

Horizon Europe: il programma europeo per la ricerca e l'innovazione

SPS PARMA

*Le nuove frontiere dell'Ingegneria
innovativa connessa e integrata*

24 Maggio 2023

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Agenzia per la Promozione della Ricerca
Europea – APRE



Mariya Gabriel, European Commissioner
for Innovation, Research, Culture,
Education and Youth

*“The programme aims at giving Europe a new push to a global positioning. Horizon Europe is to be **the biggest and most ambitious EU Research Innovation programme ever**. It builds on the **success of Horizon 2020** and improves it further by fostering a stronger support to **breakthrough innovation** through the European Innovation Council, by creating greater **impact** through R&I **missions** and by streamlining **partnerships** landscape.”*

6 Commission priorities for 2019-24

A European Green Deal

Striving to be the first climate-neutral continent



A Europe fit for the digital age

Empowering people with a new generation of technologies

An economy that works for people

Working for social fairness and prosperity



A stronger Europe in the world

Europe to strive for more by strengthening our unique brand of responsible global leadership

Promoting our European way of life

Building a Union of equality in which we all have the same access to opportunities.



A new push for European democracy

Nurturing, protecting and strengthening our democracy

Industry & Digital- Policy Framework





EUROPEAN UNION

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HORIZON EUROPE



#HorizonEU



THE EU RESEARCH &
INNOVATION PROGRAMME
2021 - 2027



HORIZON EUROPE

95,5 Mlr €

L'ambizioso programma quadro dell'UE per la ricerca e l'innovazione (2021-2027)



rafforzare le basi scientifiche e tecnologiche dell'UE e lo spazio europeo della ricerca (SER)



migliorare la capacità innovativa, la competitività e l'occupazione in Europa



conseguire gli obiettivi prioritari per i cittadini e sostenere il nostro modello socio-economico e i nostri valori

dimensione

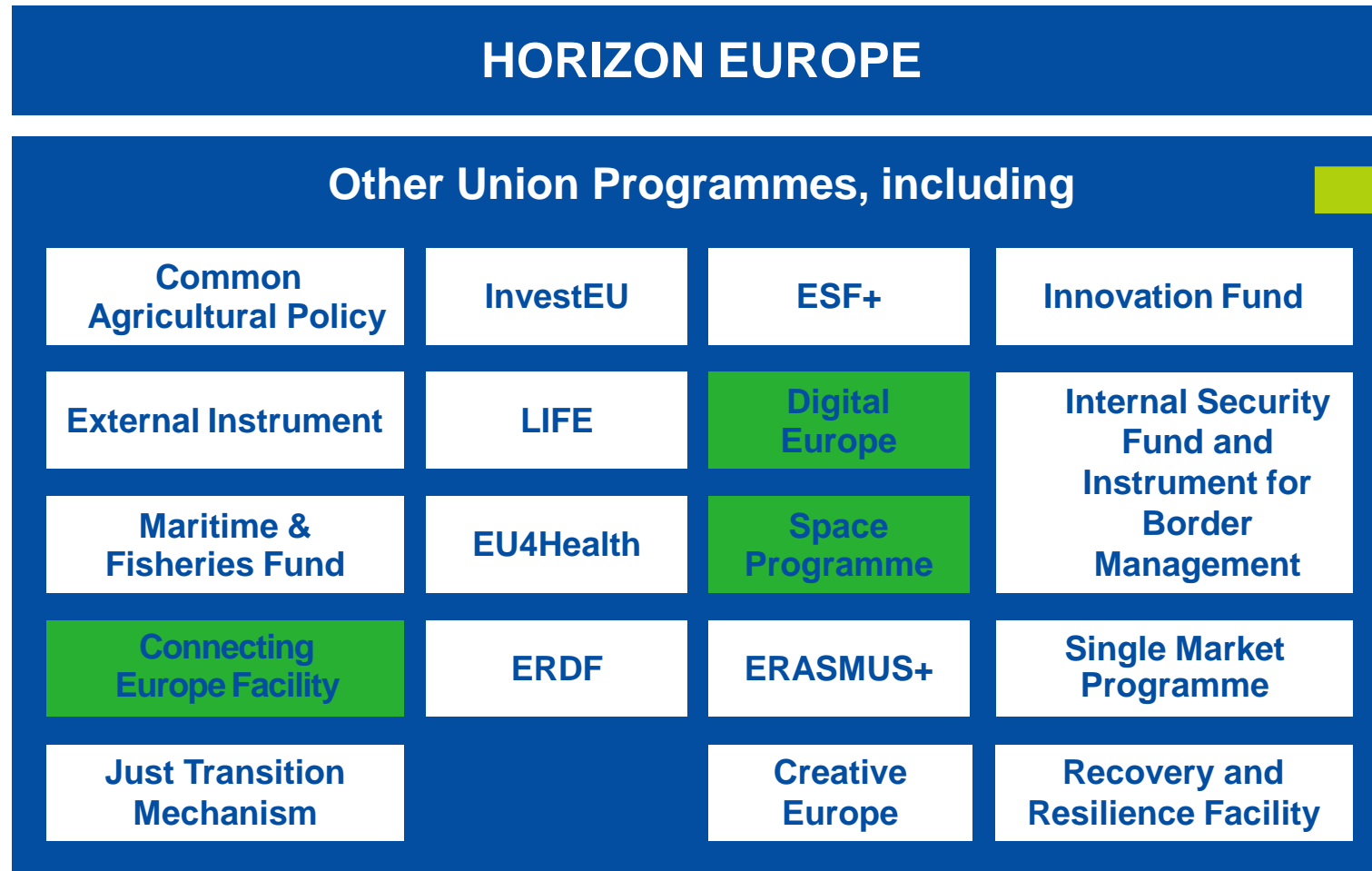
SCIENTIFICA

ECONOMICA

SOCIALE

di Horizon Europe

Synergies with other Union programmes



Enhanced synergies

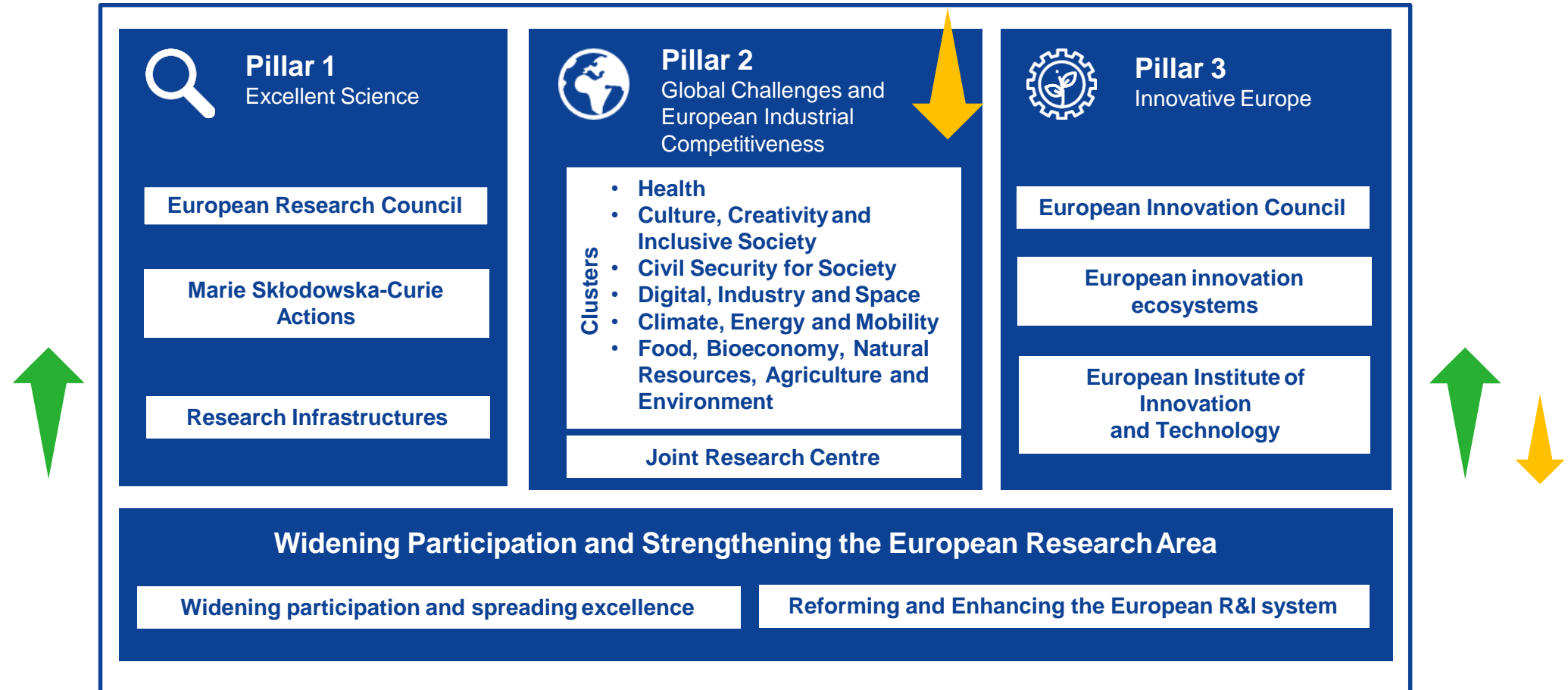
COMPATIBILITY

Harmonisation of funding rules; flexible co-funding schemes; pooling resources at EU level

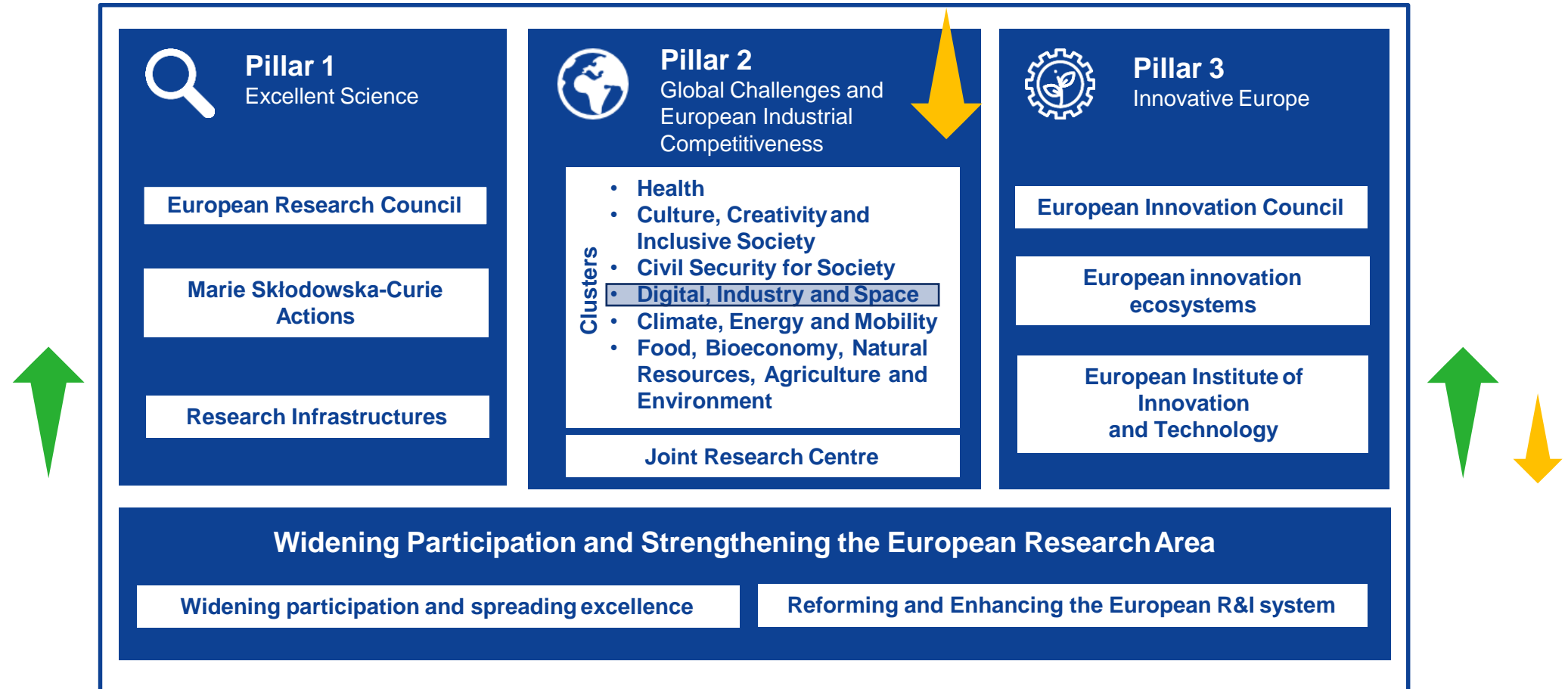
COHERENCE & COMPLEMENTARITY

Alignment of strategic priorities in support of a common vision

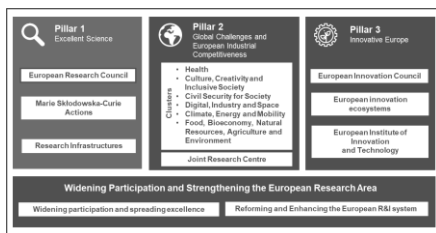
Horizon Europe: struttura



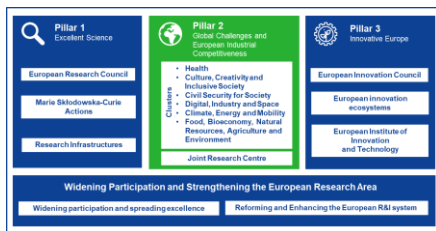
Horizon Europe: struttura



SPECIFIC OBJECTIVES

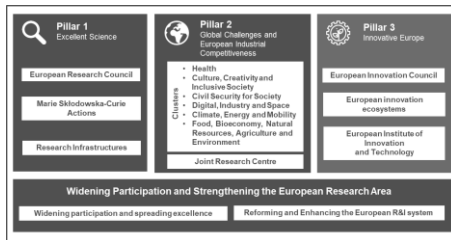


to develop, promote and advance scientific excellence, support the creation and diffusion of **high-quality new fundamental and applied knowledge, skills, technologies and solutions**, training and mobility of researchers, attract talent at all levels and contribute to full engagement of Union's talent pool in actions supported under this Programme; bottom up.

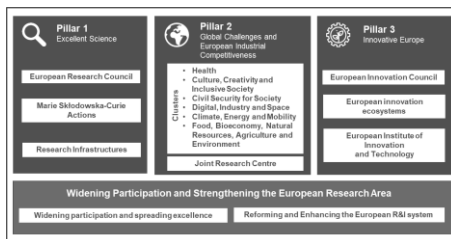


to generate knowledge, strengthen **the impact of research and innovation** in developing, supporting and implementing Union policies and support the access to and uptake of innovative solutions in European industry, notably in SMEs, and society to address global challenges, including climate change and the Sustainable Development Goals; top down.

SPECIFIC OBJECTIVES



to foster **all forms of innovation**, facilitate technological development, demonstration and knowledge and technology transfer, strengthen deployment and exploitation of innovative solutions; bottom up



to optimise the Programme's delivery for **strengthening and increasing the impact and attractiveness of the European Research Area**, to foster the excellence-based participations from all Member States, including low R&I performing Member States, in Horizon Europe and to facilitate collaborative links in European research and innovation. Top down

ELEMENTI CHIAVE

Pillar 2- Global Challenges and European Industrial Competitiveness

- ▣ incentrato sulle **sfide globali e la competitività industriale**,
- ▣ migliorare **le problematiche della società e le tecnologie industriali** con un approccio *top-down*
- ▣ integrazione in cluster, con una serie di settori di intervento ciascuno, per incentivare la **collaborazione interdisciplinare, intersettoriale, trasversale e internazionale**, ottenendo così un **impatto** più elevato e cogliendo meglio il potenziale di innovazione che spesso è maggiore i punti di intersezione di discipline e settori
- ▣ il ruolo essenziale dell'**industria** nel conseguimento di tutti gli obiettivi del programma, favorito anche dagli investimenti nelle tecnologie abilitanti fondamentali del futuro.

ELEMENTI CHIAVE

Pillar 2- Global Challenges and European Industrial Competitiveness

- ▣ includono le **Partnership** (nuova razionalizzazione su tre categorie) e le **Missions** (che perseguiranno obiettivi ambiziosi ma realizzabili e circoscritti nel tempo, incoraggiando la partecipazione dei cittadini)
- ▣ aumento della quota di partecipazione nella ricerca e nel finanziamento da parte di **entità provenienti da paesi con basso e medio reddito**
- ▣ il ruolo dello **JRC** come fonte di dati scientifici e assistenza tecnica a sostegno delle politiche dell'Union

Regole di partecipazione

Art. 22, comma 1 – Regolamento Horizon Europe

“Qualsiasi soggetto giuridico, indipendentemente dal luogo in cui è stabilito e compresi i soggetti giuridici dei paesi terzi non associati o delle organizzazioni internazionali, può partecipare alle azioni nell'ambito del programma, purché siano soddisfatte le condizioni stabilite nel presente regolamento unitamente a eventuali condizioni stabilite nel programma di lavoro o nell'invito a presentare proposte..”

Soggetto giuridico:
persone fisiche,
persone giuridiche,
entità senza
personalità giuridica.



indipendentemente dal luogo
di stabilimento.

Regole di partecipazione

Art. 22, comma 2, Regolamento Horizon Europe

*“Tranne in casi debitamente giustificati in cui il programma di lavoro preveda diversamente, i soggetti giuridici che fanno parte di un consorzio sono ammissibili alla partecipazione ad azioni nell'ambito del programma purché il **consorzio** comprenda:*

- a) **almeno un soggetto giuridico indipendente stabilito in uno Stato membro; e;***
- b) **almeno altri due soggetti giuridici indipendenti, ciascuno stabilito in diversi Stati membri o paesi associati.”***

Condizioni minime:



Costituzione di un consorzio composto da almeno 3 soggetti indipendenti stabiliti in 3 diversi Stati membri o associati. Almeno uno stabilito in uno Stato membro

Activities eligible for funding – Type of actions

Research
and
innovation
action (RIA)

Activities to establish new knowledge or to explore the feasibility of a new or improved technology, product, process, service or solution.

Innovation
action (IA)

Activities to produce plans and arrangements or designs for new, altered or improved products, processes or services.

Coordination
and
support
actions
(CSA)

Activities that contribute to the objectives of Horizon Europe. This excludes R&I activities, except for 'Widening participation and spreading excellence'

Programme
co-fund
actions
(CoFund)

A programme of activities established or implemented by legal entities managing or funding R&I programmes, other than EU funding bodies.

Innovation
and market
deployment
actions
(IMDA)

Activities that embed an innovation action and other activities necessary to deploy an innovation on the market. (EIC)

Training and
mobility
actions
(TMA)

Activities that aim to improve the skills, knowledge and career prospects of researchers, based on mobility between countries and, if relevant, between sectors or disciplines. (MSCA)

Pre-
commercial
procurement
actions/ (PCP)

Activities that aim to help a buyers' group to strengthen the public procurement of research, development, validation and, possibly, the first deployment of new solutions

Public
procurement
of innovative
solutions
actions (PPI)

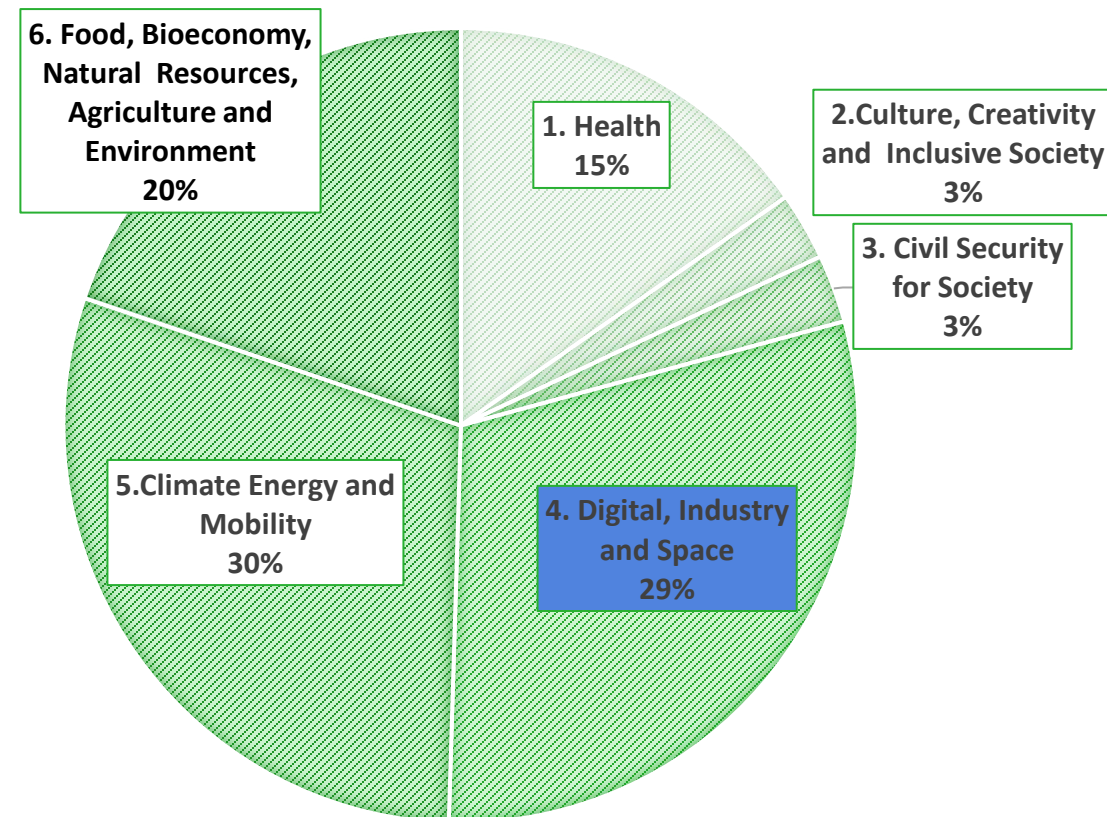
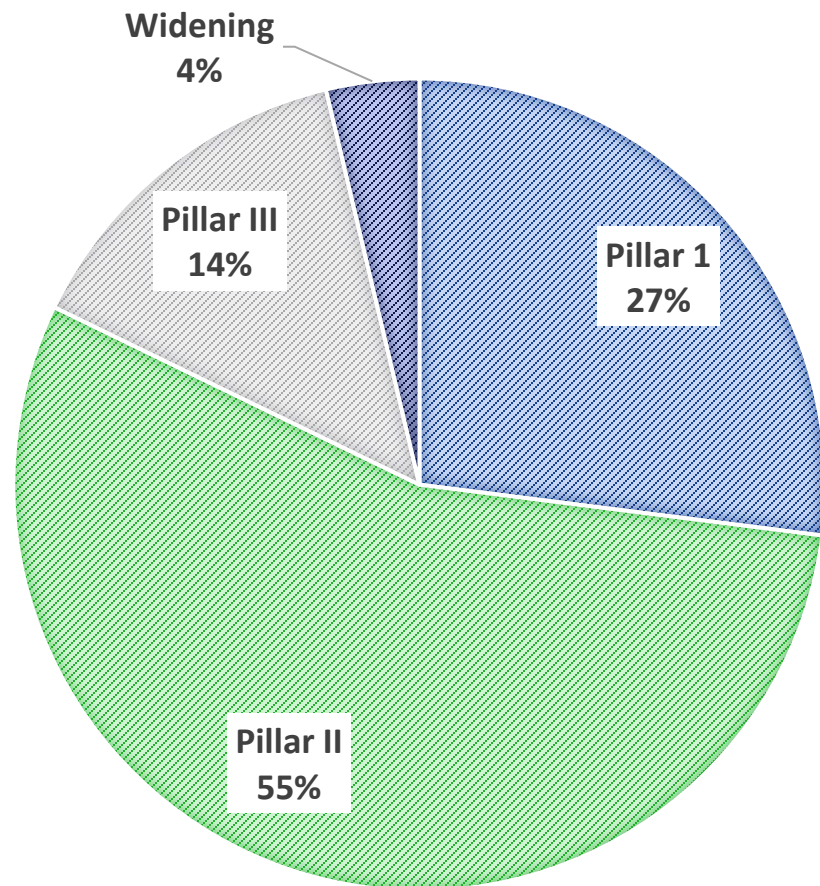
Activities that aim to strengthen the ability of a buyers' group to deploy innovative solutions early

Finanziamento

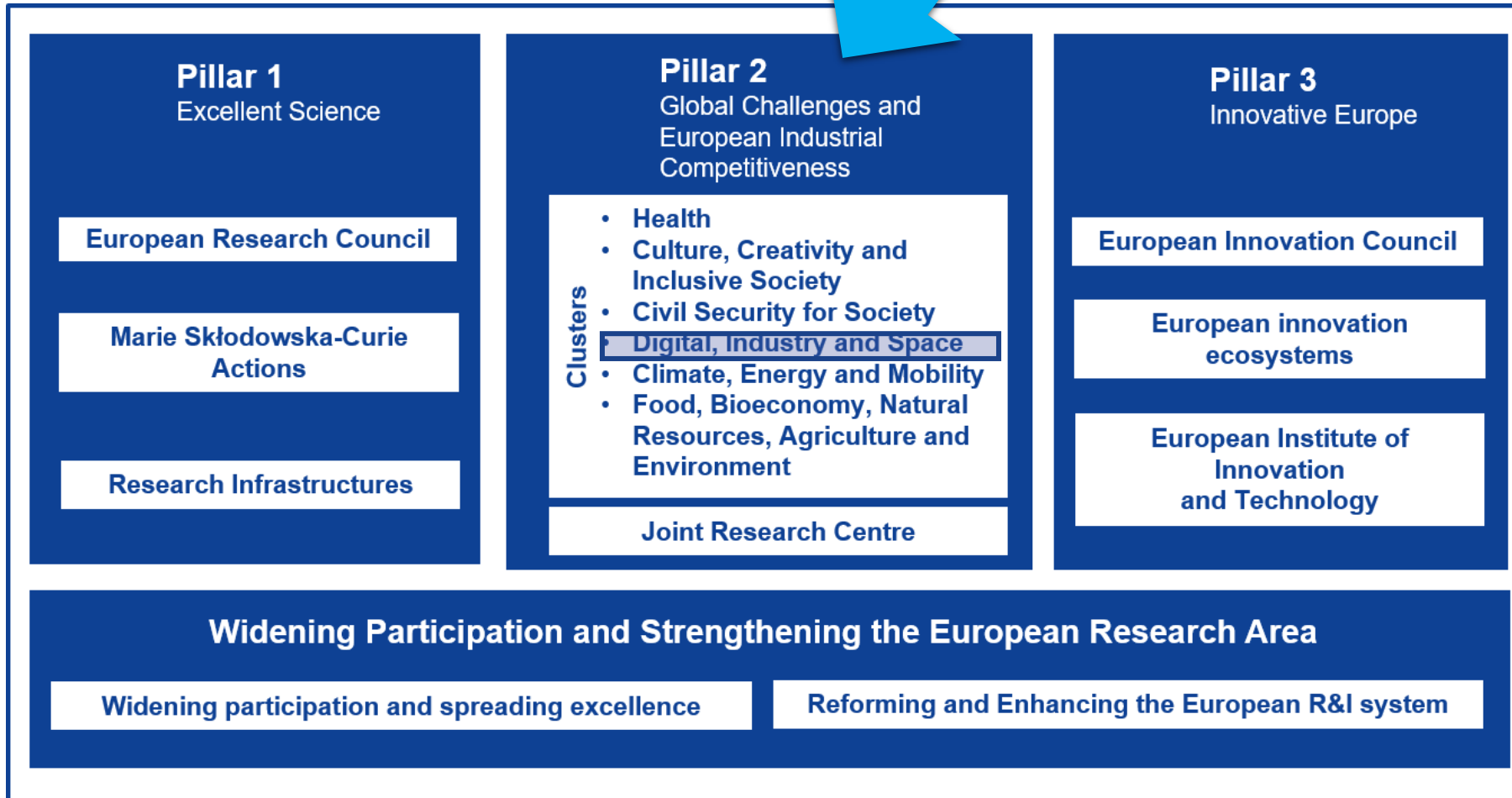
Funding rates

Types of action			
	IA (Innovation Actions)	RIA (Research and Innovation Actions)	CSA (Coordination and support actions)
Profit	70 %	100 %	100 %
Non for profit	100 %	100 %	100 %

Budget - Distribuzione



Digital, Industry and Space



Partnerships
&
Missions



CL4: Digital, Industry and Space - Objectives

- ❏ Global **leadership in clean and climate-neutral industrial value chains**, circular economy and climate-neutral digital systems and infrastructures (networks, data centres)
- ❏ Industrial leadership and **increased autonomy in key strategic value chains** with security of supply in raw materials
- ❏ **Sovereignty in digital technologies and in future emerging enabling technologies** by strengthening European capacities in key parts of digital and future supply chains
- ❏ Globally **attractive, secure and dynamic data-agile economy** by developing and enabling the uptake of the next-generation computing and data technologies and infrastructures (including space infrastructure and data)
- ❏ **Strategic autonomy in** conceiving, developing, deploying and using **global space-based infrastructures, services, applications and data**
- ❏ A **human-centred and ethical development** of digital and industrial technologies

CLUSTER 4 – AREAS OF INTERVENTION

2021-2027

DIGITAL

INDUSTRY

SPACE

 Key Digital Technologies

 AI and Robotics

 NGI

 Advanced Computing and Big Data

 Manufacturing

 Advanced materials

 Circular industry

 Low carbon and clean industry

 A globally competitive Space sector

 New services from Space

Emerging enabling technologies: Graphene, Quantum Technologies, spintronics, smart materials

Cluster 4 Complementarities – European Partnerships

DID YOU KNOW?



European Partnerships are initiatives where the EU, together with private and public partners, commit to jointly support the development and implementation of a programme of research and innovation activities. The partners could represent industry, universities, research organisations, bodies with a public service remit at local, regional, national or international level or civil society organisations, including foundations and NGOs. Partnerships are not new – they were first introduced in 2002 as part of the European Research Area to overcome fragmentation of research effort.

3 Institutional partnerships (Art.187, Public-Private)

- EuroHPC JU
- **Key Digital Technologies JU (ex ECSEL JU)**
- Smart Networks and Services JU (ex 5G PPP)

7 Co-programmed partnerships

- **Made in Europe (ex FoF)**
- **Process4Planet - Carbon neutral Circular Industry(ex SPIRE)**
- Clean steel
- **AI, Data and Robotics**
- Photonics
- Globally competitive Space Systems (Proposed 2023)

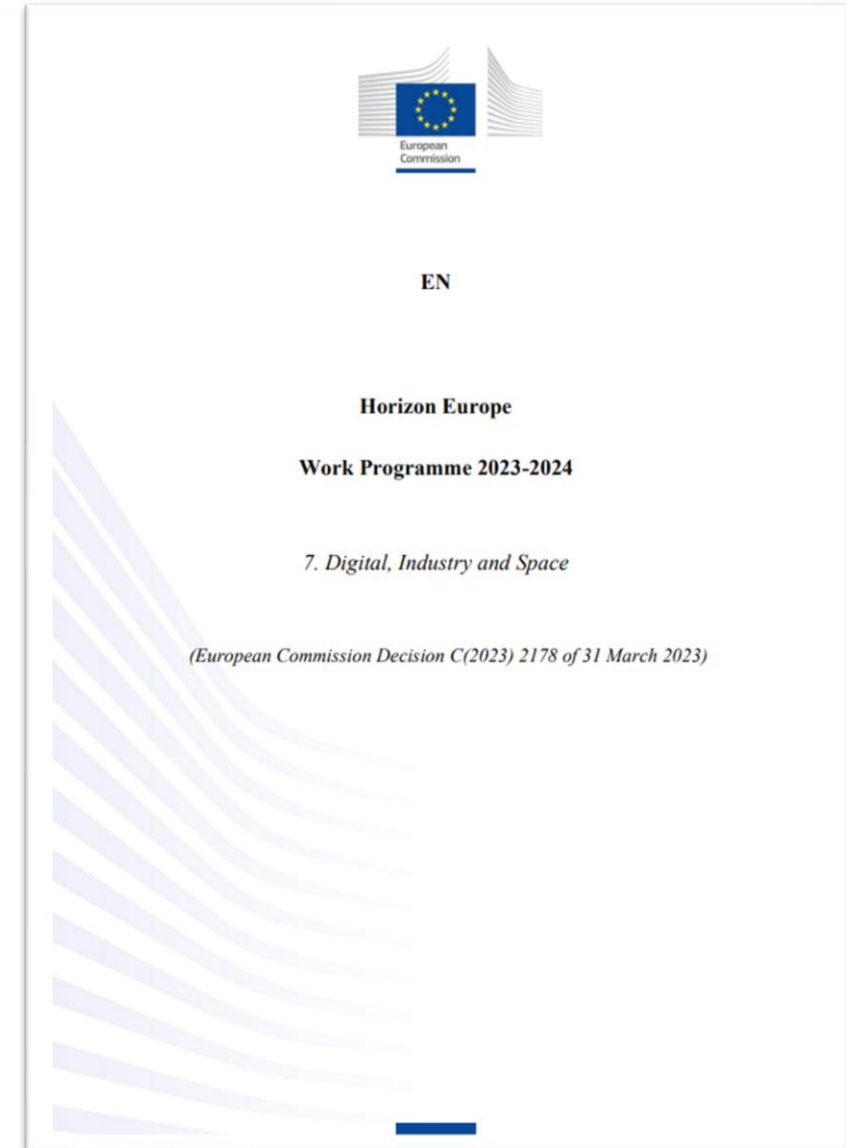
1 Institutional partnership (Art. 185, Public-Public)

- European Partnership on Metrology



Work Programme Cluster4 2023-24

https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-7-digital-industry-and-space_horizon-2023-2024_en.pdf





CLUSTER 4 | Overview Work Programme 2023 -24

Deadlines		Topic		Budget	
'23	28 e 29 March+20 April	'23	88	'23	1390,23
'24	7 e 20 Feb + 19 March	'24	42	'24	927
			130		2317,23

CL4 - Destinations

Destination #1 “Climate neutral, circular and digitized production” Supporta la transizione verde e digitale delle industrie manifatturiere, edili e ad alta intensità energetica, comprese le industrie di processo. Contribuisce allo sviluppo di processi produttivi e catene del valore sostenibili, flessibili, reattive e resilienti, abilitate dall’intelligenza artificiale, dalla condivisione dei dati, dalla robotica avanzata e dalla modularità, al fine di garantire efficienza energetica e sostenibilità ambientale.

Destination #2 “Increased autonomy in key strategic value chains for resilient industry” Sostiene la modernizzazione e la resilienza dei modelli industriali tradizionali, sviluppando al contempo nuove tecnologie e materiali avanzati, modelli di business e processi basati su circolarità e sostenibilità, e puntando a ridurre le dipendenze dell’Unione dai paesi terzi per le materie prime.

Destination #3 “World leading data and computing technologies” Supporta lo sviluppo di capacità di elaborazione dati sicure, efficienti dal punto di vista energetico, a costi contenuti e di elevata qualità, come quelle offerte da infrastrutture e servizi cloud sia nei centri di dati sia ai margini della rete.

CL4 - Destinations

Destination #4 “Digital and emerging technologies for competitiveness and fit for the Green Deal”

Promuove la sovranità nelle tecnologie abilitanti emergenti rafforzando le capacità europee in fotonica, elettronica e processori di nuova generazione, robotica, intelligenza artificiale, reti e servizi intelligenti, consentendo risposte agili a bisogni urgenti di transizione ecologica e investendo ulteriormente nella scoperta precoce e nell'adozione industriale di nuove tecnologie, quali grafene e tecnologie quantistiche.

Destination #5 “Open strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data” Contribuisce a garantire autonomia nello sviluppo, installazione e utilizzo delle infrastrutture spaziali, nell'applicazione di servizi e nell'utilizzo di dati. L'autonomia nel settore spaziale è garantita anche grazie alla capacità di accedere allo Spazio attraverso il lancio delle infrastrutture e la possibilità di proporre opportunità di dimostrazione e validazione in orbita. Garantisce inoltre autonomia nell'approvvigionamento di tecnologie e attrezzature critiche e promuove la competitività del settore spaziale europeo.

Destination #6 “A human-centred and ethical development of digital and industrial technologies” Sostiene uno sviluppo tecnologico etico ed incentrato sui bisogni della persona, mirando a garantire trasparenza e fiducia nelle applicazioni di intelligenza artificiale e nella presenza digitale del singolo, e inclusività ed innovazione sociale a supporto del singolo lavoratore e dell'utente finale, anche attraverso lo sviluppo di tecnologie immersive

Cluster 4 – Work Programme 2023-24 Overview



D1 - Climate neutral, circular and digitized production
TWIN-TRANSITION

Manufacturing Industry

A New Way to Build, accelerating disruptive change in construction

Energy Intensive Process Industries

D2 - Increased autonomy in key strategic value chains for resilient industry
RESILIENCE

Raw Materials for strategic autonomy and circular economy

Safe and Sustainable by Design Chemicals and Materials

Strategic Innovation Markets Driven by Advanced Materials

Improving the resilience of EU businesses

D3 - World leading data and computing technologies
DATA

Data sharing and analytics capacity

From Cloud to Edge to IoT

D4 - Digital and emerging technologies for competitiveness and fir for the Green Deal
DIGITAL-EMERGING

Open Source for Cloud/Edge Digital Autonomy

Photonics

AI, data and robotics

Graphene

Quantum

Emerging Techs

D5 - Open strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data
SPACE

Competitiveness

Access to Space

Galileo, EGNOS and Copernicus, PRS and GOVSATCOM

Copernicus service

Galileo and EGNOS

SSA, GOVSATCOM , Quantum

CASSINI & Space entrepreneurship

D6 - A human-centred and ethical development of digital and industrial technologies
HUMAN

AI based on trust

Internet of Trust

Extended Reality

Accelerating uptake of tech & innovation

Industry 5.0

Standardization

Digital Humanism

Energy efficiency and climate neutral process industries
Circularity and Zero Pollution in process industry
Clean Steel

Other Actions: NGI commons; Critical Raw Materials Exploration Investment Facility; UNECE resource management system; JRC & Action Plan on Critical Raw Materials; Raw Materials events; Support to Hydrogen

2023–2024 | Specific conditions/elegibility criteria

**Blind
evaluation**
(two-stage)

4 topics in
destination 6
with **FSTP**

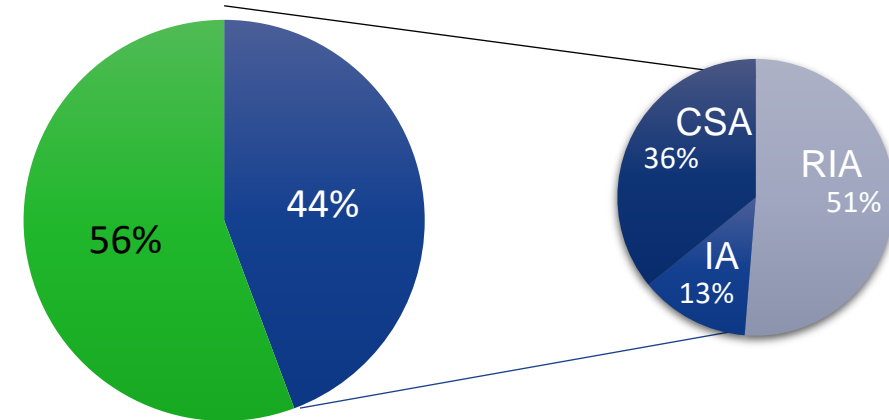
ART 22.5

- Limited participation in 6 out of 16 topics in destination 5
- Limited participation in 3 out of 14 topics in destination 4

COLLABORATIONS (17 topics)

- International Cooperation: 10 topics
- Collaboration with JRC: 3 topics
- Collaboration with EIT: 4 topics

Lump Sum



Destination 1: Climate neutral, Circular and Digitised Production: this destination will directly support the following Key Strategic Orientations (Orientamenti Strategici Chiave/Principali), as outlined in the Strategic Plan:

1. KSO C, 'Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems.'
2. KSO A, 'Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations.'
3. KSO D, 'Creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions.'

The focus can be, for example, on addressing demands in healthcare, automotive, maritime and aviation industries, energy generation or environmental areas.

The most relevant policies of the European Commission on this front are:

1. The [European Industrial Strategy of March 2020](#), and in particular the [Update of May 2021](#): there is now a renewed momentum in the EU to tackle its strategic dependencies as well as to boost its resilience across key strategic areas. The Covid-19 crisis revealed the importance of improving production response and preparedness of EU industry, in support of its long-term competitiveness.
2. The [Digital Decade](#) of March 2021, where the Commission presented a vision, targets and avenues for a successful digital transformation of Europe by 2030.
3. The [Circular Economy Action Plan](#) of March 2020 announced initiatives along the entire life cycle of products and aims to ensure that waste is prevented and the resources used are kept in the EU economy for as long as possible.
4. The [Fit for 55 Package of July 2021](#), delivering the [EU's 2030 Climate Target on the way to climate neutrality](#), given the process industries' 20% share of global greenhouse gas emissions.
5. The [Zero Pollution Action Plan](#) of May 2021 addresses both pollution and waste, where research needs could be tackled and is particularly relevant to advanced materials and the process industries, as well as to the manufacturing industry.



D1 2024 Call Single Stage
Call opening: 19.09.2023

Manufacturing Industry

<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-03:</u> <u>Manufacturing as a Service: Technologies for customised, flexible, and decentralised production on demand (Made in Europe Partnership) (RIA)</u>	Start: 4 End: 6	35 (5-7 per project) (<u>Lump-sum</u>)	RIA	07.02.2024
<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-05:</u> <u>Technologies/solutions to support circularity for manufacturing (Made in Europe Partnership) (RIA)</u>	Start: 4 End: 6	36 (4-6 per project)	RIA	07.02.2024

Energy Intensive Process Industries

<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-32:</u> <u>Optimisation of thermal energy flows in the process industry (Processes4Planet partnership) (IA)</u>	Start: 5 End: 7	30 (10-15 per project)	IA	07.02.2024
<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-34:</u> <u>Renewable hydrogen used as feedstock in innovative production routes (Processes4Planet Partnership) (RIA)</u>	Start: 4 End: 6	20 (8-10 per project)	RIA	07.02.2024



Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-35:</u> <u>Turning CO2 emissions from the process industry to feedstock (Processes4Planet partnership) (IA)</u>	Start: 5-6 End: 7	30 (10-15 per project)	IA 60% funding rate	07.02.2024
<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-38:</u> <u>Hubs for circularity for industrialised urban peripheral areas (Processes4Planet partnership) (IA)</u>	Start: 5 End: 7	40 (15-20 per project)	IA	07.02.2024
<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-41:</u> <u>Breakthroughs to improve process industry resource efficiency (Processes4Planet partnership) (RIA)</u>	Start: 4 End: 6	30 (10-12 per project) (<u>Lump-sum</u>)	RIA	07.02.2024
<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-44:</u> <u>Digital transformation and ensuring a better use of industrial data, which can optimise steel supply chains (Clean Steel Partnership) (IA)</u>	Start: 5 End: 6-7	10 (3-5 per project) (<u>Lump-sum</u>)	IA	07.02.2024
<u>HORIZON-CL4-2024-TWIN-TRANSITION-01-46:</u> <u>CO2-neutral steel production with hydrogen, secondary carbon carriers and electricity OR innovative steel applications for low CO2 emissions (Clean Steel Partnership) (RIA)</u>	Start: 4 End: 5-6	20 (3-5 per project)	RIA	07.02.2024



D1 2024 Call Two Stages
Call opening: 19.09.2023

Manufacturing Industry

HORIZON-CL4-2024-TWIN-TRANSITION-01-01:
Bio-intelligent manufacturing industries (Made in Europe Partnership) (RIA)

Start: 4
End: 6

25
(4-5 per project)
(Lump-sum)

RIA

First stage:
07.02.2024
Second stage:
24.09.2024

A New Way to Build, accelerating disruptive change in construction

HORIZON-CL4-2024-TWIN-TRANSITION-01-12:
Enhanced assessment, intervention and repair of civil engineering infrastructure (RIA)

End: 6

12
(5-6 per project)
(Lump-sum)

RIA

First stage:
07.02.2024
Second stage:
24.09.2024



Destination 2: Increased Autonomy in Key Strategic Value Chains for Resilient Industry

▣ This destination will directly support the following Key Strategic Orientations, as outlined in the Strategic Plan:

1. KSO C, **‘Making Europe the first digitally-enabled circular, climate-neutral and sustainable economy** through the transformation of its mobility, energy, construction and production systems’
2. KSO A, **‘Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains** to accelerate and steer the digital and green transitions through human-centred technologies and innovations’
3. KSO D, **‘Creating a more resilient, inclusive and democratic European society**, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions.

Proposals for topics under this Destination should set out a credible pathway to contributing to the following expected impact of Cluster 4:

Industrial leadership and increased autonomy in key strategic value chains with security of supply in raw materials, achieved through breakthrough technologies in areas of industrial alliances, dynamic industrial innovation ecosystems and advanced solutions for substitution, resource and energy efficiency, effective reuse and recycling and clean primary production of raw materials, including critical raw materials, and leadership in the circular economy.

The COVID-19, the war against Ukraine and other crises have shown that global competitiveness and resilience are two sides of the same coin. Whilst Cluster 4 addresses KSOs A, C and D, KSO B is becoming increasingly important, given the role of the industry highlighted in the zero-pollution action plan.

Destination 2: Increased Autonomy in Key Strategic Value Chains for Resilient Industry

▣ The most relevant policies of the European Commission on this front are:

1. The European Industrial Strategy of March 2020, and in particular the Update of May 2021: there is now a renewed momentum in the EU to tackle its strategic dependencies as well as to boost its resilience across key strategic areas. The Covid-19 crisis revealed the importance of improving production response and preparedness of EU industry, in support of its long-term competitiveness. The Industrial Strategy Update and the accompanying Staff Working Document on strategic dependencies, showed that 99 products in the most sensitive ecosystems included materials on the list of critical raw materials.
2. The Circular Economy Action Plan of March 2020 announced initiatives along the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented and resources used are kept in the EU economy for as long as possible.
3. The Chemicals Strategy for Sustainability of October 2020 strategy aims to better protect citizens and the environment whilst boosting the innovation for safe and sustainable chemicals. It calls for actions in the frame of research and innovation to develop a Safe and Sustainable by Design (SSdB) framework and criteria and a Strategic Research and Innovation Agenda addressing research and innovation needs raised in the Strategy and beyond..

Destination 2: Increased Autonomy in Key Strategic Value Chains for Resilient Industry

▣ The most relevant policies of the European Commission on this front are:

1. The Zero Pollution Action Plan of May 2021 set's out the objective that by 2050 air, water and soil pollution shall be reduced to levels no longer considered harmful to health and natural ecosystems, that respect the boundaries of the planet. The action plan aims to strengthen the EU green, digital and economic leadership, whilst creating a healthier, socially fairer Europe and planet. It provides a compass to mainstream pollution prevention in all relevant EU policies, to step up implementation of the relevant EU legislation and to identify possible gaps.
 2. The Materials 2030 Manifesto will enable the green and digital transition, anchoring on good design principles, combined with synergies between advanced materials, circularity, digital and industrial technologies. It calls for the evolution of materials research by uniting digital and material capacities and competences, combining technology push with market pull and united actions at Member States level, to benefit from Europe's strength.
 3. The Digital Decade of March 2021, where the Commission presented a vision, targets and avenues for a successful digital transformation of Europe by 2030.
 4. The Fit for 55 Package of July 2021, delivering the EU's 2030 Climate Target on the way to climate neutrality, given the process industries' 20% share of global greenhouse gas emissions.
- ▣ **Business cases and exploitation strategies for industrialisation:** This section applies only to those topics in this Destination, for which proposals should demonstrate the expected impact by including a *business case and exploitation strategy for industrialisation*.



D2 2024 Call Two Stages

Call opening: 19.09.2023

Strategic innovation markets driven by advanced materials

<u>HORIZON-CL4-2024-RESILIENCE-01-35:</u> Biodegradable polymers for sustainable packaging materials (IA)	Start: 4 End: 6-7	31 (6-8 per project)	IA	First stage: 07.02.2024 Second stage: 24.09.2024
<u>HORIZON-CL4-2024-RESILIENCE-01-36:</u> Advanced biomaterials for the Health Care (IA)	Start: 3-4 End: 5-6	31 (6-8 per project) (Lump-sum)	IA	First stage: 07.02.2024 Second stage: 24.09.2024

D2 2024 Call Single Stage

Call opening: 19.09.2023

Raw Materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy

<u>HORIZON-CL4-2024-RESILIENCE-01-01:</u> Exploration of critical raw materials in deep land deposits (RIA)	End: 3-5	20 (~5 per project)	RIA	07.02.2024
<u>HORIZON-CL4-2024-RESILIENCE-01-04:</u> Technologies for processing and refining of critical raw materials (IA)	End: 6-7	22 (~7.3 per project)	IA	07.02.2024



Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
<u>HORIZON-CL4-2024-RESILIENCE-01-08:</u> <u>Rare Earth and magnets innovation hubs (IA)</u>	End: 6-7	32 (~16 per project)	IA	07.02.2024
<u>HORIZON-CL4-2024-RESILIENCE-01-10:</u> <u>Addressing due diligence requirements in raw materials supply chains. (CSA)</u>	-	2.2 (~2.2 per project) (Lump-sum)	CSA	07.02.2024
<u>HORIZON-CL4-2024-RESILIENCE-01-11:</u> <u>Technologies for extraction and processing of critical raw materials (IA)</u>	End: 6-7	15 (~7.5 per project) (Lump-sum)	IA	07.02.2024
Safe and Sustainable by Design (SSbD) Chemicals and Materials				
<u>HORIZON-CL4-2024-RESILIENCE-01-24:</u> <u>Development of safe and sustainable by design alternatives (IA)</u>	Start: 4-5 End: 6-7	59 (12-15 per project)	IA	07.02.2024
Improving the resilience of EU businesses, especially SMEs and Startups				
<u>HORIZON-CL4-2024-RESILIENCE-01-41:</u> <u>'Innovate to transform' support for SME's sustainability transition (CSA)</u>	-	10 (~5 per project) (Lump-sum)	CSA FSTP	07.02.2024

Destination 3: World-leading Data and Computing Technologies

This destination will directly support the following Key Strategic Orientations, as outlined in the Strategic Plan:

1. **KSO A, ‘Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains** to accelerate and steer the digital and green transitions through human-centred technologies and innovations.’
2. **KSO C, ‘Making Europe the first digitally led circular, climate-neutral and sustainable economy** through the transformation of its mobility, energy, construction and production systems

Proposals for topics under this Destination should set out a credible pathway to contributing to the following expected impact of Cluster 4 as set out in Horizon Europe Strategic Plan:

Globally attractive, secure and dynamic data-agile economy, by developing and enabling the uptake of the next-generation computing and data technologies and infrastructures (including space infrastructure and data), enabling the European single market for data with the corresponding data spaces and a trustworthy artificial intelligence ecosystem.

As data becomes the new fuel of the economy and a key asset to address our societal challenges, the EU cannot afford to have the data of its businesses, public sector and citizens stored and exploited largely outside its borders. This is affecting not only our economic performance but also our security, safety and sovereignty.



Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
D3 2024 Call Call opening: 15.11.2023				
Data sharing and analytics capacity				
<u>HORIZON-CL4-2024-DATA-01-01:</u> <u>AI-driven data operations and compliance technologies (AI, data and robotics partnership) (IA)</u>	Start: 4-5 End: 6-7	38 (8-10 per project)	IA 60% funding rate	19.03.2024
From Cloud to Edge to IoT for European Data				
<u>HORIZON-CL4-2024-DATA-01-03:</u> <u>Piloting emerging Smart IoT Platforms and decentralized intelligence (IA)</u>	Start: 3-4 End: 6-7	45 (20-25 per project)	IA FSTP	19.03.2024
<u>HORIZON-CL4-2024-DATA-01-05:</u> <u>Platform Building, standardisation and Up-scaling of the 'Cloud-Edge-IoT' Solutions (Horizontal Activities - CSA)</u>	-	2 (~2 per project)	CSA	19.03.2024

Destination 4: Digital & Emerging Technologies for Competitiveness and Fit for the Green Deal

▣ This destination will directly support the following Key Strategic Orientations, as outlined in the Strategic Plan:

1. KSO A, '**Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains** to accelerate and steer the digital and green transitions through human-centred technologies and innovations.'
2. KSO C, '**Making Europe the first digitally led circular, climate-neutral and sustainable economy** through the transformation of its mobility, energy, construction and production systems

Proposals for topics under this Destination should set out a credible pathway to contributing to the following expected impact:

1. **Open strategic autonomy in digital technologies and in future emerging enabling technologies**, by strengthening European capacities in key parts of digital and future supply chains, allowing agile responses to urgent needs, and by investing in early discovery and industrial uptake of new technologies.

Destination 4: Digital & Emerging Technologies for Competitiveness and Fit for the Green Deal

Destination is structured into the following headings and main Topics, which group topics together with similar outcomes to address a common challenge:

1. European Innovation Leadership in Photonics
2. AI, Data and Robotics
3. Open Source for Cloud/Edge and Software Engineering Fundamentals to support Digital Autonomy
4. European leadership in Emerging and Enabling Technologies
5. Flagship on Quantum Technologies: a Paradigm Shift
6. Graphene: Europe in the lead



D4 2024 Call
Call opening: 15.11.2023

AI, Data and Robotics (incl. efficient, robust, safe, adaptive and trusted robots)

<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-03:</u> <u>Novel paradigms and approaches, towards AI- powered robots–</u> <u>step change in functionality (AI, data and robotics partnership)</u> <u>(RIA)</u>	Start: 2-3 End: 4-5	30 (~8 per project)	RIA	19.03.2024
Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-04:</u> <u>Industrial leadership in AI, Data and Robotics boosting</u> <u>competitiveness and the green transition(AI Data and Robotics</u> <u>Partnership)</u>	Start: 3-5 End: 6-7	60 (~10 per project)	IA FSTP	19.03.2024
Open Source for Cloud/Edge and Software Engineering Fundamentals to support Digital Autonomy				
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-21:</u> <u>Open Source for Cloud/Edge to support European Digital Autonomy</u> <u>(RIA)</u>	Start: 4 End: 6	20 (4-6 per project)	RIA	19.03.2024
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-22:</u> <u>Fundamentals of Software Engineering (RIA)</u>	Start: 2 End: 5	13.5 (4-6 per project)(<u>Lump-</u> <u>sum</u>)	RIA	19.03.2024
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-23:</u> <u>Public recognition scheme for Open Source (CSA)</u>	-	2 (~2 per project)(<u>Lump-</u> <u>sum</u>)	CSA	19.03.2024



Graphene and 2D materials: Europe in the lead				
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-31:</u> <u>Pilot line(s) for 2D materials-based devices (RIA)</u>	Start: 3-4 End: 5-6	33 (~33 per project)	RIA	19.03.2024
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-34:</u> <u>Synergy with national and regional initiatives in Europe (CSA)</u>	-	3 (~3 per project) (<u>Lump-sum</u>)	CSA	19.03.2024
Flagship on Quantum Technologies: a Paradigm Shift				
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-42:</u> <u>Stimulating transnational research and development of next generation quantum technologies, including basic theories and components (Cascading grant with FSTP)</u>	Start: 1-4 End: 6	15 (~15 per project)	RIA FSTP	19.03.2024
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-45:</u> <u>Quantum sensing and metrology for market uptake (IA)</u>	Start: 4-5 End: 6-7	15 (4-5 per project)	IA	19.03.2024
European Innovation Leadership in Photonics				
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-54:</u> <u>Smart photonics for joint communication & sensing and access everywhere (Photonics Partnership) (RIA)</u>	Start: 2 End: 5	18 (3-5 per project)	RIA	19.03.2024
<u>HORIZON-CL4-2024-DIGITAL-EMERGING-01-55:</u> <u>Photonics Innovation Factory for Europe (Photonics Partnership) (IA)</u>	Start: 2-5 End: 4-7	15 (~15 per project)	IA	19.03.2024

Destination 6: A human-centred and ethical development of digital and industrial technologies

This destination will directly support the following Key Strategic Orientations, as outlined in the Strategic Plan:

1. **KSO D, Creating a more resilient, inclusive and democratic European society**, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions

Proposals for topics under this Destination should set out a credible pathway contributing to the following expected impact:

1. **A human-centred and ethical development of digital and industrial technologies**, through a two-way engagement in the development of technologies, empowering end-users and workers, and supporting social innovation.

*The rapid adoption of new technologies offers an immense potential for improved standards of living, safer mobility, **better healthcare**, new jobs, or the personalisation of public services. At the same time, it presents risks such as skills mismatches, digital divides, customer lock-in, or serious breaches of security or privacy*

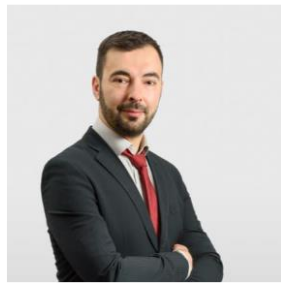


Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
D6 2024 Call Call opening: 15.11.2023				
Leadership in AI based on trust				
<u>HORIZON-CL4-2024-HUMAN-01-06:</u> <u>Explainable and Robust AI (AI Data and Robotics Partnership) (RIA)</u>	Start: 2-3 End: 4-5	30 (9-10 per project)	RIA	19.03.2024
<u>HORIZON-CL4-2024-HUMAN-01-07:</u> <u>Collaborative intelligence – combining the best of machine and human (AI Data and Robotics Partnership) (RIA)</u>	Start: 2-3 End: 4-5	20 (~5 per project)	RIA	19.03.2024
Systemic approaches for accelerating uptake of technology and innovation				
<u>HORIZON-CL4-2024-HUMAN-01-34:</u> <u>Support for transnational activities of National Contact Points in the thematic areas of Digital, Industry and Space (CSA)</u>	-	5 (1.5-5 per project) (<u>Lump-sum</u>)	CSA	19.03.2024
European standards for industrial competitiveness				
<u>HORIZON-CL4-2024-HUMAN-01-61:</u> <u>Facilitate the engagement in global ICT standardisation development (CSA)</u>	-	6 (~6 per project) (<u>Lump-sum</u>)	CSA FSTP	19.03.2024

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