulation and the biogeochemistry of the oceans – will give users access to a whole range of natural and socio-economic information, services, models, scenarios, simulations, forecasts, and visualisations.

Scope

Two operational Digital Twins will be constructed and fully integrated in the core service platform of Destination Earth from clusters of pre-defined and mature use cases related to EU’s Green Deal policy priorities. They will provide functionalities of outstanding scientific/technical quality and link to added-value services. The same set of quality, maturity and dependability metrics apply for both digital twins:

1. DT on Weather-induced and Geophysical Extremes will provide capabilities and services for the assessment and prediction of environmental extremes at very high spatial resolution and close to real-time decision-making support at continental, country, coastline, catchment and city scales in response to meteorological, hydrological and air quality extremes. The aim is to have simulations indistinguishable from observations at km-scale. The system aims to combine weather, hydrology and air-quality observation and simulation capabilities at levels that represents a real breakthrough in terms of accuracy, local detail, access-to-information speed and interactivity. In addition to weather-induced extremes, geophysical extremes (for example earthquakes and tsunamis, volcanic eruptions, geomagnetic storms) will be added.
2. DT on Climate Change Adaptation will be connected to the first digital twin and will provide capabilities and services in support of climate adaptation policies and mitigation scenario testing at decadal timescales aiming at a real breakthrough at the level of reliability at local, regional and national levels. Accurate monitoring of the changes over the past decades (through the entirety of historical Earth observation data) combined with advanced Earth-system modelling will form the basis for understanding the causes and explaining the feedback mechanisms of change, predicting possible evolution trajectories and identifying irreversible tipping points, in particular in highly sensitive regions such as the Arctic. The inclusion of socio-economic feedback will allow leveraging the societal influence, which also extends to mitigation measures such as carbon capture and storage. Artificial Intelligence techniques will provide the means to fully exploit the vast amounts of data collected and simulated over decades and understand the complex interactions of processes between Earth system and human space (i.e. full impact assessment). Regarding scope, as a starting point, this digital twin will focus on 1-2 clearly defined topics in relation to climate emergencies and disasters, quantifying the impacts of adaptation options and enabling monitoring / early warning. Food security (global food baskets) and impact on living and water resources could serve this purpose. An Earth-system simulation/data fusion capability similar to the first digital twin is required for this digital twin as well so that the common software and hardware infrastructure developments can benefit from economies of scale.

Both digital twins will be operational within 30 months, linked to data providers for continuous operation and to modelling institutions for continuous improvement through the core service platform (3.1.1.1) and made available, in the first instance, for users in the public sector. From the outset, both digital twins should be global in their scope, add regional downscaling options and use similar simulation and data fusion methodologies Rigorous handling of quality and confidence information will be secured, among others through machine learning, consistent mapping of the maturity of models and data and resulting in an overall metrics on the actionability of the predictions for expert and non-expert type of end-users, including policy services and the general public.

Outcomes and deliverables

* Two fully operational digital twins, fully integrated and operating as part of the core service platform, providing the EU with a real breakthrough in the level of prediction capability, accuracy and accountability of corresponding crisis management tools to significantly contribute to the EU’s ability to anticipate and make decisions in natural disaster and climate-related domains and help address crises situations related to weather, natural disasters and other hazards;
* New AI-based methodologies to extract application-sector-specific information from exascale data volumes;
* New observation and simulation capability embracing the entire digital loop from smart sensors, IoT, big data, data analytics and cognitive computing, HPC and cloud computing, to intelligent physical systems in all socio-economic impact sectors.

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| Type of action | Contribution Agreement (DT1) |
| Indicative Budget | [25-30 MEUR] |
| Indicative year  | 2021 |
| Indicative duration of the action | 30 months |

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| Type of action | Contribution Agreement (DT2 with DT1) |
| Indicative Budget | [20-25 MEUR] |
| Indicative year  | 2021 |
| Indicative duration of the action | 30 months |

### Data ecosystem for climate-neutral and smart communities

Smart cities and communities (both rural and urban communities) are promising places for implementing the Green Deal objectives, as they strive for reducing resource consumption and pollution, adapting to climate change, and improving people’s quality of life, using digital technologies and intelligent solutions.

In order for smart cities and communities in the EU to benefit from cross-domain, cross-city, portable data-services and AI-powered simulation through digital twins, the programme will support the creation of a local data ecosystem for climate-neutral and smart communities, networked at EU level. This will provide an interconnected, interoperable and trusted environment for data sharing, it will help address common local challenges more efficiently and will foster the growth of innovative European SMEs.

The process will be supported by:

* rolling out the required digital infrastructure
* capacity building of federated local data ecosystems
* validation through a number of Large Scale Pilots, deploying AI-enabled urban data services
* as well as preparing the groundwork and capacity for deploying Digital Twins for AI-powered simulation

These activities will work in synergy with the activities of Horizon Europe’s missions, in particular in the area ‘Climate-neutral and smart cities’[[19]](#footnote-20) as well as Connecting Europe Facility (CEF2) Digital’s goal of reaching the EU's 2025 Gigabit objectives[[20]](#footnote-21) where municipalities will increase their resilience and mitigate greenhouse gas emissions, as the Commission aims at localising the digital revolution and supporting smart communities.

#### Deployment of Urban Digital Platforms

Objective

This topic aims at reaching the ambitious goal set by the Signatories of the ‘Join, Boost, Sustain Declaration’ to implement interoperable urban platforms based on commonly-agreed mature set of standards, solutions and indicators, while embracing EU values and ensuring citizens’ digital rights.

An Urban Digital Platform is a software implementation of a logical architecture that integrates data flows within and across city systems by exploiting modern technologies, such as sensors, cloud services, mobile devices, analytics, social media etc.. The Platforms will enable cities to rapidly shift from fragmented to predictive efficient operations and urban planning, and novel ways of engaging and serving city stakeholders for tangible and measurable outcomes at local level such as increased energy efficiency, reduced traffic congestion and emissions, creation of a digital innovation ecosystems, etc.

The deployment at scale of urban digital platforms based on open standards will provide a sound, EU-wide, minimum digital infrastructure on which cities and communities will be able to deploy new, added-value and sustainable green services. The platforms will also support the missions in Horizon Europe, in particular in the area “Climate-neutral and smart cities”.[[21]](#footnote-22)

This project will prepare the cities and communities in rural and urban areas, signatories to the Living-in.EU declaration, for the procurement and deployment of urban digital platforms through advisory services on their technological readiness to implement interoperable urban platforms, technical support for the preparation of the procurement process and documentation, and support for the tendering, testing and implementation phases. It will also Identify lessons learnt from urban digital platforms and interoperability mechanisms to support evolving digital platforms in more rural contexts.

Scope

The project will fund a consortium *(one project)* thatwill take care of the preparation and support of the procurement and deployment of urban digital platforms:

1. *Support for the preparation of the procurement and deployment of urban digital platforms*
* ICT readiness self-assessment tools.
* advisory services to assess communities’ technological readiness for implementing interoperable urban platforms;
* support for the preparation of procurement and deployment, including;
	+ preparation of general and customised procurement templates and documents
	+ creation of procurement networks and working groups
	+ assistance in creating architectures for shared multi-city/community platforms
1. *Distribution of cascading grants to cities and communities as third parties for the procurement, testing and deployment activities. The grants will be used for:*
* the procurement processes
* the support for testing and validation activities of the procurement process and the contract

Outcomes and deliverables

Creation of the right environment, documentation (such as templates) and procurement networks and financial support for a large number of procurement processes, which will lead to the procurement and deployment at scale of urban digital platforms through funding from the Recovery and Resilience Fund, ERDF, etc.

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| Type of action | Grant for Support to Third Parties – *cascading grants*  |
| Indicative Budget | [ 30 -35 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 36 months |
| Indicative budget per Grant (EU contribution) | [ 30-35 MEUR] |

#### Establishment of a data ecosystem for climate-neutral and smart communities

Objective

The aim is to develop a blueprint for the data ecosystem for climate-neutral and smart communities[[22]](#footnote-23).

Scope

The related activities will include the following[[23]](#footnote-24):

* Agreement on the relevant **datasets** to be shared[[24]](#footnote-25), for the development of the blueprint and making them accessible, reusable and interoperable across domains and borders[[25]](#footnote-26);
* Developing a decentralised, multi-stakeholder **governance scheme,** including clarity on access rights, conditions for processing and re-use, all in line with EU principles and values;
* The governance scheme should be supported by data brokers, data stewards/integrators, data sharing / transactions (‘clearing house’) **functionalities** and appropriately address data protection / data trust, quality control and assurance, support and maintenance as well as any other aspects deemed relevant by the stakeholders;
* The blueprint should re-use existing **building blocks**[[26]](#footnote-27) and propose an appropriate **architecture**.

The data ecosystem for climate-neutral and smart communities will benefit from other relevant dataspaces, the Common Services Platform, the Data Spaces Support Centre and the generic cloud services running on the EU Federated Cloud Infrastructure, spanning from IaaS, to PaaS and SaaS, in order to establish the interconnection among the various urban digital platforms, aggregate data and provide the necessary data storage capacity and data processing/computational power.

Outcomes and deliverables

Blueprint of a data infrastructure and related ‘terms and conditions’, for an interoperable, trusted data ecosystem for climate-neutral and smart communities that enables (public and private) stakeholders such as SMEs and others to develop cross-sectoral, cross-city, AI-enabled, integrated smart city applications and to port them from community to community (portability).

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| Type of action | Coordination and Support Action |
| Indicative Budget | [ 5 MEUR] |
| Indicative time of call opening | First call  |
| Indicative duration of the action | 36 months |

#### Capacity building, coordination and governance of the Living-in.eu community’s governance

Objective

The aim is to govern the Living-in.eu community by coordinating the broad range of activities and stakeholders with various expertise (legal, financial, technical, education and capacity building, impact measuring). The governance should define the processes of interaction and decision-making among the actors involved in the Living-in.eu community. The activities should comprise:

* Co-creation of the processes, actors, roles, rights, associated timeframes of the various sub-groups and to ensure the development and scaling up of digital smart and green solutions by the community;
* Running the coordination of all activities, including, but not limited to, community building and management, on boarding of new members, communication and exploitation of results, in the context of the Living-in.eu movement for the benefit of all the parties;
* Monitoring and supporting the relevant actions undertaken by the community that contribute to the establishment of interoperable digital platforms in cities and communities and measuring their impact to achieve their smart and sustainability goals.

Outcomes and deliverables

Creation of a Community Management Toolkit that enables the management and fosters the growth of the community in a sustainable manner

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| Type of action | Coordination and Support Action |
| Indicative Budget | [ 5 MEUR] |
| Indicative time of call opening | First call  |
| Indicative duration of the action | 48 months |

#### Large Scale Pilots to validate the data ecosystem for climate-neutral and smart communities

Objective

As part of the Digital Europe Programme a blueprint for the data ecosystem for climate-neutral and smart communities[[27]](#footnote-28) will be established. The objective of this action is to validate the blueprint of the data infrastructure and related ‘terms and conditions’, through Large Scale Pilots in focus areas relevant to the Green Deal.

Scope

The Large Scale Pilots (LSPs) will demonstrate the real life operation of the data ecosystem for climate-neutral and smart communities by deploying portable, AI-enabled, cross-sectoral, cross-city urban data services[[28]](#footnote-29). The projects will demonstrate how networked Urban Data Platforms can benefit from the federated cloud infrastructure and will set out a plan for the data ecosystem for climate-neutral and smart communities to become economically sustainable in the long term.

The Large Scale Pilots should have a minimum of 10 cities or communities[[29]](#footnote-30) as partners from a minimum of 7 Member States.

The LSPs will focus on use cases benefitting from cross-sectoral data to focus on at least one of the below objectives:

* predictive traffic management / sustainable mobility planning;
* data-services related to extreme weather events to facilitate climate change adaptation, risk prevention and disaster resilience;
* management of energy flows and;
* pursuing the zero pollution ambition (e.g. air, water, soil pollution or waste).

Given these focus areas’ links to EU urban, environmental and climate policies, the data ecosystem for climate-neutral and smart communities will be an important enabler for cities to become climate neutral, develop and implement climate change mitigation or adaptation strategies to achieve their Green Deal objectives. All LSPs should include sufficient budget for data sharing. The projects should rely on interoperable urban digital platforms and common data models[[30]](#footnote-31) and ensure compliance with the principles of the Living-in.eu declaration. They should involve locally based, innovative SMEs with business curiosity to create new service offerings and commercial models.

Outcomes and deliverables

Establishing a catalogue of AI-enabled, portable data-services for a European ecosystem of smart community solutions, data, applications, services and developers.

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| Type of action | Grants |
| Indicative Budget | [30 -50 MEUR] |
| Indicative time of call opening  | Forth call  |
| Indicative duration of the action | 36 months |
| Indicative budget per Grant (EU contribution) | [10 MEUR] |

#### AI-powered Urban Digital Twins

Objective

The action will coordinate and support the deployment of Urban Digital Twins and the scaling-up of Europe’s capacity in this area.

The short-term objective is to build EU capacity, to prepare the ground for the massive adoption of Urban Digital Twins, based on common and interoperable building blocks and benefitting from the local data ecosystem for climate-neutral and smart communities that will provide an ecosystem of trusted environment. The long-term objective is to deploy Urban Digital Twins, built on EU values and principles that will exploit the strengths of AI, cloud computing, advanced data analytics and increased computational power in order to improve the holistic performance of a city.

The action will secure an effective, coordinated approach at the EU level to avoid a piece-meal adoption of standards and existing solutions and ad-hoc initiatives by cities across EU, which lead to cost inefficiencies and market disruption, while in turn, raising entry-to-market barriers for EU SMEs and jeopardising EU strategic autonomy in this area.

Scope

The Coordination and Support Action work and related activities will include and focus on the following:

* Definition, categorisation and taxonomy for EU urban digital twins as well as identification of the main Urban Digital Twin use cases, including their needs, challenges, business and technical requirements, required skills, implementation and benefits realisation approaches. These key characteristics are going to form a toolbox for each use case and serve as its accelerator.

Clustering of the involved cities based on common use cases, providing a roadmap for the implementation and deployment of the AI-powered Urban Digital Twins with common elements for all use cases/toolboxes and specific implementation paths for each cluster to ensure maximum benefit is taken from the results. Development of a common space for networking, collaboration and interaction among cities, providing testing ground for the technical specifications of each toolbox to be tested and validated.

* Ensuring that interactions, feedback and two-way communication are established with activities that are essential for improving the action’s work and its alignment with other relevant actions in this work programme, like the data ecosystem for climate-neutral and smart communities CSA, the Destination Earth initiative and other relevant ongoing initiatives (e.g. H2020 projects).

Outcomes and deliverables

The action will deliver the required capacity for cities planning to implement AI-powered Urban Digital Twins, in a structured and efficient way. It will also mobilise the necessary actors of the ecosystem, to ensure the readiness of both the supply and demand side of urban digital twins. The identification of the use cases, the development of their respective toolboxes and the testing and validation of the technical specifications will pave the way for an effective implementation and scale-up of the initiative across EU cities and their future integration with Destination Earth.

By helping, coordinating and supporting the deployment of the AI-powered Urban Digital Twins, the CSA will actually support the realisation of a wide variety of benefits for EU cities (e.g. operational efficiencies and cost savings, urban adaptation to climate change, increased resilience and improved sustainability, effective urban planning and urban infrastructure management, economic development, crisis management).

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| Type of action | Coordination and Support Action |
| Indicative Budget | [5 MEUR] |
| Indicative time of call opening  | Second call  |
| Indicative duration of the action | 24 months |

### Digital Product Passport: sustainable and circular systems

Objective

The Sustainable Products Policy initiative (SPPI) foreseen in the new Circular Economy Action Plan[[31]](#footnote-32) (CEAP) establishes a digital Product Passport (PP) that gathers data on a product and its value chain. The objective of the PP is to support sustainable production, to enable the transition to circular economy, to provide new business opportunities to all economic actors involved, to support consumers in making sustainable choices and to allow authorities to verify compliance with legal obligations.

The objective of this Coordination and Support Action as is to prepare the ground for a gradual deployment as of 2023 of digital product passports in the sector of electronics (consumer and/or industrial), batteries and at least another one of the sectors identified in CEAP, namely construction, textiles and plastics.

Scope

Specific contribution is expected on identifying the key PP data as well as protocols for secure and tailored access to relevant stakeholders. The work will also contribute to the development of standardized and open digital solutions for identification, tracking, mapping and sharing of product information along its life-cycle ensuring interoperability across borders and well-functioning EU Internal Market. In this way, this CSA will support the establishment of an interoperable European Dataspace for Smart Circular Applications building on and linking to manufacturing dataspaces (see topic 1.2.1.1.6) and other available and relevant data sources.

Particular emphasis should be given to engagement of all relevant stakeholders throughout the value chain and optimal use of digital technologies such as Artificial Intelligence, Internet of Things and blockchain to provide authentication of transaction records and product data in a secure and immutable manner.

Deliverables should include a roadmap with milestones for a gradual deployment of PP and PP prototypes in the electronics sector and the other selected key value chains of the CEAP based on analysis of existing and upcoming legislation and ongoing activities on dataspaces and product passports in these sectors. While different product groups will have different information requirements, a common data set to enable cross-sectoral use should also be proposed.  The business model to ensure the sustainability of the product passport development and use has to be addressed.

Outcomes and deliverables

Support the goals of the Green Deal and in particular Circular economy action plan’s Sustainable Product Policy Initiative, the EU Digital strategy’s Circular Electronics Initiative and the EU Data strategy by improving product sustainability, boosting material and energy efficiency, enabling new business models and circular value extraction based on data sharing.

To contribute to enhanced concertation of stakeholders, provision of a roadmap for open and standardised approaches for beneficial and viable use of product passport based on digital innovations as well as support the well-functioning of the EU Single Market providing consistent information about products, across the value chain and borders, to business, customers and authorities.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [ 3 MEUR] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 18 months |
| Indicative budget per grant (EU contribution) | [ 3 MEUR] |

## Blockchain - European Blockchain Services Infrastructure (EBSI) and Regulatory Sandbox

The European Blockchain Services Infrastructure (EBSI) will accelerate the uptake of blockchain in Europe, in connection with other technologies. Publicly driven, it will deploy a distributed network of nodes all across Europe and will integrate solutions to improve services to citizens and organizations. It will support cooperation with private actors and other blockchain initiative and it will build capacities to reinforce the European blockchain ecosystem.

EBSI will have various work strands:

* The European Blockchain Partnership (EBP) and EBSI governance, including support for cooperation and communication activities; legal & liability aspects and the evolutive development, deployment, operations and maintenance of the core platform;
* EBP priority use cases: every year the European Blockchain Partnership selects a set of new cross border use cases to be developed and be operated on top of EBSI;
* EBSI exploitation and cooperation with industry: It will support the development, integration and implementation of national, local applications running on EBSI by public authorities in MS; stimulate the exploitation of EBSI by SME all across Europe; support specific cooperation with industry projects;
* Innovation & Integration facilities for EBSI: It will support the benchmarking and testing of innovative or advanced solutions proposed by start-ups or solution providers, in order to evaluate their contribution to EBSI or other relevant Blockchain initiatives in Europe. It will concern the new functionalities and level of performances, quality and robustness regarding security, privacy / data protection, interoperability, and sustainability;
* EU regulatory sandbox activities implemented with the support of the European Blockchain Partnership (EBP), aims to provide more legal certainty to European start-ups and market players that innovate with Blockchain based solutions.

For all work strands, the Commission actively encourages proposers to use Innovation Radar[[32]](#footnote-33) intelligence when developing activities that reinforce Blockchain ecosystems.

### EBSI and sandbox– Core activities

*Scope*

The funded activities will cover:

1. The EBP and EBSI governance; support services including communication and cooperation activities; legal & liability assessment and facilities, are essential to enable the evolution and deployment of EBSI, its use cases and applications. Support to the development, deployment, update and maintenance of, and the implementation of support services for the core service platform which aims to evolve with regular upgrades to include new features and capacities to support more demanding use cases (applications). Those evolutions enable to improve EBSI performances as well as its capacities to meet higher standards regarding privacy and data protection, interoperability security and sustainability aspects.
* EBSI governance: This governance is provided through the Policy, Technical and other ad-hoc groups of the European Blockchain Partnership (EBP) working with the EC. In relation to governance, activities will also address support to cooperation with other initiatives (e.g in the context of international cooperation, of cooperation with INATBA, or other relevant initiatives);
* EBSI support services will include support to the uptake and operation (including helpdesk type of activities); support to standardisation activities; communication actions; support to acceptance and uptake by stakeholders and end users; and to any other specific actions like ethics or economic aspects that are related to EBSI development and implementation ;
* EBSI Legal & Liability assessment and facilities: It will support the provision of services to ensure that EBSI and its applications are designed and implemented in full compliance of EU regulation; and that liability aspects are clarified when exploiting EBSI. This work will be done in synergies with the EU regulatory sandbox activities;
* Development and deployment of additional capacities, with higher performances, meeting high standards in terms of security, privacy and data protection, interoperability and sustainability;
1. EBSI cross border use cases are selected annually by the European Blockchain Partnership. There are priority projects for EBSI, requiring coordination between all MS and EC, with specific development and deployment activities. Those use cases will exploit existing and future capacities of EBSI and they will be supported with in combination with activities addressed under the above point (i).
2. The Regulatory sandbox at EU level (under the auspice of the EBP) aims to clarify the legal framework and provide for legal certainty to solution providers, in particular for start-ups and SMEs. It will facilitate cooperation between EU and national regulators and experts, with the view to develop harmonised interpretation of regulations with flexibility to allow for innovation. It will be implemented though platform regrouping regulatory authorities and experts to advise the companies and projects. It will collect best practices and support the assessment of legal, as well as business obstacles that arise in deploying such solutions.

*Outcomes and deliverables*

EBSI will reach a level of performances, of robustness and of security that will position it as (being amongst) the most advanced blockchain infrastructure for public services in the world.

EBSI will be enriched with 6 to 12 new cross border use cases that will be exploited by public authorities in all MS, as well as by organisations and citizens as end users. Some of those use cases, may concern millions of potential individual users all across Europe.

The joint work between EC and MS for clarifying EBSI legal and liability aspects will serve as trail-blazer for other blockchain projects in Europe.

A regulatory sandbox at EU level will be established and operational as the main reference body for clarifying legal issues related to blockchain and EBSI implementation. It will support tens of start-ups per year.

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| Type of action | Procurements – open call and Framework Contracts |
| Indicative Budget | [ 15 – 25 MEUR] |
| Indicative year of procurement | 2021-2022 |
| Indicative duration of the action | 1 to 3 years |

### EBSI and sandbox – Deployment of services

*Scope*

This part concern all the EBSI actions for 2021-22, which activities are implemented through call for proposals. [More details on the actions will be given in the call text].

1. EBSI and cross border use cases: It will support the roll out of the EBSI by contributing to the deployment of nodes in all MS enhancing the performance and robustness of EBSI, and to the implementation of local support services (help desk, information and training activities for local authorities, citizens etc.). It will support as well as contribution for the development and deployment of specific cross-border use cases identified by EBP.
2. EBSI – exploitation and cooperation with industry: It concerns the exploitation and enrichment of EBSI by public authorities and SME at national and local levels. It will concern for instance the use of EBSI by a city council to provide services to citizens, such services building on the APIs, the network and the core services provided by EBSI. Another track will concern a similar exploitation by SME that will offer new services built and operated on EBSI or will contribute to EBSI and EBP priorities. A last track will support specific cooperation with industry projects to develop synergies with EBSI according to priorities agreed in the context of EBP. Specific cooperation can be planned through the different calls in 2021-22.
3. EBSI Innovation & Integration facilities: It will facilitate future development of EBSI and the integration of advanced components and core services in EBSI, as well as for other blockchain projects in Europe. It will consist of creating a testing and integration environment that will associate blockchain competence centers (many of them are universities) all across Europe and the JRC at EC level. It will ensure the provision of methodologies and benchmarking approaches to assess the value of solutions regarding challenging new functionalities, scalability and level of performances. It will assess the contribution to the highest requirements in terms of security, privacy, interoperability and sustainability. It will give to start-ups and solution providers the opportunity to demonstrate or certify the benefits and quality of their products.
4. Support to regulation and sandbox activities: in synergies with the above sandbox core activities, support will be provided to start-ups, SMEs and other players participating in the sandbox addressing at least four areas, namely, smart contracts, the tokenisation of assets, personal information management services. .

*Outcomes and deliverables*

EBSI will be deployed all across Europe and will support at least 50 applications in different Member states which will reinforce the confidence and experience in using blockchain and EBSI in Europe. It will reinforce the catalytic role of EBSI for providing better services to citizens and business opportunities for citizen. This will enlarge significantly the number of individuals and organisations using EBSI across Europe.

Europe will get an operational integration network to stimulate further development for blockchain innovations and assess their value through recognised methods and benchmarks. EBP and EBSI will benefit from this tool to integrate best solutions. At least 15 competence centres should participate in this network and [at least 50] Start-ups or SMEs will enjoy this framework to demonstrate the quality of their products and get more visibility.

Within the next two years, [60 or tens of] start-ups or SMEs will received specific supported for participating in sandbox activities clarifying the conditions for deploying their innovative solutions..

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| Type of action | CSAGrants |
| Indicative Budget | [ 40 - 50 - MEUR] |
| Indicative time of call opening | Call 2, 3 and 4  |
| Indicative duration of the action | 24-36 months |
| Indicative budget per Grant (EU contribution) | [ MEUR] 0.5 M€ (for SME Grant) to 10 M€ for other grants with third party financing |

## Deployments of Public Services

### European Digital Government Eco System (EDGES): cross-border services and interoperability

The digital transformation of public administrations and interoperability are meant to help increase the efficacy and efficiency of service delivery, the convenience of services for European businesses and citizens and the accessibility of public data cross-border and across sectors.  These actions will support seamless and secure data flows, digitalisation of economy and society, help upskill European public administrations and place interoperability as a core enabler of Europe’s digital autonomy. This work strand will focus on three main actions:  “Common Services Platform”, “Once-Only Principle implementation” and “Interoperability and GovTech”.

Support will also be provided for the digitalization of Justice as well as for the piloting of AI applications in law enforcement domain.

#### Common Services Platform

Interoperable solutions deployed in support to Digital Government need to be adapted to the changed legal, organizational and technological challenges such as the combined use of several services in Digital Government applications, the shift of technological solutions to the cloud, the emerging need to provide government services on a mobile platform, upcoming obligations for algorithmic transparency, multilingualism, enhanced data protection and compliance with green computing standards. This will be achieved through:

* an increase of the use of deployed interoperable cross-border and cross-sector public services in alignment with regulatory requirements (such as eIDAS Regulation, eInvoicing Directive, Single Digital Gateway Regulation, EU semester digital priorities)
* an accelerated digital transformation of public administrations across Europe aligned with the EU’s overall digital Government policy framework and interoperability strategy.
* Reduction of digital administrative barriers to the free movement of goods, service, people and capital.

##### Common Services Platform

 Objective

To implement the great majority of the services of the platform and in particular those that will:

* Simplify the environment for data exchange with and within public administrations and the provision of interoperable, multilingual, cross-border and cross-sector public services.
* Provide a means to match supply and demand of digital government basic capabilities and interoperability solutions, exploit synergies, promote sharing and reuse, avoid duplication and take advantage of economies of scale.
* Support a harmonised monitoring, evaluation & communication and governance framework

Scope

The platform will provide the following services:

* the maintenance of necessary artefacts (standards, specifications, profiles, frameworks and guidelines (core services);
* evolutive (i.e. preventive, corrective adaptive and perfective) maintenance of sample software – including user testing – and operation support – extending to conformance and connectivity testing and operation of components hosted by the Commission as managed service) (enabling services);
* stakeholder and eco-system management, on-boarding and supporting public sector organisations & businesses (esp. SMEs and start-ups), & other entities from the EU & EEF (enhancing services).

The funded activities will cover the integration of the former core services of selected digital services deployed under the CEF Telecom programme (namely eID, eSignature, eDelivery, eTranslation, eInvoicing, eProcurement) and selected ISA2 actions and solutions (such as Semantic Interoperability and Technical specifications, Digital Transformation of Public Procurement, Legal IoP solutions/specs, Policy support reusable solutions, Horizontal IOP services), as well as of new components deployed in the context of the Once-Only Principle implementation for the Single Digital Gateway (see section 2.4.2), or developed under the interoperability incubator (see also section 2.4.3).￼

For eTranslation, state-of-the-art language technology (LT) tools and services including the eTranslation service, the ELRC-SHARE repository and other LT services deployed in CEF programme will be integrated, as well as new LT solutions deployed in response to emerging needs.

The toolset should include the use of state of the art technologies like AI (Machine Learning, Natural Language Processing) for analytic purposes. Work on the platform will also include the development of a reference architecture for the European Digital Government Eco System combining the offered solutions and reusing the European Interoperability Reference Architecture (EIRA).

The activities will include the creation and operation of a single online entry point to all services, including a common repository of solutions, with catalogue, community features and support desk (reusing as much as possible existing solutions like JoinUp).

The action will also cover outreach to all stakeholder communities among public and private sector organisations, European and International standardization bodies & international partners interested in aligning with the standards of the platform or contributing to or using the platform’. It will include actions to enable others – especially EDHI – to provide support services to a wider audience (Train the trainers).

Outcomes and deliverables

The Common Services Platform will offer a one-stop-shop for services, which allow public administrations at all levels, businesses and citizens to access free or open source solutions enabling basic Digital Government capabilities or more generally improve technical, semantic, organizational and legal interoperability.

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| Type of action | Procurement |
| Indicative Budget | [ 40 - 60 MEUR ] |
| Indicative year of procurement | 2021 |
| Indicative duration of the action | 24 months |

#### eArchiving- Core Services

Objective

This action build on and consolidate the platform for digital preservation created at EU level, enabling public administrations, businesses and end users to deploy free and interoperable solutions for archiving and reusing data.

Scope

Operation and evolution of the eArchiving services, including:

* maintenance and improvement of the eArchiving standards, specifications and knowledge base, focusing and building on the synergies with other services (core services);
* preventive, corrective, adaptive and perfective evolution of sample software, including compliance conformance testing (enabling services);
* stakeholder and eco-system management, onboarding, training and supporting end users (enhancing services).

The funded activities will cover the coordination of the eArchiving services, accelerating the digital transformation of archives by supporting their onboarding and take up of the eArchiving specifications. The results and related intellectual property and exploitation rights will remain in the open domain.

Outcomes and deliverables

Adapting the open standard and interoperable eArchiving specifications. This will allow European archives to improve their digitalisation, and to serve the citizens more efficiently.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [ 2 MEUR] |
| Indicative time of call opening  | Third call |
| Indicative duration of the action | 24 months |
| Indicative budget per grant (EU contribution) | [ 2 MEUR] |

#### Once-Only Principle implementation

Objective

The technical system for the cross-border automated exchange of evidence and application of the ‘once-only’ principle in accordance with Article 14 of the Single Digital Gateway Regulation has to be rolled out. The OOP initiative will reuse the core services in a unifying architecture that can serve as a template for common dataspaces. The created solutions will integrate results from past activities under Horizon 2020, CEF and the ISA2 programme (such as the TOOP large-scale pilot, the OOP CEF preparatory action, the Business Registers Interconnection System digital service, the DE4A large-scale pilot, and former ISA2 actions like Access to Base Registries, Catalogue of Service, semantic interoperability (core vocabularies, …), electronic documents and electronic files). The solutions will contribute to the acquisition of new common service offerings and therefore support a wider application of the once only principle technical infrastructure beyond the scope of the Single Digital Gateway.

Scope

The action will cover:

* The operation, maintenance and set-up of the Core Services of the technical system for the cross-border automated exchange of evidence and application of the ‘once-only’ principle, the OOP related services provided by the Commission, all specifications and profiles required by this Technical System.
* the services that are currently being considered to be Core Services of the technical system are:
	+ Evidence Broker
	+ Data Service Looup
	+ Semantic Repository
	+ Data Authorisation system
* Enablement, Onboarding and Support Services(training & tools) to MS
	+ in data quality efforts in addition to semantic and business process harmonization;
	+ for the deployment of components necessary for interconnecting MSs such as the eIDAS node, eDelivery node and other elements;
	+ for the deployment of record matching;
	+ for the Improvement of Core administrative databases interoperability.
* Interconnection of OOP Access Points to other existing systems such as BRIS.

Outcomes and deliverables

After two years:

* One common platform and tools to facilitate the evidence exchange mandated under the Single Digital Gateway Regulation will be set up.
* Delivery of support services for public authorities throughout Europe on all levels of Government for meeting the OOP requirements of the SDG Regulation will be set up.

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| Type of action | Procurement – use of Framework Contract  |
| Indicative Budget | [ 15-25 MEUR ] |
| Indicative year of procurement | 2021 |
| Indicative duration of the action | 24 months |

#### Interoperability and GovTech

The topics in this section aim to continue exchanging and innovating with Member States on concepts, solutions, frameworks and standards to respond to the evolving challenges for interoperability in digital government and to maintain a set of interoperable solutions.

##### Interoperability Knowledge and SupportCentre

Objective

The Interoperability Knowledge and Support Centre will support the implementation of Interoperability activities as formalised in the European Interoperability Framework (EIF). This will include its maintenance, monitoring and evolution in line with the evolution of the digital policies.

The successful implementation of the EIF will improve the quality of European public services and will create an environment where public administrations can collaborate digitally. This implementation needs to cover the four layers: technical, semantic, organisational and legal.

Scope

The activities that will support the implementation of such objectives are:

* Monitoring and measuring activities on the implementation of interoperability (NIFO) in the EU;
* Maintaining, testing, promoting and evolving further interoperability concepts and best practices around a strengthened European Interoperability Framework (EIF);
* Maintaining and developing a collection of interoperability relevant standards and specifications;
* Operation and evolutive maintenance of selected legacy solutions previously funded under ISA² programme and that are not part of the Common Services Platform;
* Knowledge sharing and supporting public administrations to overcome legal and organisational barriers for the implementation of the principles of “digital by default” and “interoperability by design” through the development of conceptual and procedural frameworks, advising on and supporting with testing and assessment capacities, and enhancing the digital policy coherence through regular “digital checks” during EU policy making;
* Supporting Advanced Digital Skills in the Public Sector through the Interoperability Academy, organising workshops, summer/winter schools and making available interoperability relevant training material and online courses;
* Performing studies in order to identify best practices in areas that relate to Interoperability in Digital Government.
* Anticipating needs, feasibility studies and preparing the first phase of concrete interoperable solutions to support EU policies and EU Legislation;
* Supporting activities of horizontal nature for the Govtech Incubator, such as defining roadmaps for pilot projects , engaging with the GovTech sector, supporting the Innovative Public Services Observatory.
* Enabling and engaging with others – especially EDHI – to provide similar services to a wider audience (Train the trainers model)

(Indicative services included: Semantic Interoperability & Technical specifications, Innovative Public Services and GovTech, Legal Interoperability, EIF supporting instruments, Horizontal IOP activities, Digital Transformation of Public Procurement, EU policies interoperable solutions)

The action will also cover awareness raising activities to all stakeholder communities among public and private sector organisations.

Outcomes and deliverables

The Interoperability Knowledge and Support centre will allow to:

* Increase the awareness and uptake of interoperable cross-border and cross-sector public services in alignment with regulatory requirements (such as eIDAS Regulation, eInvoicing Directive, Single Digital Gateway Regulation, EU semester digital priorities)
* Improve Digital Government Skills among the Public. Sector Accelerated digital transformation of public administrations across Europe aligned with the EU’s overall digital Government policy framework and interoperability strategy.

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| Type of action | Procurement – use of Framework Contract  |
| Indicative Budget | [ 25-45 MEUR ] |
| Indicative year of procurement | 2022 |
| Indicative duration of the action | 24 months |

##### Govtech Incubator

Objective

The GovTech incubator aims at fostering the deployment of new digital services, promoting innovative digital government solutions and putting in place the right mechanism to ensure Interoperability by default. The funded activities would make use of the Common Services Platform to the extent possible.

The aim is to ensure cross-border collaboration between different Member States digitalisation agencies as well as involving in the GovTech sector actors from the private sector and academia.

Groups of Member States can engage in variable geometries around specific projects of particular interest, including with actors in the larger GovTech environment. Lessons learnt and any tools, training programmes and concepts developed will be available for sharing and reuse across the EU, and may be scaled up further into joint digital government solutions, building blocks and/or services, in particular the Common Services Platform.

Scope

The long-term cooperation between the Commission and the selected consortium will be formalised within a Framework Partnership Agreement (FPA) to provide an environment to ensure continuous support to experimentation for the Public Sector. This agreement shall specify the common objectives, the nature of actions planned and the general rights and obligations of each party.

The Framework Partnership Agreement will involve Member States’ Public Sector Digitalisation agencies in a joint GovTech experimentation mechanism.

Within the FPA, , the Commission intends to award Specific Grants to support the activities foreseen in the action plan and any additional request the Commission might consider necessary. The GovTech Incubator should provide basic activities to engage with the GovTech Community beyond the Consortium.

Outcomes and deliverables

The GovTech Incubator should allow to identify at the end of the 2022, at least 2 pilot projects testing digital public sector innovations that could lead to reusable solutions, Large Scale Pilots or new components made available through the Common Service Platform.

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| Type of action | Framework Partnership Agreement |
| Indicative Budget | [ 3 MEUR] |
| Indicative time of call opening  | Third call |
| Indicative duration of the action | 24 months |

### Justice and consumer protection

Activities in this area will contribute to the implementation of the European e-Justice Strategy and Action Plan for 2019-2023[[33]](#footnote-34) with the objective of improving access to justice and electronic communication in a pan-European context, and to ensuring consumer protection in the digital transition.

For the 2021-2022 period, the priority goals under this chapter is to continue the activities started during the 2014-2020 MFF under the CEF programme but reorganising them in such a way to provide users with a more organic and coherent offer. Only the core services (e.g. platforms, standards, reference architectures) will be supported by the actions below, but the offer will be extended with the support for new actions towards the digitalisation of justice and the establishment of a Common platform for online investigations and enforcement in the consumers area.

#### Maintenance and evolution of the core EU justice and consumers systems

Objective

For the 2021-2022 period, the objective under this topic is to continue ensuring the maintenance and evolutive development of the core IT systems in the justice and consumers area, started during the 2014-2020 MFF under the CEF programme. Only the core services (e.g. platforms, standards, reference architectures) will be supported by the actions below.

In particular, the objective of the foreseen activities is to:

* e-Evidence Digital Exchange System (e-EDES) – e-EDES is a system providing for the digital exchange of evidence further to the European Investigation Order (Directive 2014/41/EU[[34]](#footnote-35)). The first version of the system will become operational in 2020, but additional evolutions are foreseen – mainly with the objective to enable electronic interactions with relevant Service Providers (SPs) and with regard to support the digitalisation of further legal instruments on cross-border judicial cooperation in criminal matters;
* The European Central Platform (ECP) – Ensure the operation and evolutive maintenance of the ECP in the context of the Business Registers Interconnection System (BRIS)[[35]](#footnote-36), and of the Beneficial Ownership Registers Interconnection (BORIS)[[36]](#footnote-37). Among the new functionalities that will be introduced for BRIS, those required by new Directives, e.g. on Company Law (Directive (EU) 2019/1151 and Directive (EU) 2019/2121) and on anti-money laundering (Directive (EU) 2015/849). Funding will also cover further communication and stakeholder engagement activities, where needed;
* Maintenance and modernisation of the European Online Dispute Resolution Platform[[37]](#footnote-38) (ODR platform), the pan-European multilingual digital service infrastructure that facilitates out-of-court settlement of consumer disputes in the digital single market. Migration to the state-of-the art user-friendly online dispute resolution platform capable of integrating advanced technologies and reusable building blocks. The current implementation should be maintained in corrective mode until the new version is fully operational;
* Maintenance and modernisation of a crypto-tool provided to Member States to enable the exchange of encrypted XML files between Member State authorities at every European Parliament election. The objective is that Member State authorities will be able to perform the envisaged encryption and decryption of XML files encoding the information foreseen in Directive 93/109/EC in a manner which is secure, timely and compliant with relevant standards. The tool has been developed under the ISA2 and its maintenance needs to be ensured until 2024.

Scope

Evolutive maintenance and operation of the core systems developed in the justice and consumer protection area. In particular, the funding will cover:

* Analytical and design activities;
* Deployment of software components;
* Operational management, corrective and evolutive maintenance;
* Stakeholder management and outreach activities.

Outcomes and deliverables

The funds of Digital Europe programme financing will ensure the sustainability of the e-EDES established for digital cooperation in the context of data exchanges between competent national authorities (digitalisation of the European Investigation Order[[38]](#footnote-39)). The expected impact is:

* Increased efficiency and resilience of digital cross-border exchanges in the justice area under the supported criminal law legal instruments;
* Faster acquisition of electronic evidence by building direct interactions for evidence exchange with relevant SPs.

For the Business registers interconnection system (BRIS), the main expected impact is:

* An increase in confidence in the Single Market by ensuring a safer business environment for consumers, creditors and other business partners;
* A higher degree of legal certainty as to the information in the EU business registers;
* An improvement of the performance of public administration regarding cooperation between business registers in Europe in procedures for cross-border mergers, and exchange of relevant information regarding branches and the company.

For the Beneficial Ownership Registers Interconnection (BORIS), the main expected impact is:

* Enabling Union-wide access to beneficial ownership information for corporate and other legal entities as well as certain types of trusts and similar legal arrangements for the purposes of enhancing EU AML/CFT framework;
* Ensuring high degree of transparency in the beneficial ownership and control structures of corporate and other legal entities as well as certain types of trusts and similar legal arrangements;
* Allowing greater scrutiny of information by civil society by granting public access to certain beneficial ownership information, and thereby increasing confidence in Union financial system from investors and the general public.

With regard to the ODR platform, the expected impact is that consumers have access to quick, efficient and cost-free way to resolve their disputes. This will give them confidence to take action in case of unresolved dispute or illegal commercial practices, thus increasing consumer trust in the governance of the digital single market and contribute to the post-COVID-19 recovery. The foreseen KPIs are:

* Uptime/downtime of the ODR platform: 2020 baseline – almost 100%, target – 100%
* User satisfaction: 2020 baseline: 80% users find the platform very easy, easy or neutral to use. Target: 80% users find the platform very easy or easy to use.
* Number of visitors and to the ODR platform – increasing trend.

With regard to the crypto-tool, the expected impact is to be able to provide Member State authority users to a robust, open source, standards compliant tool which can be incorporated into national government IT deployment which enables the secure encryption, decryption, validation of a specific pre-determined format of XML files used to enable the secure exchange of data[[39]](#footnote-40) identifying citizens who have expressed the intention to exercise their EU citizenship right to vote or stand for election in the European parliamentary election in their country of residence.

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| Type of action | Procurement – use of Framework Contract(s)  |
| Indicative Budget | [ 8-12 MEUR] |
| Indicative year of procurement | 2021-2022 |
| Indicative duration of the action | 24 months |

#### e-Justice Communication via Online Data Exchange (e-CODEX)

Objective

The objective of this topic is to continue ensuring the operation and evolutive maintenance of e-CODEX started under previous programme and now in use, and to provide support to the stakeholders and users of the system until the planned hand-over to eu-LISA in 2023.

Scope

Evolutive maintenance and operation of e-CODEX. In particular, the funding will cover:

* Analytical and design activities;
* Deployment of software components;
* Operational management, corrective and evolutive maintenance;
* Stakeholder management and outreach activities.

Outcomes and deliverables

The e-CODEX system supports a number of cross-border electronic exchanges in the context of family law (iSupport), civil law (European Small Claims, European Payment Order) and criminal law (e-Evidence Digital Exchange System).

The support will ensure its sustainability with operational support, as well as corrective and evolutive maintenance of e-CODEX until its transfer to eu-LISA in 2023, thus not endangering the use cases it supports.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [3 MEUR] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 24 months |

#### Digitalisation of justice

Objective

The two new Regulations on Service of Documents[[40]](#footnote-41) and Taking of evidence[[41]](#footnote-42) in civil and commercial matters task the Commission with defining a decentralised IT system underpinning the foreseen digital data exchanges, and with establishing an interoperable Reference Implementation software implementation, which will be used by most Member States. For the 2021-2022 period, the objective is to carry out the initial technical work towards the adoption of the implementing acts foreseen by the two Regulations.

Beyond 2021-2022, a recent study has identified the most urgent needs in digital criminal justice, and has recommended seven priority actions, with a phased implementation over the next five years. Furthermore, the Commission Work Programme for 2021[[42]](#footnote-43) has identified several initiatives towards the digitalisation of the cross-border civil and criminal law judicial cooperation *acquis*.

Scope

The scope of the funded activities for the digitalisation of justice (including criminal justice) aims to ensure that the justice area will be equipped with the tools most urgently needed to properly perform functions while making use of digital technologies. In particular, the funding will target the digitalisation of the Regulations on Service of Documents and Taking of Evidence. The scope of the foreseen activities concerns the definition of the decentralised IT system’s overall architecture, horizontal features, as well as the functional and non-functional requirements (including on security) of the Reference Implementation solution; initial prototyping.

Outcomes and deliverables

The impact of the financing of the first stage in the digitalisation of the procedures on Service of Documents and Taking of Evidence is that it will allow the definition of the necessary requirements, standards, and initial blueprint of the decentralised IT system and the reference software implementation, which many Member States will use once the system is developed. This phase will conclude with the adoption of the foreseen implementing acts, supplemented by the elaborated system architecture and requirements documentation.

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| Type of action | Procurement – use of Framework Contract  |
| Indicative Budget | [ 2 MEUR] |
| Indicative year of procurement | 2021 |
| Indicative duration of the action | 24 months |

#### Common platform for online investigations and enforcement (EU eLab)

Objective

The EU eLab will be an optional tool to the national authorities addressing or preventing mass-scale breaches to EU consumer law by traders marketing and selling online, as well as safety concerns of the products using advanced or emerging technologies:

* A central platform with a repository of state-of-the-art investigative tools and analytical methods that national consumer protection authorities and authorities in charge of product safety market surveillance may use, for instance, to gather evidence, conduct online investigations and perform advanced testing;
* Preparatory actions necessary for reaching out to all consumer protection and product safety market surveillance authorities, as well as activities offering support to the national authorities to address the emerging consumer law and product safety concerns, notably cyber threats of connected products or safety challenges related to products incorporating AI.

Scope

Deployment, evaluative maintenance and operation of the EU eLab as a central access point to tools, resources, analytical methods with regard to monitoring and enforcing compliance with consumer law and product safety in digital markets and digital marketing. In particular, the funding will cover:

* A remote access point to the facility, including secure data collection and sharing, and a repository of the analytical, investigative and testing software for the national consumer protection and market surveillance authorities. This will build on the ongoing collaboration between the Commission and the national authorities (e.g. the Consumer Protection Cooperation network under Regulation (EU) 2017/2394[[43]](#footnote-44)), notably those who are already using facilities for online investigations, as well as the recent study by the Commission on advanced digital tools for online enforcement;
* Optional methodological support for the national authorities to analyse the products, processes and practices. This will target the authorities who have no means to use forensic tools necessary to meet the consumer law or product safety challenges in modern markets;
* Guidance and methodological support for the businesses to ensure that innovative products do not pose new risks for consumers.

Outcomes and deliverables

The deployment and operation of eLab will deliver an optional tool for national authorities to address high-impact problems in the consumer segment of the digital market (including online marketing) and consumer safety. The eLab is foreseen as a key tool to implement the Single Market Enforcement Action Plan[[44]](#footnote-45) and the Joint Communication on tackling COVID‑19 disinformation.[[45]](#footnote-46)

It will protect European consumers from illegal practices such as online consumer fraud, manipulative profiling (especially of vulnerable consumers), geo-blocking and from unsafe products. At the macroeconomic level, the eLab will contribute to the level-playing field in the single market and safe consumer product innovation. It will also encourage national authorities to use advanced technologies, therefore increasing uptake of digital and AI tools in the public services.

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| Type of action | Procurement – open call  |
| Indicative Budget | [2 MEUR] |
| Indicative year of procurement | 2021-2022 |
| Indicative duration of the action | 24 months |

### Health

The COVID-19 pandemic has prompted a renewed urgency in unlocking the potential of digital tools for, and the need to accelerate the digital transformation of, health and care. We have witnessed an acceleration in the development of new medical technologies based on cutting-edge discoveries. At the same time, the pandemic has shown the need to coordinate the development and uptake of digital health across countries and regions, and across borders.

#### Digital Transformation of Health and Care

Objective

This action will support a coordinated approach among all stakeholders for the uptake and integration of digital solutions along the continuum of health and care, including innovators. It will take forward and consolidate achievements in terms of interoperability, digital twins, common dataspaces, telemedicine and remote monitoring by engaging with the ecosystem, and creating buy-in from key stakeholders. It will also build on existing initiatives to support swift actions for digital preparedness for pandemics. Synergies with the work in Member States and associated countries – and in the eHealth Network in particular - will ensure links with national and regional strategies on digital health.

Scope

The Coordination and Support action will:

* Support aligning, strengthening and coordinating the policies, strategies, instruments and activities regarding primary and secondary use of health data, including those related to the Electronic Health Records across stakeholders in Member States and associated countries and relevant exchange formats.
* Analyse the uptake of digital health solutions in Member States and regions, including Health and telemedicine and related standards and interoperability, and wider aspects such as their economic value to both patients and health and care systems, their impact on healthcare efficiency and continuity of care, financing and reimbursement models, and patient empowerment.
* Promote the transfer of innovative practices between regions and Member States, and facilitate benchmarking and knowledge sharing between stakeholders.

Outcomes and deliverables

The consolidation of an European framework and ecosystem of digital health solutions, covering technological and organisation innovation and addressing the needs of the stakeholders, and in particular those of SMEs and start-ups.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [ 1 MEUR] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 24 months |

#### An ecosystem for digital twins in healthcare

Objective

The development of digital twins in healthcare (DTH) has progressed substantially, profiting from advances in science and technology. In order to exploit the benefits of DTH in view of better prevention approaches, faster and more accurate diagnoses, personalised treatments and care, a framework to structure cooperation and leverage on synergies between academia, private sector, regulators and end-users needs to be strengthened.

The objective is to support the roll-out of DTH by structuring the ecosystem within the EU Member States and associated countries, and identifying the most efficient actions in fostering it, ensuring that the clinical perspective is adequately represented. With such coordinated approach at European level, it will reduce fragmentation that leads to inefficiencies in exploiting the benefits of the digital twins in healthcare.

Scope

The Coordination and Support action will help framing key elements of the ecosystem such as mapping and linking the actors and initiatives on DTH and developing a blueprint ecosystem bringing in all relevant stakeholders. It will also coordinate the deployment of a federated repository of digital twins in healthcare and help with the uptake of DTH in particular by SMEs and healthcare providers. It will further employ a framework for the deployment of trusted digital companions.

Outcomes and deliverables

The overall outcome will be a consolidated EU ecosystem around digital twins for healthcare in the EU that brings together, streamlines and bundles their use across stakeholders in a coordinated manner, thereby empowering patients and enabling health professionals, pharmaceutical and medical devices industries, SMEs, software developers, academia and regulatory agencies to make use of DTH.

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| Type of action | Coordination and Support Action  |
| Indicative Budget | [ 3 MEUR ] |
| Indicative time of call opening  | First call |
| Indicative duration of the action | 18 months |

### Security and law enforcement

Constantly growing digitalisation in all sectors and the rapidly changing technological landscape provide vast opportunities for criminals and terrorists. Law Enforcement Agencies (LEAs) often lack the necessary technical and financial means as well as digital skills when preventing, detecting, investigating or prosecuting criminal and terrorist activities supported by advanced technologies. In that context, supporting MS law enforcement (LE) cyber capacity building is paramount, in particular in the field of AI applications that are key to address the data overload. Projects under this action should pay specific attention to fundamental rights challenges notably by proposing adequate bias mitigation[[46]](#footnote-47) and non-discrimination mechanisms[[47]](#footnote-48) as well as by providing enhanced data quality. They should also demonstrate a strict compliance with EU the legal framework on data processing for police purposes as set out in Directive 2016/680 of the European Parliament and the Council of 27 April 2016 and the GDPR.

The activities supporting this policy are organised around two complementary actions : the Data Space for Security (see 1.1.1.1) and the pilots, here below.

#### Pilot(s) using AI for law enforcement

Objective

The overall objective is to enable the final validation and foster the uptake of AI systems for law enforcement by running large scale pilots in Law Enforcement Authorities (LEAs) premises. This is necessary, as AI systems for LE need, in most cases, a final validation on real operational datasets[[48]](#footnote-49) that can only be accessed in stand-alone secured environments.

This action will contribute to close the gap between prototypes that have been developed with the support of EU funded research and innovation programmes (i.e. up to TRL 7) and systems proven in operational environment that bring clear added value to police practitioners (i.e. TRL 8/9).

 Due to the sensitivity of data handled in investigations, this can only be done by LE, in their own premises and on real use cases. This is particularly true in the context of AI where machine-learning algorithms have to be trained and assessed on fully representative datasets that in most cases cannot be provided outside of MS LEAs.

From a data perspective, this action complements the creation of a security data space. The security data space will gather pseudo operational data (or anonymized datasets) that will be used to train and test AI systems, while this action will make full use of real operational data in stand-alone environments to assess, validate and better train AI systems.

The involvement of Europol Innovation Lab in a steering role e.g. to identify the most promising prototypes and to contribute to the assessment of the applications, and the participation of end-user driven networks such as the European Anti Cybercrime Technology Development Association (EACTDA) will ensure the European added value. The coordination of large scale pilots across member states will be done via the establishment of Core Groups in the framework of the Europol Innovation Lab in order to contribute to the emergence of European technological solutions in key areas.

Scope

To achieve the above mentioned objective, it is necessary to foster the testing, validation and optimisation of innovative digital forensic and investigation tools over sufficient periods of time (min 6 months) in real operational environment. It is also necessary to coordinate the pilots and to ensure that the validated solutions can benefit to EU law enforcement at large and duly address fundamental rights challenges notably by enhancing data quality, mitigating bias, detecting errors and avoiding any form of discrimination in the decision making process.

This would be done by:

* setting up a validation methodology for innovative investigative tools that should be designed and validated by the Europol Innovation Lab with the involvement of its dedicated core groups of EU Member States.[[49]](#footnote-50)
* running large scale pilots in law enforcement premises for training, validating and adapting a limited number of best in class (selected among a set of tools proposed by Europol Innovation Lab that comply to EU standards in terms of regulation and protections of fundamental rights) innovative AI tools in real environment,
* creating when necessary of set of annotated data during the pilot projects that could be shared among law enforcement and potentially Europol (and eventually feed the data lake for security)**,**
* ensuring that the solutions validated through pilots can benefit to a number of EU LEAs with the support of Europol Innovation Lab, Networks of law enforcement practitioners and the enforcement of appropriate IPR.

 Outcomes and deliverables:

The project will have direct impact on the capability of law enforcement to test and deploy AI based solutions and other emerging technologies thus to handle efficiently and in accordance with EU core values the abundance of digital evidence. In addition, it will contribute to foster the adoption and give visibility to best in class EU designed solutions for LE.

|  |  |
| --- | --- |
| Type of action | SME support grant (75% co-funding rate for SMEs and 50% for all the other beneficiaries) |
| Indicative Budget | [ 3-5 MEUR ] |
| Indicative time of call opening | Second call |
| Indicative duration of the action | 12 months |
| Indicative budget per Grant (EU contribution) | 1.2 MEUR per project |

## Enhancing confidence in Digital Transformation

Digitisation is transforming the economy and society at an unprecedented pace, changing the way citizens engage in society, politics, and government. Online digital platforms reshape the way we socialise, access and share information. While offering unprecedented opportunities, the internet also gives rise to risks such as disinformation, cyberbullying, violence, incitement to hatred, or the spread of child sexual abuse material. Topics in this chapter are focused on two work strands:

* protecting and empowering children to become resilient digital citizens and well equipped for the digital economy;
* detecting and combatting intentional online disinformation spread through the use of new technologies and supporting and connecting stakeholders tackling this issue in the Member States in order to develop adequate responses.

### Safer Internet

#### Better Internet for Kids (BIK) - EU coordination

Objective

The topic aims to empower and protect minors online so they learn at an early age the skills and values needed to thrive in a digital society and economy and to become resilient digital citizens. This is articulated through two main work strands:

* To coordinate at EU level the national child online safety activities of the Safer Internet Centres (‘SICs’ - consisting of awareness centres, helplines and Hotlines) through a central hub - the BIK platform www.betterinternetforkids.eu - providing access to online tools, resources and services for professionals dealing with child online safety and the general public. This will foster cross-border cooperation, enhance the outreach of national activities, create cross-fertilization by sharing knowledge and resources, and facilitate keeping pace with new risks arising from emerging technologies.
* To tackle the dissemination of online child sexual abuse material (CSAM) through a network of web-based reporting points for CSAM (Hotlines), thus contributing to the swift removal of such illegal material.

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 back-office facilities for Helplines and Hotlines. In particular, the funding will cover:

* 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 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 industry, researchers and NGOs;
* back-office reporting facilities for Hotlines, in direct contact with law enforcement agencies’ activities, and potentially industry. This must include secure environments for gathering and sharing data of child sexual abuse imagery and videos to support the Hotlines' capability and capacity to analyse, identify and remove illegal online content.

Outcomes and deliverables

Raise awareness on, promote and build synergies between the different initiatives tackling online safety for children in the Member States. The tools, resources and services provided are expected to:

* create a safer digital environment for children;
* provide effective support for identifying, tracking and removing CSAM.

|  |  |
| --- | --- |
| Type of action | Procurement – open call  |
| Indicative Budget | [ 4 MEUR] |
| Indicative year of procurement | 2022 |
| Indicative duration of the action | 18-24 months |

#### Safer Internet Centres

Objective

The objective of the topic is to support national SICs (NGOs, government bodies/agencies, private sector organisations) in providing online safety information, educational resources, public awareness tools and counselling services (helplines) for young people, teachers and parents. The activities performed by the SICs will help minors tackle online risks and to become media literate, resilient digital citizens.

Scope

Ensure the financial sustainability of the European SICs. In particular, the funding will enable each national SIC to provide at least:

* an awareness centre for raising awareness among children, parents and teachers about online opportunities and risks. Particular focus has to be placed on identifying and addressing emerging risks (e.g. self-generated sexualised content) and challenges such as mental and physical health issues related to the use of technologies (self-harm, addiction, perception of self-identity and self-image);
* Helpline services to give advice and support to parents and children on issues related to children's use of digital technologies and services;
* A Hotline for tackling CSAM, including receiving, analysing and processing reports of such material. Closer cooperation with law enforcement and industry should be further explored.

Outcomes and deliverables

To better protect and empower children and young people so that they take full advantage of the opportunities and they thrive in the digital age through digital literacy and responsible use of technology. Parents, carers, teachers and professionals working with children will benefit by gaining a better understanding of how children access and use digital content and services, and how to mitigate the related risks and maximize opportunities. Public authorities including law enforcement agencies will have access to resources and services to develop better preventive measures and to remove illegal child sexual abuse imagery in an effective manner. Industry will benefit from increased market opportunities for content, from having clear EU-wide information about risks and strategies for dealing with these through awareness campaigns such as Safer Internet Day, and from cross-border provision of associated services (helplines, hotlines). Synergies will be created by bringing together relevant stakeholders at European, national and international level, for example at the annual Safer Internet Forum.

|  |  |
| --- | --- |
| Type of action | Simple grant (50% co-funding rate) |
| Indicative Budget | [ 15 - 25 MEUR ] |
| Indicative time of call opening | First call |
| Indicative duration of the action | 24 months |
| Indicative budget per Grant (EU contribution) | [0,7 MEUR] |

### European Digital Media Observatory (EDMO)

The European Digital Media Observatory (EDMO) supports the creation and the activities of the European multidisciplinary community composed of fact-checkers, academic researchers and other relevant stakeholder to address the disinformation phenomena in the EU.

It provides the necessary evidence and specific knowledge to public authorities in charge of monitoring and assessing platforms’ policies under the Code of Practice on disinformation[[50]](#footnote-51) while supporting media literacy practitioners to sharpen their initiatives aimed at enhancing critical thinking of digital media users.

EDMO has started its operation with the support of the CEF programme. Digital Europe will provide financial support to continues EDMO operations and extend the coverage of its centres.

#### EDMO - central infrastructure and governance

Objective

This topic will finance the maintenance and further development of the technical platform supporting the operations of the European Digital Media Observatory (EDMO) as well as the functioning of the EDMO governance.

Scope

The funding will support:

* The deployment and operation of a set of tools and services made available through the platform. The tools will respond to the needs of the EDMO community composed of fact-checkers, academic researchers and other relevant stakeholder and will make use of the latest technological developments.
* The coordination of fact-checking and media literacy activities at European level. EDMO will identify disinformation campaigns with the potential to spread cross-border, and will facilitate the coordination of pan-European fact-checking activities across the research hubs. EDMO will continue expanding fact-checking and media literacy repositories and will organise events with relevant stakeholders.
* The coordination of academic research activities at EU level. EDMO will identify relevant research themes and support the coordination of research activities around such themes and across the research hubs. EDMO will also continue, with the support of the research community, to define scope and conditions for access to online platforms data for research purposes.
* public authorities and policy advice in coordination with the research hubs, for the monitoring of the implementation and impact of the Code of Practice on online disinformation. It will also cover recommendations to policy makers at national and European Level on potential improvements to a broad regulatory framework including self and co-regulation.
* Reporting activities to the European Commission about the main trends and other key research finding relating to online media trends and the disinformation phenomenon.

Outcomes and deliverables

At the end of the actions EDMO will be equipped with one platform providing state-of-the art tools for fact-checking and academic research activities to study the phenomenon of disinformation. EDMO will be coordinating several fact-checking and research activities in Europe and across the national/multinational research hubs. EDMO will have a key role in supporting the monitoring of the implementation of platforms policies to tackle disinformation.

|  |  |
| --- | --- |
| Type of action | Procurement – open call  |
| Indicative Budget | [2-4 MEUR] |
| Indicative year of procurement | 2022 |
| Indicative duration of the action | 30 months |

#### EDMO - centres of digital media

Objective

Following-up from the first round of centres created under CEF, this topic aims to create new national or multinational centres for analysis of digital media ecosystems in order to expand the geographical coverage of EDMO. A national/multinational centre is a network of organisationsactive 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 centres should be independent from any public authority.

These national/multinational centres will focus their activities around emerging digital media vulnerabilities and disinformation campaigns, which are of special relevance within the territory and/or linguistic area in which they will operate. Multinational centres will cover more than one Member State with similar media ecosystems within an EU region.

Scope

Support will be provided to:

* Increase the number of independent national or multinational centres on digital media. Each centre must pull together a national/multinational multidisciplinary community composed of academic researchers, fact-checkers, media practitioners and other relevant stakeholders in order to create a network capable of quickly detecting and analysing disinformation campaigns, as well as producing content to support mainstream and local media and public authorities in exposing harmful disinformation campaigns. They will work in cooperation with EDMO and contribute to its repositories of fact-checks, media literacy materials and scientific articles, including surveys on disinformation trends, situational analyses, assessments of online platforms’ policies to address disinformation-related harms.
* Detection, analysis and disclosure of harmful disinformation campaigns at regional, national, multinational and EU level, and analysis of their impact on society and democracy. They will analyse relevant actors, vectors, tools, methods, dissemination dynamics, prioritised targets of disinformation campaigns by applying a common methodology, established in coordination with EDMO, to monitor the evolution of disinformation-related harms on relevant audiences. Each centre will indicate the type of collaborations intended with independent media outlets operating within its territory or linguistic area. The centres will also monitor the financial viability of the news media sector within the territory or linguistic area covered , including the effectiveness of public support measures taken by Member States to address potential market failures affecting the plurality and diversity of the news media sector at national level. Funding will also support a regular assessment of the impact of relevant disinformation campaigns on society and democratic processes, as well as the effectiveness of the policies set out by online platforms to counter various disinformation phenomena. In addition, the centres will actively participate to the EDMO joint research activities selected by the EDMO Governance Body and promptly react to EDMO requests linked to emerging disinformation issues.
* Media literacy. The centres will identify the needs and support tailor-made media literacy campaigns for the covered territory or linguistic area. They will also leverage on the exchange of good practices and materials stored on the EDMO platform and contribute to the EDMO repositories with newly created educational and training materials.
* Cooperation with national authorities for the monitoring of online platforms’ policies and digital media ecosystem the territory or linguistic area covered by the proposal. In particular, they will support the competent national authorities, including the audio-visual regulator(s) overseeing, and monitor the implementation of the Code of Practice on Disinformation by its signatories. They will respond to the above-mentioned national authorities’ requests to carry out on-demand surveys on emerging online disinformation campaigns.

Outcomes and deliverables

At the end of the actions, existing and new established research hubs will cover most of the EU. Networks of expert and organisations linked to the hubs will be part of an European multidisciplinary community which will actively detect, analyse and expose disinformation campaigns in Europe. Each hub will have produced at least 10 investigation and reports on disinformation campaigns and shared them through EDMO. Hubs will have established at least 5 tailored made media literacy programs in Member States and supported national authorities in producing reports (at least 1 per year) regarding the implementation and effectiveness of online platforms policies to tackle disinformation.

|  |  |
| --- | --- |
| Type of action | SME support grant (75% co-funding rate for SMEs and 50% for all the other beneficiaries) |
| Indicative Budget | [ 10 -20 MEUR ] |
| Indicative time of call opening  | Second call |
| Indicative duration of the action | 24-30 months |
| Indicative budget per Grant (EU contribution) | [1,5 MEUR] |

# Programme Support Actions

Programme support actions aimed at maximising the impact of the EU intervention. 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.

|  |  |
| --- | --- |
| *Category of expenditure* | *Total indicative budget* |
| Studies | [12 -16 MEUR] |
| Communication and events |
| Proposals evaluation and project reviews |
| Other support measures |

# Implementation

## Main implementation measures and EU financial contribution

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 as follow.

Proposers are strongly encouraged to follow green public procurement principles and take account of life cycle costs[[51]](#footnote-52).

## 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.

## Grants – Calls for proposals

### 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 one Executive Agency with the assistance of independent experts. The award and selection criteria will be applied to each submitted proposal. The three sets of criteria are described in detail in Annex 2 of this Work Programme.

Only proposals meeting the requirements of the eligibility criteria in the call text will be evaluated further.

Each of the eligible proposals will be evaluated against the award criteria, while each individual applicant must demonstrate their financial and operational capacity to carry out the proposed action or work programme.

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. In case it is specified in the call text that *only one proposal per Member State will be selected*, only the proposal with the higher ranking will be selected in case more proposals from a same Member State have passed the threshold. The Selection Decision will include proposals to be invited to prepare the Grant Agreement.

The coordinators of all submitted proposals will be informed in writing about the outcome of the evaluation for their proposal(s).

### 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 apply using the mechanisms and tools provided for in the H2020 Framework Programme[[52]](#footnote-53) and a list of experts appropriate to the requirements of the Digital Europe programme and each of its area will be established. 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.

### Indicative implementation calendar

The indicative calendar for the implementation of the Digital Europe calls for proposals in 2021 and 2022 is shown in the table below.

More information about these calls will be available on: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home.

| **Date** | **Milestone** |
| --- | --- |
| Q1 2021 | WP published, 1st call opens |
| Q2 2021 | 1st call closes |
| Q2 – Q3 2021 | Evaluation 1st call |
| Q2 2021 | 2nd call opens |
| Q4 2021 | Information to applicants on 1st call results, and Grant Agreements for 1st call signed; 2nd call closes. |
| Q4 2021 – Q1 2022 | Evaluation 2nd call |
| Q4 2021 | 3rd call opens |
| Q1 2022 | Information to applicants from 2nd call |
| Q2 2022 | 3rd call closes, 4th call opens |
| Q2 2022 | 2nd call Grant Agreements signed  |
| Q2 2022 | 3rd call evaluation |
| Q4 2022 | Information to applicants on 3rd call results, 4th Call closes |
| Q4 2022 – Q1 2023 | Evaluation 4th call  |
| Q4 2022 | Grant Agreements signed for 3rd call |
| Q1 2023 | Information to applicants for 4th call |
| Q2 2023 | Grant Agreements signed for 4th call |

1. https://ec.europa.eu/digital-single-market/en/innovation-radar [↑](#footnote-ref-2)
2. Except actions under Destination Earth [↑](#footnote-ref-3)
3. Joint Undertaking established by Council Regulation (EU) 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking [↑](#footnote-ref-4)
4. Communication from the Commission, A European strategy for data; COM/2020/66 final [↑](#footnote-ref-5)
5. The [European Marine Observation and Data Network (EMODnet)](https://www.emodnet.eu/) consists of more than 150 organisations assembling marine data, products and metadata to make these fragmented resources more available to public and private users relying on quality-assured, standardised and harmonised marine data which are interoperable and free of restrictions on use. EMODnet is currently in its third development phase with the target to be fully deployed by 2020 [↑](#footnote-ref-6)
6. EGDI – The European Geological Data Infrastructure: gives access to datasets and services from a number of pan-European data harmonisation and infrastructure projects, either entirely funded by EGS members or co-funded by the EU, including OneGeology-Europe (geological mapping), EuroGeoSource (energy and minerals), ProMine (minerals), PanGeo (Earth Observation and geohazards), TerraFirma (Earth Observation and geohazards), GeoMind (geophysics), GEMAS (soils and geochemistry) and EMODNet (seabed mapping). [↑](#footnote-ref-7)
7. https://ec.europa.eu/transport/themes/urban/urban\_mobility/sumi\_en [↑](#footnote-ref-8)
8. COM(2020) 66 final [↑](#footnote-ref-9)
9. <https://eur-lex.europa.eu/eli/dir/2019/1024/oj> [↑](#footnote-ref-10)
10. Open Data Portal, providing access to European Open Data: https://www.europeandataportal.eu [↑](#footnote-ref-11)
11. COM(2020) 65 final [↑](#footnote-ref-12)
12. under implementation [↑](#footnote-ref-13)
13. The role of artificial intelligence in achieving the Sustainable Development Goals: https://www.nature.com/articles/s41467-019-14108-y [↑](#footnote-ref-14)
14. The Edge AI chipsets market is expected to grow with a CAGR of 45.2% from 6.6B$ in 2018 to 91.2B$ in 2025 according to Ee-news, with a CAGR of 37,5% from 7.7B$ in 2019 to 51.9B$ in 2025 according to Omnia. [↑](#footnote-ref-15)
15. https://www.cedefop.europa.eu/files/3075\_en.pdf [↑](#footnote-ref-16)
16. EC, Joint Research Centre 2019, Academic offer and demand for advanced profiles. [↑](#footnote-ref-17)
17. Communication COM(2012) 196 of 2.5.2012 from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on ‘European Strategy for a Better Internet for Children’ (BIK strategy) [↑](#footnote-ref-18)
18. COM(2019) 640 final [↑](#footnote-ref-19)
19. [↑](#footnote-ref-20)
20. The 2025 Gigabit objectives aim to provide 1Gbps for all schools, transport hubs and main providers of public services and digitally intensive enterprises; Access to download speeds of at least 100 Mbps to be upgraded to 1 Gbps for all European households; and Uninterrupted 5G wireless broadband coverage for all urban areas and major roads and railways. [↑](#footnote-ref-21)
21. <https://ec.europa.eu/info/horizon-europe/missions-horizon-europe_en> [↑](#footnote-ref-22)
22. ‘Communities’ captures both rural and urban communities [↑](#footnote-ref-23)
23. For inspiration and background information see the Workshop Report of the Expert Consultation held on 25/06/2020 here: <https://ec.europa.eu/digital-single-market/en/news/expert-workshop-common-european-smart-communities-data-space> as well as the Workshop on ‘Data-driven cities : fostering common data spaces for urban sustainability’ held on 08/12/2020 [↑](#footnote-ref-24)
24. In addition to the relevant High Value Datasets [↑](#footnote-ref-25)
25. Following for example the Minimal Interoperability Mechanisms (MIMs) Plus, work of SEMIC , the reference community for semantic interoperability, the INSPIRE and location interoperability data models, SAREF as well as the forthcoming interoperability framework for smart cities and communities [↑](#footnote-ref-26)
26. Technologies such as eID (digital identity), eDelivery (secure data exchange), the Context Broker and the Big Data Test Infrastructure and others, already widely used by EU-wide cross-border systems, should be considered to facilitate interoperability among the actors [↑](#footnote-ref-27)
27. ‘Communities’ captures both rural and urban communities [↑](#footnote-ref-28)
28. Also ensuring urban-rural linkages, when relevant [↑](#footnote-ref-29)
29. ‘Communities’ captures both rural and urban communities [↑](#footnote-ref-30)
30. Following the Minimal Interoperability Mechanisms (MIMs) [↑](#footnote-ref-31)
31. COM(2020) 98 final [↑](#footnote-ref-32)
32. https://www.innoradar.eu/ [↑](#footnote-ref-33)
33. 2019-2023 Strategy on e-Justice (2019/C 96/04) and 2019-2023 Action Plan European e-Justice (2019/C 96/05), 13 March 2019. [↑](#footnote-ref-34)
34. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0041> [↑](#footnote-ref-35)
35. 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 mergers, 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 and to allow further exchanges of information between registers, e.g. on disqualified directors and cross-border events. [↑](#footnote-ref-36)
36. 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. [↑](#footnote-ref-37)
37. Regulation (EU) No 524/2013 of the European Parliament and of the Council of 21 May 2013 on online dispute resolution for consumer disputes and amending Regulation (EC) No 2006/2004 and Directive 2009/22/EC (Regulation on consumer ODR). [↑](#footnote-ref-38)
38. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0041> [↑](#footnote-ref-39)
39. The purpose of this exchange is to combat multiple voting and to ensure that citizens retain the right to stand in elections when they register with their state of residence. This process is described most recently in the Commission’s report on the 2019 European elections. [↑](#footnote-ref-40)
40. <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2018:0379:FIN> [↑](#footnote-ref-41)
41. <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2018:0378:FIN> [↑](#footnote-ref-42)
42. <https://ec.europa.eu/info/publications/2021-commission-work-programme-key-documents_en> [↑](#footnote-ref-43)
43. Regulation (EU) 2017/2394 of the European Parliament and of the Council of 12 December 2017 on cooperation between national authorities responsible for the enforcement of consumer protection laws and repealing Regulation (EC) No 2006/2004 [↑](#footnote-ref-44)
44. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1594820816757&uri=CELEX:52020DC0094 [↑](#footnote-ref-45)
45. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1594820907577&uri=CELEX:52020JC0008 [↑](#footnote-ref-46)
46. https://fra.europa.eu/sites/default/files/fra\_uploads/fra-2019-data-quality-and-ai\_en.pdf [↑](#footnote-ref-47)
47. https://fra.europa.eu/sites/default/files/fra\_uploads/fra-2018-focus-big-data\_en.pdf [↑](#footnote-ref-48)
48. In compliance with Directive 2016/680 of the European Parliament and the Council of 27 April 2016 [↑](#footnote-ref-49)
49. One of the objectives of the Europol Innovation Lab is to help EU MS to work together in developing innovative solutions and to avoid duplication. To do so, the Innovation Lab creates **Core Groups**, composed of volunteering MS, which work together on specific tools and key technologies within the framework of the Europol Innovation Lab. Core Groups combines two principles: 1) projects launched within the Europol Innovation Lab are Member State-driven to ensure the successful implementation of new tools in the national police context, based on genuine operational needs. 2) At the same time, it is necessary to ensure continuity, synergies and to avoid duplication of efforts, so the Core Groups are established within the Europol Innovation Lab and benefit from a set of standard products and services. The Core Groups are led by one or several EU MS, which already have a strong background in the technology on which the core group focuses. Each group is led by a dedicated expert from the leading Member State. With the support of the Europol Innovation Lab team, the leader will steer the activities of the core group. Europol is part of all thematic core groups to ensure the overall coordination. Schengen Associated States (SAS) can join core groups but cannot lead them. [↑](#footnote-ref-50)
50. <https://ec.europa.eu/digital-single-market/en/news/code-practice-disinformation> [↑](#footnote-ref-51)
51. <http://ec.europa.eu/environment/gpp/index_en.htm> [↑](#footnote-ref-52)
52. http://ec.europa.eu/research/participants/portal/desktop/en/experts/index.html [↑](#footnote-ref-53)