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PROPOSAL

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	7 June 2018
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
No. Cion doc.:	COM(2018) 434 final ANNEXES 1 to 3
Subject:	ANNEXES to the PROPOSAL FOR A REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the Digital Europe programme for the period 2021-2027

Delegations will find attached document COM(2018) 434 final ANNEXES 1 to 3.

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Encl.: COM(2018) 434 final ANNEXES 1 to 3

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Brussels, 6.6.2018
COM(2018) 434 final

ANNEXES 1 to 3

ANNEXES

to the

PROPOSAL FOR A REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

establishing the Digital Europe programme for the period 2021-2027

{SEC(2018) 289 final} - {SWD(2018) 305 final} - {SWD(2018) 306 final}

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ACTIVITIES

Technical description of the programme: initial scope of activities

The initial activities of the Programme shall be implemented in accordance with the following technical description:

Specific Objective 1. High Performance Computing

The Programme shall implement the European strategy on HPC by supporting a full EU ecosystem that provides the necessary HPC and data capabilities for Europe to compete globally. The strategy aims to deploy a world-class HPC and data infrastructure with exascale capabilities by 2022/2023, and post exascale facilities by 2026/27, endowing the Union with its own independent and competitive HPC technology supply, achieving excellence in HPC applications and widening HPC availability and use.

Initial activities shall include:

1. A joint procurement framework for an integrated network of world-class HPC including exascale supercomputing and data infrastructure. It will be accessible on a non-economic basis to public and private users and for publicly funded research purposes.

2. A joint procurement framework of a post-exascale supercomputing infrastructure, including the integration with quantum computing technologies.

3. EU-level coordination and adequate financial resources to support the development, procurement and operation of such infrastructure.

4. Networking of Member State HPC and data capacities and support for Member States wishing to upgrade or acquire new HPC capacities.

5. Networking of HPC Competence Centers, one per Member State and associated with their national supercomputing centers to provide HPC services to industry (in particular SMEs), academia and public administrations.

6. The deployment of ready to use/operational technology: supercomputing as a service resulting from R&I to build an integrated European HPC ecosystem, covering all scientific and industrial value chain segments (hardware, software, applications, services, interconnections and advanced digital skills).

Specific Objective 2. Artificial Intelligence

The Programme shall build up and strengthen core Artificial Intelligence capacities in Europe including data resources and repositories of algorithms and making them accessible by all businesses and public administrations as well as reinforcement and networking of existing AI testing and experimentation facilities in Member States.

Initial activities shall include:

1. Creation of Common European Data spaces that aggregate public information across Europe and become a data input source for AI solutions. The spaces would also be open to public and private sector. For increased usage, data within a space should be

made interoperable as much as possible, both in the interactions between public and private sectors, within sectors and across sectors (semantic interoperability).

2. Development of common European libraries of algorithms that would be accessible to all. Companies and public sector would be able to identify and acquire whichever solution would work best for their needs.

3. Co-investment with Member States in world class reference sites for experimentation and testing in real setting focusing on the applications of AI in essential sectors such as health, earth/environment monitoring, mobility, security, manufacturing or finance, as well as in other areas of public interest. The sites should be open to all actors across Europe and connected to the Network of Digital Innovation Hubs. They should be equipped with large computing and data handling facilities as well as latest AI technologies including emerging areas such as neuromorphic computing, deep learning and robotics.

Specific Objective 3. Cybersecurity and trust

The Programme shall stimulate the building of essential capacities to secure the EU's digital economy, society and democracy by reinforcing the EU's cybersecurity industrial potential and competitiveness, as well as improving capabilities of both private and public sectors to protect European citizens and businesses from cyber threats, including supporting the implementation of the Network and Information Security Directive.

Initial activities, under this objective, shall include:

1. Co-investment with Member States in advanced cybersecurity equipment, infrastructures and know-how that are essential to protect critical infrastructures and the DSM at large. This could include investments in quantum facilities and data resources for cybersecurity, situational awareness in cyberspace as well as other tools to be made available to public and private sector across Europe.

2. Scaling up existing technological capacities and networking the competence centres in Member States and making sure that these capacities respond to public sector needs and industry, including in products and services that reinforce cybersecurity and trust within the DSM.

3. Ensuring wide deployment of the latest cybersecurity and trust solutions across the Member States. This includes ensuring security and safety by design for products.

4. Support to close the cybersecurity skills gap by e.g. aligning cybersecurity skills programmes, adapting them to specific sectorial needs and facilitating access to targeted specialised training courses.

Specific Objective 4. Advanced Digital skills

The Programme shall support easy access to advanced digital skills, notably in HPC, AI, distributed ledgers (e.g. blockchain) and cybersecurity for the current and future labour force by offering students, recent graduates, and existing workers, wherever they are situated, with the means to acquire and develop these skills.

Initial activities shall include:

1. Access to on the job training by taking part in traineeships in competence centres and companies deploying advanced technologies.

2.	Access to courses in advanced digital technologies which will be offered by universities in cooperation with the bodies involved in the Programme (topics will include AI, cybersecurity, distributed ledgers (e.g. blockchain), HPC and quantum technologies).

3.	Participation in short-term, specialised professional training courses that have been pre-certified, for example in the area of cybersecurity.

Interventions shall focus on high-end digital skills related to specific technologies.

All interventions will be designed and implemented primarily through the Digital Innovation Hubs, as defined in Article 15.

Specific Objective 5. Deployment, best use of digital capacities and Interoperability

**I.	Initial activities related to the digital transformation of areas of public interest shall include:**

Projects serving the deployment, the best use of digital capacities or interoperability shall constitute projects of common interest.

*1.	Modernisation of administrations:*

1.1.	Support Member States in the implementation of the Principles of the Tallinn Declaration on e-Government in all policy domains, creating where necessary, the registries needed and interconnecting them in full respect of the General Data Protection Regulation.

1.2.	Support the design, piloting, deployment, maintenance and promotion of a coherent eco-system of cross-border digital services infrastructure and facilitate seamless end-to-end, secure, interoperable, multi-lingual, interoperable cross-border or cross-sector solutions and common frameworks within public administration. Methodologies for assessing the impact and benefits shall also be included.

1.3.	Support the assessment, updating and promotion of existing common specifications and standards as well as the development, establishment and promotion of new common specifications, open specifications and standards through the Union's standardisation platforms and in cooperation with European or international standardisation organisations as appropriate.

1.4.	Cooperate towards a European ecosystem for trusted infrastructures using distributed ledgers (e.g. blockchain) services and applications, including support for interoperability and standardisation and fostering the deployment of EU cross-border applications.

*2.	Health[1]*

2.1.	Ensure that EU citizens can access, share, use, and manage their personal health data securely across borders irrespective of their location or the location of the data. Complete the eHealth Digital Service Infrastructure and extend it by new digital services, support deployment of the European exchange format for electronic health records.

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[1]	COM(2018) 233 final, on enabling the digital transformation of health and care in the Digital Single Market; empowering citizens and building a healthier society

2.2.   Make available better data for research, disease prevention and personalised health and care. Ensure that European health researchers and clinical practitioners have access to necessary scale of resources (shared data spaces, expertise and analytical capacities) to achieve breakthroughs in major as well as in rare diseases. The target is to ensure a population-based cohort of at least 10 million citizens. A milestone is 1 million of sequenced genome by 2022.

2.3.   Make digital tools available for citizen empowerment and for person-centred care by supporting the exchange of innovative and best practices in digital health, capacity building and technical assistance, in particular for cybersecurity, AI and HPC.

3.   *Judiciary:* Enable seamless and secure cross-border electronic communication within the judiciary and between the judiciary and other competent bodies in the area of civil and criminal justice. Improve access to justice and juridical information and procedures to citizens, businesses, legal practitioners and members of the judiciary with semantically interoperable interconnections to national databases and registers as well as facilitating the out-of-court dispute resolution online. Promote the development and implementation of innovative technologies for courts and legal practitioners based on artificial intelligence solutions which are likely to streamline and speed-up procedures (for example "legal tech" applications).

4.   *Transport, energy and environment:* Deploy decentralised solutions and infrastructures required for large-scale digital applications such as smart cities or smart rural areas in support of transport, energy and environmental policies.

5.   *Education and culture*: Provide creators and creative industry in Europe with access to latest digital technologies from AI to advanced computing. Exploit the European cultural heritage as a vector to promote cultural diversity, social cohesion and European citizenship. Support the uptake of digital technologies in education.

All the above activities may be partly supported by Digital Innovation Hubs through the same capacities developed to assist the industry with their digital transformation (see point II).

Additionally a set of Digital Single Market support activities will be supported which will include a pan-European network of Safer Internet Centres to foster digital literacy and raise awareness and among minors, parents and teachers regarding risks minors may encounter online and ways to protect them, and to tackle the dissemination of child sexual abuse material online; measures aimed at combatting intentional disinformation spread; an EU observatory for the digital platform economy as well as studies and outreach activities.

II. Initial activities related to the digitization of industry:

1.   Contribution to the upscaling of the infrastructure and technology facilities (equipment, software and tools) of the network of Digital Innovation Hubs to ensure access to digital capacities to any business, notably SMEs in any region across the EU. This includes notably:

1.1.   Access to Common European Data space and AI platforms and European HPC facilities for data analytics and compute intensive applications

1.2.   Access to AI large scale testing facilities and to advanced cybersecurity tools

1.3.   Access to advanced skills

2.   Activities will be coordinated with, and will complement the innovation actions in digital technologies supported notably under the Horizon Europe Programme as well as investments in Digital Innovation Hubs supported under the European Regional

and Development Funds. Grants for market replication may also be provided from the Digital Europe Programme in line with state aid rules. Support for access to finance further steps in their digital transformation will be achieved with financial instruments making use of the InvestEU scheme.

ANNEX 2
Performance indicators

Specific Objective 1 - High-performance computing

1.1 Number of HPC infrastructures jointly procured

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

Specific Objective 2 - Artificial intelligence

2.1 Total amount co-invested in sites for experimentation and testing

2.2 Number of companies and organisations using AI

Specific Objective 3 - Cybersecurity & Trust

3.1 Number of cybersecurity infrastructure and/or tools jointly procured.

3.2 Number of users and user communities getting access to European cybersecurity facilities

Specific Objective 4 - Advanced digital skills

4.1 Number of ICT specialists trained and working

4.2 Number of enterprises having difficulty recruiting ICT specialists

Specific Objective 5 - Deployment, best use of digital capacity and interoperability

5.1 Take-up of digital public services

5.2 Enterprises with high digital intensity score

5.3 Alignment of the National Interoperability Framework with the European Interoperability Framework

ANNEX 3

Synergies with other Union programmes

3. Synergies with Horizon Europe shall ensure that:

(a) Whereas several thematic areas addressed by Digital Europe and Horizon Europe converge, the type of actions to be supported, their expected outputs and their intervention logic are different and complementary;

(b) Horizon Europe will provide extensive support to research, technological development, demonstration, piloting, proof-of-concept, testing and innovation including pre-commercial deployment of innovative digital technologies, in particular through (i) a dedicated budget in the Global Challenges pillar for "Digital and industry" to develop enabling technologies (Artificial Intelligence and Robotics, Next Generation Internet, High Performance Computing and Big Data, Key Digital Technologies, combining digital with other technologies); (ii) support to e-Infrastructures under the Open Science pillar; (iii) the integration of digital across all the Global Challenges (health, security, energy and mobility, climate, etc.); and (iv) support for scale-up breakthrough innovations under the Open Innovation pillar (many of which will combine digital and physical technologies);

(c) Digital Europe will invest in (i) digital capacity building in High Performance Computing, Artificial Intelligence, Cybersecurity and advanced digital skills; and (ii) national and regional deployment within an EU framework of digital capacities and the latest digital technologies in areas of public interest (such as health, public administration, justice and education) or market failure (such as the digitisation of businesses, notably small and medium enterprises);

(d) Digital Europe capacities and infrastructures are made available to the research and innovation community, including for activities supported through Horizon Europe including testing, experimentation and demonstration across all sectors and disciplines;

(e) As the development of novel digital technologies matures through Horizon Europe, these will progressively be taken up and deployed by Digital Europe;

(f) Horizon Europe initiatives for the development of skills and competencies curricula, including those delivered at the co-location centres of the European Institute of Innovation and Technology's KIC-Digital, are complemented by Digital Europe-supported capacity-building in advanced digital skills;

(g) Strong coordination mechanisms for programming and implementation, are put in place, aligning all procedures for both programmes to the extent possible. Their governance structures will involve all Commission concerned services.

4. Synergies with Union programmes under shared management, including the European Regional Development Fund (ERDF), the European Social Fund Plus (ESF+), the European Agricultural Fund for Rural Development (EAFRD) and European Maritime and Fisheries Fund (EMFF), shall ensure that:

(a)   Arrangements for complementary funding from Union programmes under shared management and the Digital Europe Programme are used to support activities providing a bridge between smart specialisations and support to the digital transformation of the European economy.

(b)   The ERDF contributes to the development and strengthening of regional and local innovation ecosystems and industrial transformation. This includes support to digitization of industry and take-up of results as well as the rolling out of novel technologies and innovative solutions. The Digital Europe programme will complement and support the trans-national networking and mapping of digital capacities to make them accessible to SMEs and to make interoperable IT solutions accessible to all EU regions.

5.   Synergies with the Connecting Europe Facility (CEF) shall ensure that:

(a)   The future DEP focuses on large-scale digital capacity and infrastructure building in High Performance Computing, Artificial Intelligence, Cybersecurity and advanced digital skills aiming at wide uptake and deployment across Europe of critical existing or tested innovative digital solutions within an EU framework in areas of public interest or market failure. DEP is mainly implemented through coordinated and strategic investments with Member States, notably through joint public procurement, in digital capacities to be shared across Europe and in EU-wide actions that support interoperability and standardisation as part of developing a Digital Single Market.

(b)   Digital Europe capacities and infrastructures are made available to the deployment of innovative new technologies and solutions in the field of mobility and transport. The CEF supports the roll-out and deployment of innovative new technologies and solutions in the field of mobility and transport.

(c)   Coordination mechanisms will be established in particular through appropriate governance structures.

6.   Synergies with InvestEU shall ensure that:

(a)   Support through market-based financing, including pursuing policy objectives under this Programme will be provided under the InvestEU Fund Regulation. Such market-based financing might be combined with the grant support.

(b)   Access to financial instruments by companies will be facilitated by the support provided by Digital Innovation Hubs.

7.   Synergies with Erasmus shall ensure that:

(a)   The Programme will support the development and acquisition of the advanced digital skills needed for the deployment of cutting-edge technologies such as artificial intelligence or high-performance computing, in cooperation with relevant industries.

(b)   The advanced skills part of Erasmus will complement the interventions of Digital Europe addressing the acquisition of skills in all domains and at all levels, through mobility experiences.