

# Digital in MFF

## 2021-2027



*Info day*  
*Portugal, 27-28 June 2019*

# DIGITAL IN MFF 2021-2027

**Objective:** *ensure that **Europe** drives the digital transformation of society and economy, bringing benefits to all citizens and businesses*



More specifically to:

- Reinforce the EU's digital capacities  
(computing, data, cybersecurity, AI,..)
- Ensure their widest possible roll out and maximise their benefits
- Prepare for and lead the development of next generation technologies
- Build a world-leading connectivity infrastructure
- Support creators and ensure the widespread distribution of their works

# Complementarities and synergies with other programmes supporting digital

## **Digital Europe: Capacities & roll out**

1. High Performance Computing
2. Artificial Intelligence
3. Cybersecurity
4. Advanced digital skills
5. Digital transformation and interoperability

## **Digital in Horizon Europe R&D&I**

1. Digital under "global challenges"
  - Digital and industry cluster
  - Digital in other clusters – security, health, mobility, energy, environment,...
2. Open Innovation
3. Research Infrastructure under Open Science

## **Connecting Europe Facility - Digital Connectivity**

- 5G roll out
- BB 4EU, Connecting communities
- Synergies with Transport /Energy

## **Creative Europe MEDIA**

## **Invest EU Research, innovation & digitisation**

## **European Regional Development Fund / Cohesion Fund**

# Horizon Europe

is the Commission proposal for a **€ 100 billion** research and innovation funding programme for seven years (2021-2027)



**to strengthen the EU's scientific and technological bases**



**to boost Europe's innovation capacity, competitiveness and jobs**



**to deliver on citizens' priorities and sustain our socio-economic model and values**

Additional **€ 4.1 billion** are proposed to be allocated for defence research, in a separate proposal for a European Defence Fund

# Horizon Europe – Why?



# Horizon Europe: investing in R&I to shape our future

- The vision:  
" a Europe that protects,  
a Europe that empowers,  
a Europe that defends"  
*Jean-Claude Juncker*
- Tackling **climate change**  
(35 % budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's  
**competitiveness and growth**

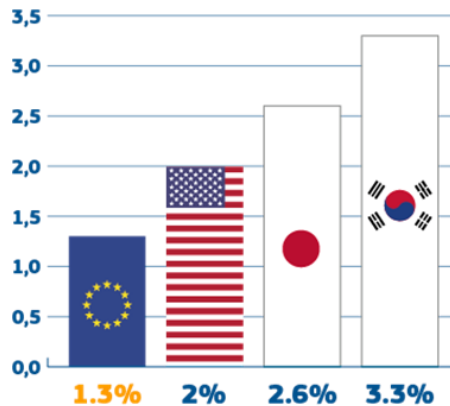


Credits: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

# While benefiting from world-class research and strong industries...

Our knowledge and skills are our main resources.

- **7%** of the world's population
- **20%** of global R&D
- **1/3** of all high-quality scientific publications



**1.3%**  
EU business  
R&D  
investment

**...Europe fails to transform leadership in science into leadership in innovation and entrepreneurship**

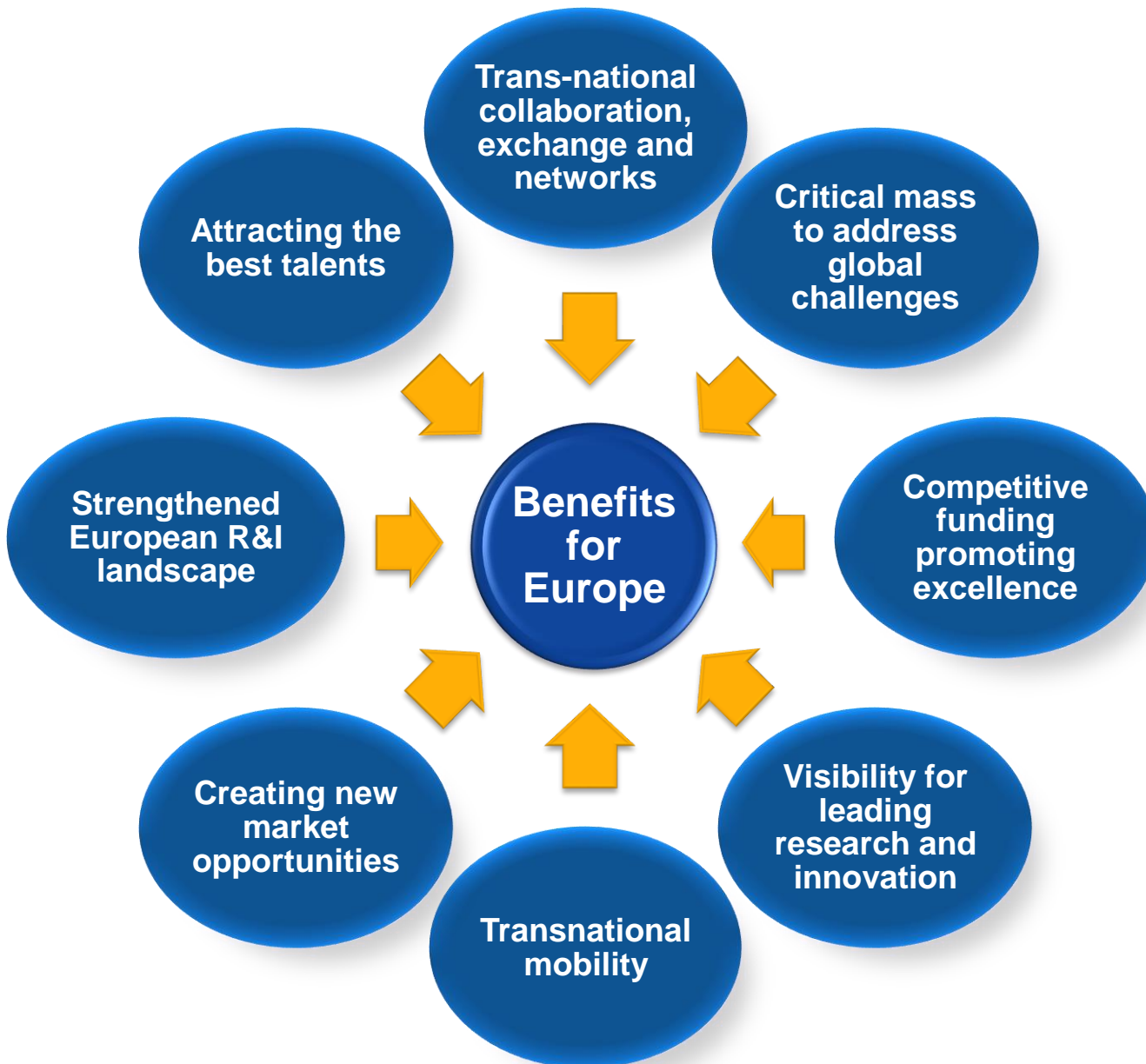
# We need a new level ambition and a renewed R&I agenda to be in pole position

- Ensuring essential investment and stimulating private investment
- Making regulatory frameworks fit for innovation
- Becoming a front runner in market-creating innovation
- Reconnecting R&I with citizens through EU-wide R&I missions
- Supporting the dissemination of innovation throughout the Union
- Investing in skills and empower universities to become more entrepreneurial and interdisciplinary





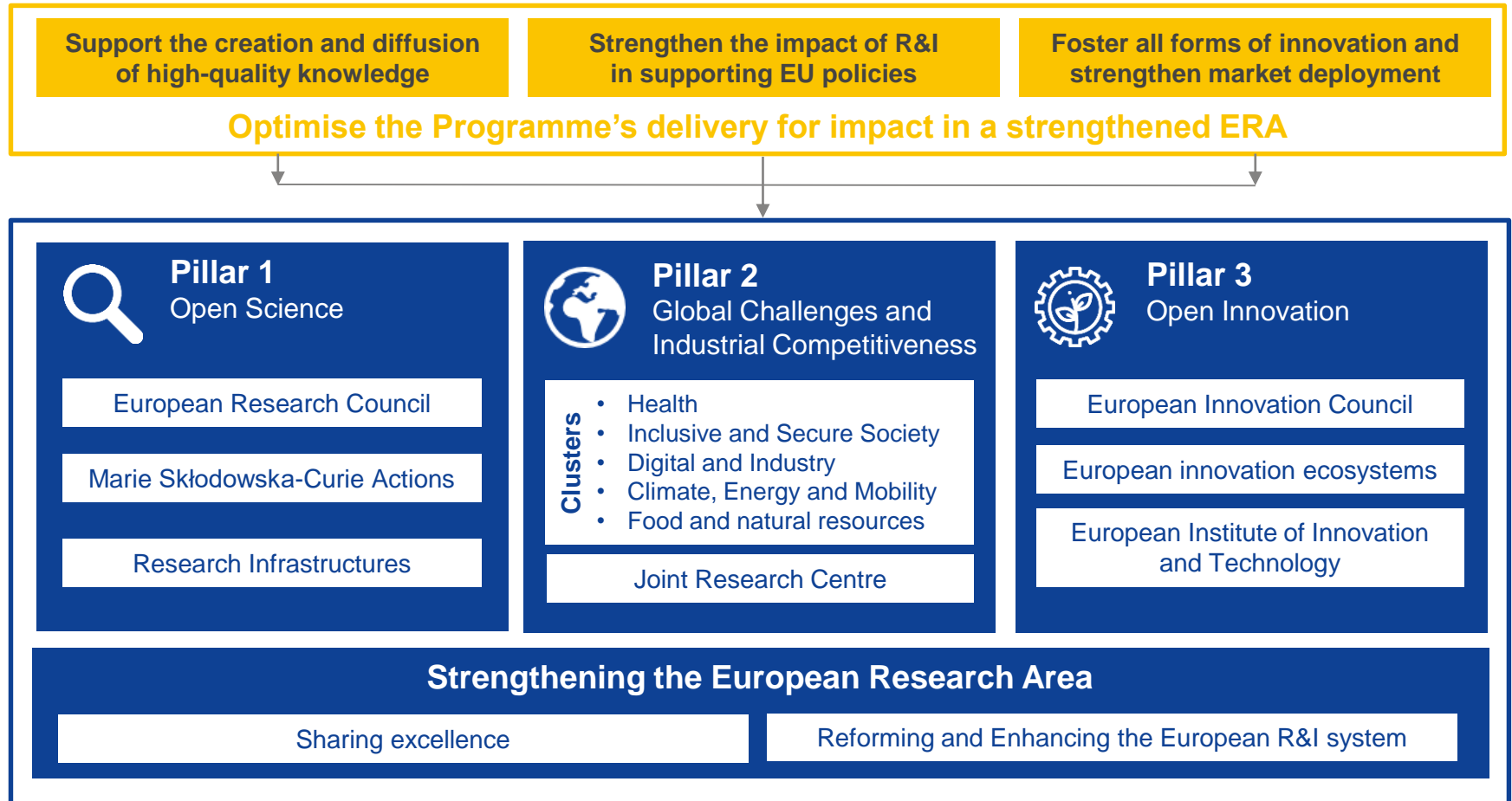
# Added value through Horizon Europe:



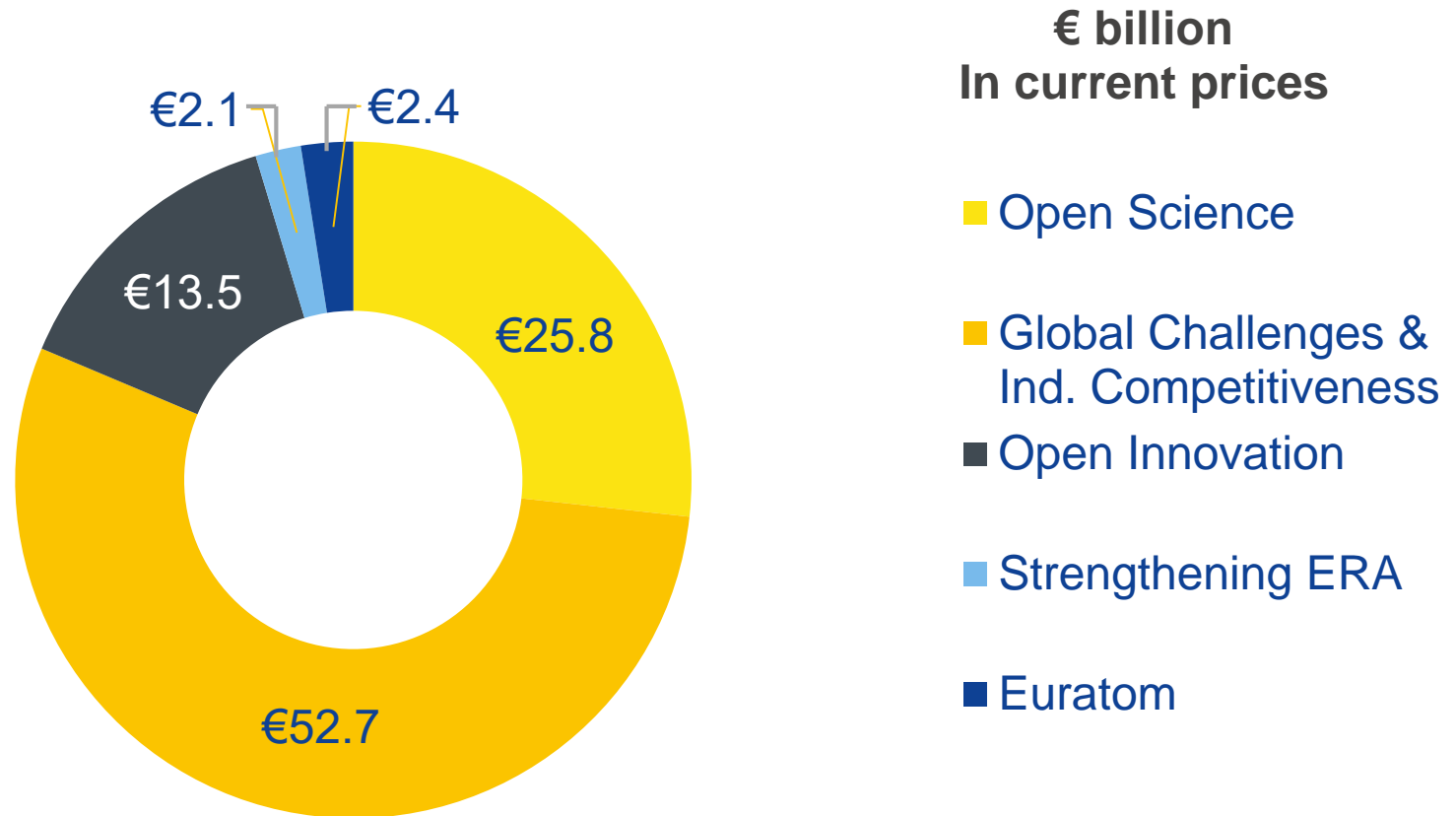
# Horizon Europe – What?

# Horizon Europe: evolution not revolution

## Specific objectives of the Programme








# Budget: €100 billion\* (2021-2027)



\* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.

# Clusters in 'Global Challenges and Industrial Competitiveness'

Clusters	Areas of intervention	
Health 	<ul style="list-style-type: none"> <li>* Health throughout the life course</li> <li>* Non-communicable and rare diseases</li> <li>* <b>Tools, technologies and digital solutions for health and care</b></li> </ul>	<ul style="list-style-type: none"> <li>* Environmental and social health determinants</li> <li>* Infectious diseases</li> <li>* Health care systems</li> </ul>
Inclusive and Secure Societies 	<ul style="list-style-type: none"> <li>* Democracy</li> <li>* Social and economic transformations</li> <li>* Protection and Security</li> </ul>	<ul style="list-style-type: none"> <li>* Cultural heritage</li> <li>* Disaster-resilient societies</li> <li>* <b><u>Cybersecurity</u></b></li> </ul>
Digital and Industry 	<ul style="list-style-type: none"> <li>* Manufacturing technologies</li> <li>* Advanced materials</li> <li>* Space</li> <li>* Circular industries</li> </ul>	<ul style="list-style-type: none"> <li>* <b>Key digital technologies</b></li> <li>* <b>Artificial intelligence and robotics</b></li> <li>* <b>Advanced computing and Big Data</b></li> <li>* <b>Next generation internet</b></li> </ul>
Climate, Energy and Mobility 	<ul style="list-style-type: none"> <li>* Climate science and solutions</li> <li>* Energy systems and grids</li> <li>* Communities and cities</li> <li>* Industrial competitiveness in transport</li> <li>* Smart mobility</li> </ul>	<ul style="list-style-type: none"> <li>* Energy supply</li> <li>* Buildings and industrial facilities in energy transition</li> <li>* Clean transport and mobility</li> <li>* Energy storage</li> </ul>
Food and Natural Resources 	<ul style="list-style-type: none"> <li>* Environmental observation</li> <li>* Agriculture, forestry and rural areas</li> <li>* Food systems</li> <li>* Circular systems</li> </ul>	<ul style="list-style-type: none"> <li>* Biodiversity and natural capital</li> <li>* Sea and oceans</li> <li>* Bio-based innovation systems</li> </ul>



# Horizon Europe – What's new?



# Lessons Learned

## from Horizon 2020 Interim Evaluation



Support breakthrough innovation



Create more impact through mission-orientation and citizens' involvement



Strengthen international cooperation



Reinforce openness



Rationalise the funding landscape



# Key Novelties

## in Horizon Europe

European Innovation Council

R&I Missions

Extended association possibilities

Open science policy

New approach to Partnerships



# European Innovation Council

Support to innovations with breakthrough and disruptive nature and scale up potential that are too risky for private investors.

**European  
Innovation  
Council**

**Helping innovators create markets of the future, leverage private finance, scale up their companies, Innovation centric, risk taking & agile, proactive management and follow up**

Two complementary instruments bridging the gap from idea to investable project

**Pathfinder: grants**  
(from early technology  
to pre-commercial)

**Accelerator:**  
**grants & blended finance**  
(from pre-commercial  
to market & scale-up)



# R&I Missions

## R&I Missions

Relating EU's research and innovation better to society and citizens' needs; with strong visibility and impact

A mission is a portfolio of actions intended to achieve **a bold and inspirational as well as measurable goal** within a set timeframe, with impact for science and technology, society and citizens that goes beyond individual actions

Horizon Europe proposal defines mission characteristics and elements of governance

Specific missions will be **co-designed with Member States, stakeholders and citizens** and programmed within the Global Challenges and Industrial Competitiveness pillar (drawing on inputs from other pillars)



# New approach to European Partnerships

New generation of objective-driven and more ambitious partnerships in support of agreed EU policy objectives

## Key features

- **Simple architecture and toolbox**
- **Coherent life-cycle approach**
- **Strategic orientation**

### Co-programmed

Based on Memoranda of Understanding / contractual arrangements; implemented independently by the partners and by Horizon Europe

### Co-funded

Based on a joint programme agreed by partners; commitment of partners for financial and in-kind contributions & financial contribution by Horizon Europe

### Institutionalised

Based on long-term dimension and need for high integration; partnerships based on Articles 185 / 187 of TFEU and the EIT-Regulation supported by Horizon Europe

# Complementarities and synergies with other programmes supporting digital

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# Digital Europe Programme



# Digital Europe programme: why?

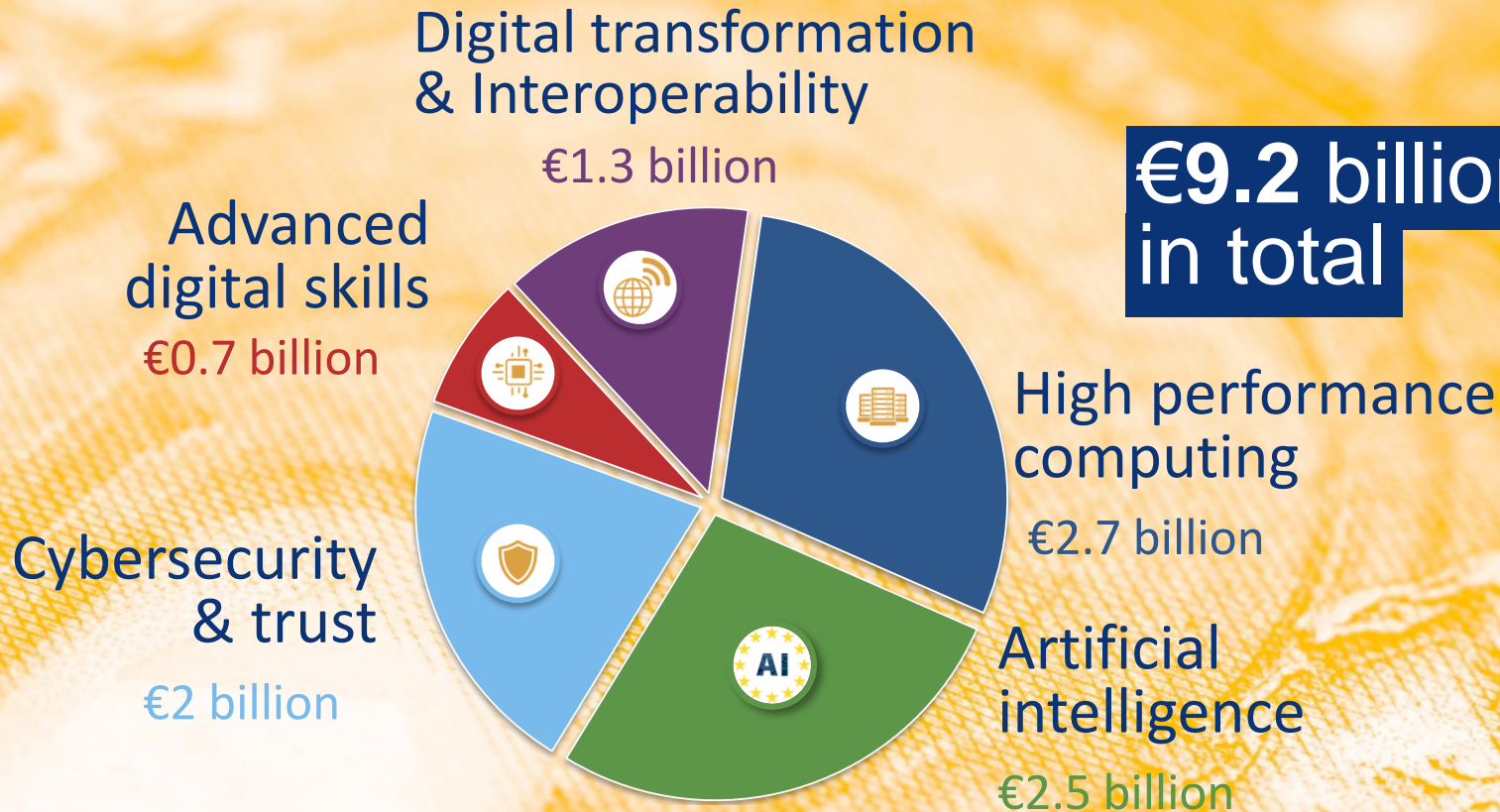


- **Mismatch between demand and supply of essential digital capacities**
  - E.g. Latest computing, data and software tools to lead in digital transformation
- **A clear investment gap in such capacities and infrastructures**
  - HPC: EU scientists and engineers turn massively to computing resources outside Europe
  - Lack of large data sets for AI, lack of real scale testing facilities,..
  - Fragmentation and low investment in cybersecurity
  - Skills: more than 400,000 EU vacancies in these fields
- **Public sector does not play its role of "first mover"**
  - In deploying latest technologies to offer best services to citizens and business
- **Difficult for SMEs to acquire/access latest technologies and skills**
  - Market failure where upstream public intervention is instrumental

# Digital Europe programme – What?

*Reinforcing digital capacities. Ensuring their best use.*

**€9.2 billion  
in total**



#EUBudget  
#DigitalEurope

# Coordinated public investments at EU level

- Targeting areas where EU investment has clear added-value
- High investment levels that no Member State can easily do alone
- Areas where there is a need to aggregate resources
  - computing power, data, expertise
- Areas where interoperability is important
  - To achieve a Digital Single Market
  - For wide diffusion across the EU

# Three levels of intervention



**Co-investing with MS in high-end infrastructures**



**Reinforcing existing MS capacities**



**Ensuring best use of capacities in public sector & industry**



# High Performance Computing



- **Application areas:** health, environment, climate, security, research, etc.
- **Implementation:** indirect management (EuroHPC Joint Undertaking)



# Artificial Intelligence

Bring the power of the AI to  
businesses & public  
administrations

Strengthen testing  
and experimentation  
facilities across the EU



Facilitate safe access  
and storage of data  
and algorithms

- **Application areas:** health, earth/environment monitoring, mobility, security, manufacturing, finance, etc.
- **Implementation:** direct management



# Cybersecurity and Trust



Support procurement of advanced equipment, tools & data sharing infrastructures



Support cyber ranges/testbeds



Certifications

Ensure wide deployment of latest solutions across the economy



Reinforce capabilities for high level of network (including MeliCERT) & information systems

- **Application areas:** public sector, critical infrastructures, health, environment, research, etc.



# Advanced Digital Skills

€ 700 million to support new opportunities for people to gain advanced digital skills to support the deployment of AI, HPC, Cyber



Long-term training courses for students and working people



On-the-job trainings and traineeships for young people



Short-term training courses for small businesses

- **Implementation:** primarily direct management (possibly using an executive agency) and indirect management (EuroHPC JU and the Cybersecurity Competence Centre)

# Deployment, use of digital capacities and interoperability



Support digital transformation of areas of public interest

Support digital transformation of industry

*Uptake of new Technologies and ensure continuous capacity to adapt to fast evolving trends*

- **Application areas:** public administrations, health and care, education, judiciary, transport, energy, environment, culture and creative sectors, etc.
- **Implementation:** direct management (partially with Executive Agency)



# Digital Innovation Hubs

**Bringing the benefits of digital technologies to all our businesses across the European Union**



EU support for one DIH per region



Co-investment with Member States



Focus on SMEs and public services



Focus on HPC, AI,  
Cybersecurity and Digital  
Skills



A strong European network of Digital  
Innovation Hubs

# Connecting Europe Facility - DIGITAL



## TRANSPORT

€30.6 billion  
(2021-2027)

- **Efficient and interconnected TEN-T**
- **Smart (digital), sustainable** (e.g. alternative fuels), **inclusive, safe and secure TEN-T**
- **TEN-T adapted to military mobility requirements**



## ENERGY

€8.65 billion  
(2021-2027)

- **integration** of the internal energy market
- **interoperability** of networks **across borders & sectors**
- **decarbonisation**
- **security of supply**
- **renewables cross-border cooperation**



## DIGITAL

€3 billion  
(2021-2027)

- deployment of **very high capacity digital networks and 5G systems**
- **increased resilience and capacity** of backbone networks on EU territories
- **digitalisation** of transport & energy networks



# DIGITAL

€3 billion

## Focus on infrastructure:

- deployment of **very high capacity digital networks and 5G systems**
- **increased resilience and capacity** of backbone networks on EU territories
- **digitalisation** of transport & energy networks

## Strong alignment with Gigabit Society Strategy objectives

- Gigabit connectivity for **socio-economic drivers** (schools, hospitals, etc.)
- Very high quality **connectivity for local communities** (WiFi4EU bis)
- **5G corridors** along major transport paths
- **Very high capacity networks** to households in mild market failure areas
- Key **international connectivity** / backbone networks
- **Digital operational platforms** for energy and transport networks

**Complementary to ESIF, InvestEU and Digital Europe Programme**

# Preparatory steps for implementation

- **Stakeholder consultation**
  - Targeted consultation: late June – October 2019 (tbc)
  - Digital Excellence Forum @ ICT Proposers' Day 2019: 19-20 September 2019

# Find out more about digital in MFF

## EU budget for the future

[http://ec.europa.eu/budget/mff/index\\_en.cfm](http://ec.europa.eu/budget/mff/index_en.cfm)

### Facebook

Digital Single Market

### Twitter

@DSMeu

@GabrielMariya

@Ansip\_EU

**#EUBudget**

**#DigitalEurope**



# Thank you !

#DigitalEurope

<http://ec.europa.eu/digital-europe>



# International Cooperation

## International Cooperation

Tackling together global societal challenges; access to the world's best talents, expertise and resources; enhanced supply and demand of innovative solutions

### Extended openness to association

- Third countries with good capacity in science, technology and innovation
- Taking into account objective of driving economic growth in Europe through innovation
- General opening for international participation
- Intensified targeted actions (flagship initiatives, joint calls, etc.)



# Open Science across the programme

Open Science

Better dissemination and exploitation of R&I results and support to active engagement of society

- **Mandatory Open Access to publications:** beneficiaries must ensure the existence of sufficient rights to comply with open access requirements
- **Mandatory Data Management Plan for FAIR (Findable, Accessible, Interoperable, Re-usable) and Open Research Data :** for all research data with possibilities to opt-out from open access requirements
- Support to researcher skills in and reward systems for open science
- Use of European Open Science Cloud



# Agenda

- **Co-legislative state-of-play for Digital Europe**
- **Rationale behind Digital Europe**
- **Digital Europe Specific Objectives**
- **Preparatory steps for implementation**
- **Q&A**

# Co-legislative state of play for Digital Europe

## Key steps:

- 6 June 2018 – Commission proposal for Digital Europe
- 13 February 2019 – preliminary political agreement at trilogue
- 13 March 2019 – Coreper endorsement
- 17 April 2019 – first reading vote in the European Parliament

## Next steps:

- Autumn 2019 → ? – final agreement
  - After overall budget agreement in Council, individual budget negotiations
- 2021 – Start of 2021-2027 MFF

# Possible elements for the 2021-2022 orientations

- **Building essential digital capacities**
  - Co-invest with Member States on new high-end infrastructures
  - Upgrade and consolidate available capacities at EU or Member State level
  - Advanced digital skills
  - Digital Innovation Hubs
- **Deploy and use the capacities**
  - Aiming for high-impact deployment
  - Widening the best use of digital technologies
- **Exploit interdependencies**

# POSSIBLE EXAMPLES OF PROJECTS

**Work on the strategic orientations is in progress  
and subject to change**

# (1) Building essential digital capacities

- **High Performance Computing**
  - i. Towards exascale supercomputing
  - ii. Ensure the widest access to HPC infrastructure
  - iii. Widen the use of HPC and applying it across sectors
- **Artificial Intelligence**
  - i. Establish EU-wide common data spaces
  - ii. Develop Large-scale Testing and Experimentation Facilities
  - iii. Scale up the European AI platform
- **Cybersecurity**
  - i. Key capacity building: the cybersecurity shield
  - ii. Accelerate cybersecurity certification
  - iii. Widen the deployment of cybersecurity tools
  - iv. Support the NIS Directive implementation



# **(1) Building essential digital capacities (cont.)**

- **Advanced Digital Skills**
  - i. **Develop Master's programmes or modules in key capacity areas**
  - ii. **Develop short term training courses in key capacity areas**
  - iii. **Maintaining and populating the platform for Skills and Jobs**
  
- **Digital Innovation Hubs**
  - i. **Set up of the initial network (first year)**
  - ii. **First network enlargement (second year)**

## **(2) Deploy and use the capacities**

### **(i) Aiming for high-impact deployment**

- **Digital transformation of for better and sustainable Health and Care**
  - Connecting health data (infrastructures, interoperability)**
  - Building trust and innovation for digital health and care**
  - Advanced digital skills for health and care professionals**
- **Clean, sustainable and Smart Communities and Mobility**
  - Deployment of Open Cross-sectorial Urban Digital Platforms and Cross-border Mobility as a Service Solutions**
  - Deployment of innovative smart city and smart mobility applications by SMEs and start-ups**
  - Establish world-reference testing and experimentation facilities**
- **Blockchain**
  - Deployment and enhancement of European Blockchain Services Infrastructure**
  - Deployment of services of public interest (and their possible integration in EBSI)**

## **(2) Deploy and use the capacities**

### **(i) Aiming for high-impact deployment (cont.)**

- **Digitising Public Services**
  - i. Roll-out of the Digital Transformation platform and the Once-Only Principle technical infrastructure at local and regional level
  - ii. Implementation of the interoperability incubator infrastructure for testing innovative GovTech services
  
- **Agri-food**
  - i. Develop/scale up large-scale reference experimentation and testing facilities
  - ii. Ensure the link/collaboration between the network of specific agri-food hubs and the network of European DIH
  
- **Digital Culture**
  - i. Digital transformation of cultural heritage institutions through deployment of innovative and emerging technologies, in particular 3D
  - ii. Europeana

## (2) Deploy and use the capacities

### (i) Aiming for high-impact deployment (cont.)

- **Cloud federation as a service**
  - i. Federation of pan-European cloud services for the provision of public services (services of general interest of *public* nature)
  - ii. Federation of pan-European cloud services for the provision of [transport] and [energy] services (services of general interest of *economic* nature)
- **Digital for a Clean Planet**

## **(2) Deploy and use the capacities**

### **(ii) Widening the best use of digital technologies**

- **Building trust for digital transformation**
  - i. **Safer internet for kids**
  - ii. **Platform for combating disinformation**
- **Language Technologies**
  - i. **Standards and technology to allow artificial intelligence resources to be usable under local language requirements**
  - ii. **Automatic aggregation of existing data sets and access to appropriate high performance computing power**
- **Digital transformation of learning and education**
  - i. **Digital transformation of schools**