

Horisontti Eurooppa

Digitaalitalous ja -teknologia, teollisuus ja avaruus (Klusteri 4)

24.3.2021

Business Finland & Suomen Akatemia

HORIZON EUROPE

— EU RESEARCH AND INNOVATION PROGRAMME —

Horisontti Eurooppa –hakuinfo (CL4) agenda

14:00-14:10 – Tervetuloa ja päivän ohjelma
Pekka Rantala, Business Finland

14:10-14:20 – EC:n strategiset tavoitteet
Kari Leino, Business Finland

14:20-14:50 – Destinaatiot 1-2
Heini Günther, Business Finland

14:50-15:20 – Destinaatiot 3-4
Pekka Rantala, Business Finland

15:20-15:30 – Destinaatio 5
Pauli Stigell, Business Finland

15:30-15:45 – Destinaatio 6
Katrine Mahlamäki, Suomen Akatemia

15:45-16:00 – Kysymykset & vastaukset



Sulje kamerasi ja hiljennä mikrofonisi



Esitä kysymyksesi keskustelupalstalla



Esitykset nauhoitetaan



Esityksaineiston ja tallenteen löydät:
www.horisonttieurooppa.fi ->
Esityksaineistoja

Horisontti Eurooppa vv. 2021 – 2027: ~95 mrd. €

25 mrd. €
(26,2 %)

Pilari 1

Huipputason tiede

Euroopan tutkimusneuvosto (ERC)

Marie Skłodowska-Curie –toimet
(MSCA)

Tutkimusinfrastruktuurit

53,5 mrd. €
(56 %)

Pilari 2

Globaalit haasteet ja Euroopan
teollisuuden kilpailukyky

Klusterit:

1. Terveys
2. Kulttuuri, luovuus ja osallisuutta edistävä yhteiskunta
3. Kansalaisturvallisuus yhteiskunnassa
4. **Digitaalitalous ja -teknologia, teollisuus ja avaruus (15,3 mrd. €)**
5. Ilmasto, energia ja liikkuvuus
6. Elintarvikkeet, biotalous, luonnonvarat, maatalous ja ympäristö

Yhteinen tutkimuskeskus (JRC)

13,6 mrd. €
(14,2 %)

Pilari 3

Innovatiivinen Eurooppa

Euroopan innovaationeuvosto (EIC)

Euroopan innovaatioekosysteemit

Euroopan Innovaatio- ja
teknologiainstituutti (EIT)

3,4 mrd. €
(3,5 %)

Osallistumispohjan laajentaminen ja eurooppalaisen tutkimusalueen (ERA) vahvistaminen

Osallistumispohjan laajentaminen ja huippuosaamisen
levittäminen

Euroopan T&I-järjestelmän vahvistaminen ja tehostaminen

Miksi minun pitäisi olla kiinnostunut EU-rahoituksesta?

- ✓ **Rahoitus seuraa aina osaamista!**
- ✓ Löydä, tee yhteistyötä ja kehitä **parhaan** akateemisen ja kaupallisteollisen **osaamisen** kanssa.
- ✓ Myötävaikuta tuleviin **standardeihin**, toimintaympäristöön ja regulaatioon.
- ✓ Hanki **riippumaton arviointi** tuotekehityksen eri vaiheisiin (problem-solution & product-to-market-fit)!
- ✓ **Kilpailijasi** hyödyntävät EU-rahoitusta joko suoraan (esim. Horizon 2020/EU: TOP 20 –yritykset listalla mm. GE Avio/Italia ja IBM Research/CH) tai yhteistyökumppaneiden avulla.
- ✓ **Jaa** innovaatioaihiosi **liiketoimintariskiä!**
- ✓ Rakenna kansainvälisiä **T&K-verkostoja**, **arvoketjuja** ja **kaupallisia kanavia**.
- ✓ Löydä ja hyödynnä yhteistyökumppaneiden osaamispääomaa ja immateriaalioikeuksia sekä esimerkiksi tietoaaltaita tai tulevia ohjelmistorajapintoja.

Keskeisimmät rahoitusinstrumentit (avustus)



Technology Readiness Level –asteikko määrittää sinulle sopivan hakutyypin

TRL 1 – basic principles observed

TRL 2 – technology concept formulated

TRL 3 – experimental proof of concept

TRL 4 – technology validated in lab

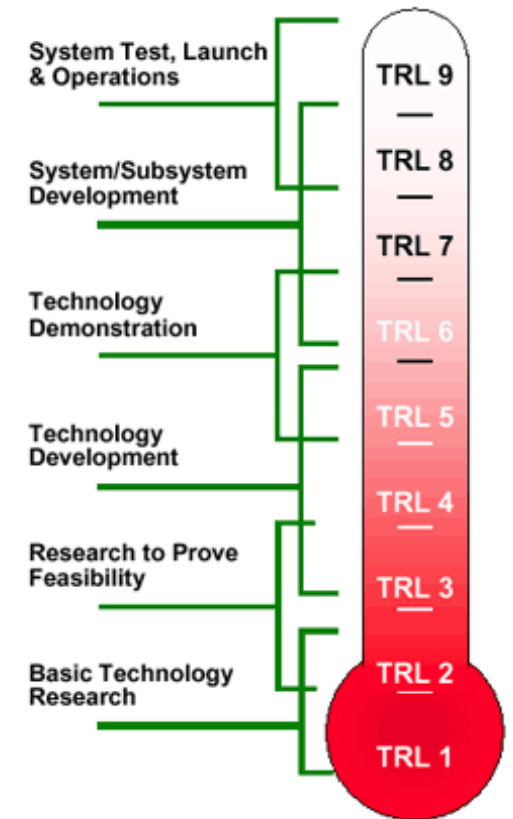
TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies) ~**"MVP"**

TRL 7 – system prototype demonstration in operational environment ~**"Pilot"**

TRL 8 – system complete and qualified ~**"Large-scale pilot"**

TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)



Yleisimmät konsortiohankemuodot pähkinäkuoressa

	Research and Innovation Action (RIA)	Innovation Action (IA)
Public money source	European Commission	European Commission
Focus company	SME, LE	SME, LE
Typical funding/company (EUR)	Depends on the call (0,25-1,0 M)	Depends on the call (0,25-1,0 M)
Funding rate for company	100 % + 25 %	70 % + 25 %
Funding type	Grant	Grant
Business case	Top down (within scope)	Top down (within scope)
Consortium structure	Min 3 from min 3 MS/AC	Min 3 from min 3 MS/AC
Typical coordinator	RTO, LE	RTO, LE (preferably)
Typical duration	36-48 mo	36-48 mo
Typical TRL scope	4-7	5-8
Application dates/cut-offs	Depends on the call	Depends on the call

AC *Associated Country (with EU)*
 LE *Large Enterprise*
 MS *Member State*
 RTO *Research and Technology Organization*
 SME *Small and Medium Sized Company*
 TRL *Technology Readiness Level (1-9)*

Miten mukaan Horisontti Eurooppaan?

EUTI (EU:n tutkimus ja innovaatio-ohjelmien asiantuntija ja kansallinen yhteystoimisto)

KOMITEAJÄSENET &
NCP-YHTEYSHENKILÖT

- maksutonta, kaikille tarjolla, julkista neuvontaa

TIETOA,
NEUVONTAA
OPASTUSTA

KOULUTUSTA
TAPAHTUMIA

HAKEMUSTEN
KOMMENTOINTIA

TYÖOHJELMAN
LUKEMISTA
KANSSASI

OHJAAMISTA
OIKEALLE
"LUUKULLE"

TILASTODATAA &
SEURANTATietoja

Horisontti Euroopan strateginen suunnitelma ja klusteri 4

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HORIZON EUROPE

— EU RESEARCH AND INNOVATION PROGRAMME —

Horizon Europe (HEU) vision

- Accelerate the twin (green and digital) transition
- Accelerate Europe's recovery, preparedness and resilience. Increase autonomy in value networks
- Increase inclusiveness
- The need for a strong research, education and innovation foundation, grounded in scientific excellence and competitive innovation policies

EU: strategic orientations

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



Making Europe the first digitally enabled circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems



Restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources to ensure food security and a clean and healthy environment



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



EU: from orientations to destinations ...

- The strategic orientations lead to destinations, in the cluster 4 Work Program this results in 6 destinations:
 1. Climate neutral, circular and digitised production
 2. Strategic autonomy for resilient industry
 3. World leading data and computing technologies
 4. Digital and emerging technologies for competitiveness and fit for the green deal
 5. Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data
 6. A human-centred and ethical development of digital and industrial technologies

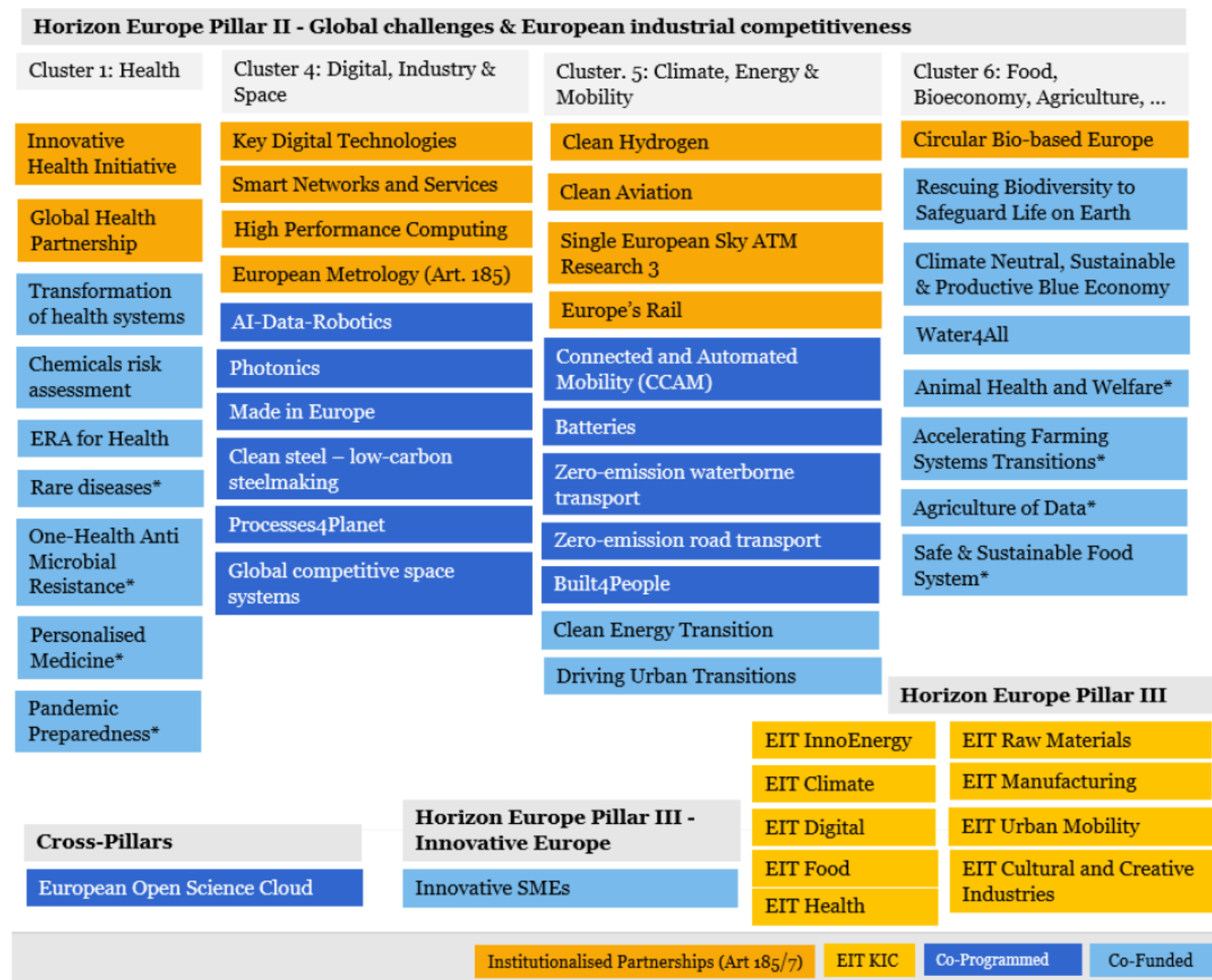
... and strategic EU partnerships

- Horizon Europe Partnerships are special programs established between the Commission, the industry and the participating states for achieving a higher impact than would otherwise be possible in certain areas
- A lot of call topics in the cluster 4 Work Program have been moved to the partnerships. In detinations 3 – 5 most of the topics, even the low-TRL ones
- In cluster 4, 60% of the funds are in the partnerships
- Partnerships have their own Work Programs and calls

HEU Cluster 4 Partnerships and funds

- European Partnership for Key Digital Technologies (KDT) (1.800 M€)
- European Partnership for Smart Networks and Services (SNS) (900M€)
- European Partnership on Artificial Intelligence, Data and Robotics (1.300M€)
- European Partnership for Photonics (340M€)
- European Partnership for Clean Steel - Low Carbon Steelmaking (350M€)
- European Partnership on Metrology (300M€)
- European Partnership Made in Europe (900M€)
- Processes4Planet – Transforming the European Process Industry for a sustainable society (1.530M€)
- European Partnership for Globally competitive Space Systems (500M€)

Overview of 49 candidate **European Partnerships** according to Horizon Europe structure



Destinaatit 1–2 (2021)

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HORIZON EUROPE

EU RESEARCH AND INNOVATION PROGRAMME

CL4: Digitaalitalous ja -teknologia, teollisuus ja avaruus ~15.3 mrd. €

1. Climate neutral, circular and digitised production

2. Increased autonomy in key strategic value chains for resilient industry

3. World leading data and computing technologies

4. Digital and emerging technologies for competitiveness and fit for the green deal

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

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

CL4 Industry calls & key industry priorities

- Circular Economy
- Digital Manufacturing
- Resilient Industries
- Resource Efficiency
- Advanced Materials

Make industries more circular and climate neutral

Strengthen excellence, leadership and competitiveness

Sustainability by design and advanced materials solutions for clean environment

Promote adoption of key digital & emerging technologies across industries

D1. Climate neutral, circular and digitised production

Reduce resource utilisation & GHG emissions

Strategic autonomy and resilience in key value chains

Modernise construction sector and reduce CO₂ emissions and waste

D2. Increased autonomy in key strategic value chains for resilient industry

Responsible and secure sourcing of (critical) raw materials

Efficient integration of renewable energy sources

Create safer, inclusive and attractive added-value manufacturing jobs

CL5 Destinations 1 & 2 commonalities

Biodiversity

- Green Deal objectives -> research and innovation activities should comply with the 'do no significant harm' principle
- To achieve wider effects **activities beyond R&I investments will be needed:**

Skills and
competence
building

- Three co-programmed partnerships will enhance dissemination, community building and foster spillover effects: Made in Europe for the manufacturing sectors, Clean Steel and Processes, 4Planet for the energy intensive industries
- Further development of skills and competencies based on project results, via the European Institute of Innovation and Technology, in particular EIT Manufacturing; upscaling of trainings via the European Social Fund+ etc.

SSH

- Proposals submitted to higher TRL topics should **demonstrate the expected impact by including a business case and exploitation strategy** for industrialisation
- 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** -> **SSH "flagged" topics**
- **Social innovation, gender, diversity, ethics**
- Building on existing standards/ former project results, other existing knowledge, existing state-of-the-art etc.
- Collaboration with other projects, links to partnership programs, synergies with other funding programmes etc. may be required
- for **a number of topics international cooperation** is encouraged
- Several topics implement European partnership programmes
 - > relatively high TRLs and in some AI topics lower funding rates (60 % /100%)

Business case
& exploitation
strategy

Building on
previous
knowledge

International
cooperation

Collaboration with
other projects &
programs

Destination 1

D1. Climate neutral, circular and digitised production

Call "TWIN GREEN AND DIGITAL TRANSITION"

Proposals should set out a credible pathway to the following expected impact of Cluster 4:

- **Global leadership in clean and climate-neutral industrial value chains, circular economy and climate-neutral digital systems and infrastructures (networks, data centres),** through innovative production and manufacturing processes and their digitisation, new business models, sustainable-by-design advanced materials and technologies enabling the switch to decarbonisation in all major emitting industrial sectors, including green digital technologies.

Activities focus on:

- **Twin green and digital transition providing a green productivity premium to discrete manufacturing, construction and energy-intensive industries, including process industries.** This will make an essential and significant contribution to achieving climate neutrality in the European Union by 2050, and to the achievement of a circular economy and enhance the Union's strategic autonomy with regard to the underlying technologies.
- activities are complementary to those in Destination 2, which will enhance strategic autonomy in key strategic value chains for a resilient industry.
- Destination has also a strong link to HE Pillar II **Cluster 5** (Climate, Energy, Mobility) for the activities related to the **integration of renewables and thermal energy management in industry,** as well as Pillar III European Innovation Council, **EIC (SMEs).**

CL4/D1: WP 2021-2022;

outcomes of R&I investments in the long-term will focus on the following impacts:

- Accelerate the **twin green and digital** transition of the manufacturing and construction sectors
- Make **jobs** in manufacturing & construction **safer, more attractive + offer upskilling opportunities**
- Set out a credible **pathway to contributing to climate neutral, circular and digitalised energy intensive industries**
- Increase **productivity, innovation capacity, resilience, sustainability and global competitiveness** of European **energy intensive industries** (hubs for circularity; circular utilisation of waste and CO₂/CO streams; and electrifying industry to enable switch to a renewable energy system)
- Contribute to a **substantial reduction of waste and CO₂ emissions, turning them into alternative feedstocks** to replace fossil-based raw materials and decrease reliance on imports

D1. Climate neutral, circular and digitised production

Call - TWIN GREEN AND DIGITAL TRANSITION

17 topics in 2021 (€ 402,6 mio.)

HORIZON-CL4-2021-TWIN-TRANSITION

A new way to build, accelerating disruptive change in construction

- TWIN-TRANSITION-01-10: Digital permits and compliance checks for buildings and infrastructure (IA) **15 M€ (5 M€)**
- TWIN-TRANSITION-01-11: Automated tools for the valorisation of construction waste (RIA) **21 M€ (6-10 M€)**
- TWIN-TRANSITION-01-12: New breakthrough technologies for technological sovereignty in construction (IA) **24 M€ (8-10 M€)**

Enabling circularity of resources in the process industries, including waste, water and CO₂/CO

- TWIN-TRANSITION-01-17: Plastic waste as a circular carbon feedstock for industry (IA) **38 M€ (12-18 M€)**
- TWIN-TRANSITION-01-18: Carbon Direct Avoidance in steel: Electricity and hydrogen-based metallurgy (IA) **28 M€ (6-8 M€)**
- TWIN-TRANSITION-01-19: Improvement of the yield of the iron and steel making (IA) **14 M€ (4-5 M€)**
- TWIN-TRANSITION-01-20: Reducing environmental footprint, improving circularity in extractive and processing value chains (IA) **34,1 M€ (12 M€)**

Green, flexible and advanced manufacturing

- TWIN-TRANSITION-01-01: AI enhanced robotics systems for smart manufacturing (IA) **28 M€ (8-10 M€)**
- TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste (IA) **28 M€ (8-10 M€)**
- TWIN-TRANSITION-01-03: Laser-based technologies for green manufacturing (RIA) **26 M€ (5-7 M€)**
- TWIN-TRANSITION-01-05: Manufacturing technologies for bio-based materials (RIA) **20 M€ (4-6 M€)**

Opening 15 Apr 2021

Call DL 23 Sep 2021

Advanced digital technologies for manufacturing

- TWIN-TRANSITION-01-07: AI for sustainable manufacturing (IA) **18,5 M€ (4-6 M€)**
- TWIN-TRANSITION-01-08: Data-driven Distributed Industrial Environments (IA) **24 M€ (4-8 M€)**

Hubs for circularity, a stepping stone towards climate neutrality and circularity in industry

- TWIN-TRANSITION-01-14: Deploying industrial- urban symbiosis solutions for the utilization of energy, water, industrial waste and by-products at regional scale (RIA) **27,5 M€ (8-12 M€)**
- TWIN-TRANSITION-01-16: Hubs for Circularity European Community of Practice (ECoP) platform (CSA) **2 M€ (2 M€)**

Integration of Renewables and Electrification in process industry

- TWIN-TRANSITION-01-21: Design and optimisation of energy flexible industrial processes (IA) **40 M€ (12-18 M€)**
- TWIN-TRANSITION-01-22: Adjustment of Steel process production to prepare for the transition towards climate neutrality (IA) **14 M€ (4-5 M€)**

CASE/D1: HORIZON-CL4-2021-TWIN-TRANSITION-01-01: (8-12 M€/project)

AI enhanced robotics systems for smart manufacturing (IA) TRL 5 -> TRL 7

Expected Outcomes:

- Provide **safe, highly flexible, reconfigurable and modular solutions, allowing fast response to repurposing changes in production requirements**, reducing considerably programming effort and configuration time for new products
- Demonstrate **significant improvements towards a meaningful and seamless social collaboration in teams of human workers, autonomous agents and robots** by exploiting the latest advancements in AI, robotics and Social Sciences and Humanities (SSH)
- Create a **network of open-access pilots to allow new users**, especially students, start-ups, representatives from the makers' community and SMEs, **to experiment new technologies and to enable data and knowledge sharing**

Scope: EU and Associated countries need to strengthen their capacity to manufacture and re-manufacture goods in a sustainable and competitive way to be ready to expand into new value chains. The recent crisis has also shown the importance of resilient, flexible, reconfigurable and responsive data-driven manufacturing lines.

Projects should seize the opportunities arising from the latest state-of-the-art-developments in AI and robotics to deploy intelligent and autonomous systems for flexible production. Research activities should be multi-disciplinary and address all of the following areas:

- **Development of robust, easy to use, explainable and compliant AI tools** for manufacturing environments **that require minimal learning**
- **Implement and integrate the latest research findings on technologies in order to develop advanced smart manufacturing human-machine collaborative systems** ensuring safe physical and social interactions and efficient collaboration with human workers;
- **Demonstrate complex, safe and efficient collaboration between multiple agents** simultaneously
- Developing **smooth collaboration in the human-machine teams** and to **increase user experience, awareness comfort, trust, skill and safety** (physical and social) **of workers in highly automated industrial environments**
- Demonstrate results in at least **three large-scale industrial use-cases**,

Requirements/Recommendations:

SSH, business case & exploitation strategy, building on existing standards/contributing to standardisation, collaboration with other projects, synergies with other initiatives/funding/platforms, international cooperation advised – in particular with Japan & Korea.

Implements European Partnerships Made in Europe and AI, Data and Robotics.

CL4/Destination 2

Proposals should set out a credible pathway to the following expected impact of Cluster 4:

D2. Increased autonomy in key strategic value chains for resilient industry

Call "A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY"

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.

Activities will focus on:

- **tackling vulnerabilities in the entire EU (critical) raw materials value chains**
- **strengthen EU's capacity to produce and use chemicals in a sustainable way**
- **Developing further technological/non-technological elements (e.g. business models and product traceability) to support transition to novel low-emission and circular value chains**
- **Prparedness of businesses/SMEs/start-ups in the uptake of new, and especially digital technologies**

-> needs investment in re- and upskilling to ensure quality employment and social inclusion

-> activities planned under Destination 6 "A human-centred and ethical development of digital and industrial technologies" will also contribute to the objectives of a more resilient industrial base. Destination 2 actions are also supported by those in destinations 1 & 3 as well as Pillar III EIC supporting innovative SMEs.

CL4/D2: WP 2021-2022;

outcomes will focus on one or several of the following impacts::

- **Resilient, sustainable and secure (critical) raw materials value chains** for EU industrial ecosystems, in support of the twin green and digital transformations
- **New sustainable-by-design materials with enhanced functionalities and applications in a wide range** of industrial processes and consumer products
- **Leadership in producing materials that provide solutions for clean, toxic/pollutant free environment, decarbonising industry, and safeguarding civil infrastructures**
- **Leadership in circular economy that strengthens cross-sectorial cooperation along the value chain and enable SMEs to transform** their activities and business models.
- **Increased adoption of key digital and enabling technologies in industrial value chains and strategic sectors**, paying particular attention to SMEs and start-ups.

D2. Increased autonomy in key strategic value chains for resilient industry

Call - A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY

22 topics in 2021 (€ 372,4 mio.)

• HORIZON-CL4-2021-RESILIENCE

Green and sustainable materials

- RESILIENCE-01-08: Establishing EU led international community on sustainable-by-design materials to support embedding sustainability criteria over the life cycle of products and processes (CSA) **4 M€ (3-4 M€)**
- RESILIENCE-01-09: Promote Europe's availability, affordability, sustainability and security of supply of essential chemicals and materials (IA) **28 M€ (7-10 M€)**
- RESILIENCE-01-10: Paving the way to an increased share of recycled plastics in added value products (RIA) **23 M€ (5-7 M€)**
- RESILIENCE-01-11: Safe- and sustainable-by-design polymeric materials (RIA) **19 M€ (4-5 M€)**
- RESILIENCE-01-12: Safe- and sustainable-by-design metallic coatings and engineered surfaces (RIA) **19 M€ (4-5 M€)**

Materials for the benefit of society and the environment and materials for climate-neutral Industry

- RESILIENCE-01-14: Development of more energy efficient electrically heated catalytic reactors (IA) **33 M€ (7-10 M€)**
- RESILIENCE-01-16: Creation of an innovation community for solar fuels and chemicals (CSA) **4 M€ (3-4 M€)**
- RESILIENCE-01-17: Advanced materials for hydrogen storage (RIA) **21 (4-6)**
- RESILIENCE-01-20: Antimicrobial, Antiviral, and Antifungal Nanocoatings (RIA) **23 M€ (4-6 M€)**

➤ RESILIENCE-01-01: Ensuring circularity of composite materials (RIA) **25 M€ (8-9 M€)**

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

- RESILIENCE-01-03: Identifying future availability of secondary raw materials (RIA) **13,5 M€ (4,5 M€)**
- RESILIENCE-01-04: Developing climate-neutral and circular raw materials (IA) **36 M€ (12 M€)**
- RESILIENCE-01-05: Building EU-Africa partnerships on sustainable raw materials value chains (CSA) **8 (8)**
- RESILIENCE-01-06: Innovation for responsible EU sourcing of primary raw materials, the foundation of the Green Deal (RIA) **30 M€ (7,5 M€)**
- RESILIENCE-01-07: Building innovative value chains from raw materials to sustainable products (IA) **36 M€ (12 M€)**

Materials and data cross-cutting actions

- RESILIENCE-01-25: Biomaterials database for Health Applications (CSA) **6 (2-4)**
- RESILIENCE-01-26: Sustainable Industry Commons (RIA) **6 M€ (2-4 M€)**
- RESILIENCE-01-27: Innovation Radar, Tech Due Diligence and Venture Building for strategic digital technologies (CSA) **4 M€ (2,5-4 M€)**
- RESILIENCE-01-28: Re-opening industrial sites preparatory action – Promoting a sustainable strategy for Europe's industrial future (CSA) **1 M€ (1 M€)**
- RESILIENCE-01-29: 'Innovate to transform' support for SME's sustainability transition (CSA) **10 M€ (5 M€)**
- RESILIENCE-01-31: Eur. Technological and Social Innovation Factory (RIA) **5 (3-5)**
- RESILIENCE-01-32: Social and affordable housing district demonstrator (IA) **10(10)**

Improving the resilience and preparedness of EU businesses, especially SMEs and Startups (PCP-action)

HORIZON EUROPE

EU RESEARCH AND INNOVATION PROGRAMME

RESILIENCE-02-01-PCP: Boosting economic recovery and strategic autonomy in Strategic Digital Technologies through pre-commercial procurement (8,9 M€)

Opening 15 Apr 2021

Call DL 23 Sep 2021

Destinaatit 3–4 (2021)

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HORIZON EUROPE

— EU RESEARCH AND INNOVATION PROGRAMME —

CL4: Digitaalitalous ja -teknologia, teollisuus ja avaruus ~15.3 mrd. €

1. Climate neutral, circular and digitised production

2. Increased autonomy in key strategic value chains for resilient industry

3. **World leading data and computing technologies**

4. **Digital and emerging technologies for competitiveness and fit for the green deal**

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

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

Destination 3 – World leading data and computing technologies

- ✓ **'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.'
- ✓ **'Making Europe the first digitally led circular, climate-neutral and sustainable economy** through the transformation of its mobility, energy, construction and production systems.'
- **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.

#Security #Trustworthiness #DataHubs #Interoperability #EUWideCommonDataSpaces
#StandardsForDataSharing #HyperDistributedApplications #HighPerformanceComputing
#Sustainability #Energy-HarvestingSensors #Transparency #Openness
#Findable_Accessible_Interoperable_Reusable #Analytics #DigitalAutonomy

Data sharing in the common European data spaces

- HORIZON-CL₄-2021-DATA-01-01: Technologies and solutions for compliance, privacy preservation, green and responsible data operations (**RIA: 5 x 8 – 11 M€**)
- HORIZON-CL₄-2021-DATA-01-03: Technologies for data management (**IA: 6 x 5 M€**)

Strengthening Europe's data analytics capacity

- HORIZON-CL₄-2021-DATA-01-04: Extreme data mining, aggregation and analytics technologies and solutions (**RIA: 6 x 5 M€**)

From Cloud to Edge to IoT for European Data

- HORIZON-CL₄-2021-DATA-01-05: Future European platforms for the Edge: Meta Operating Systems (**RIA: 5 x 8 – 12 M€**)
- HORIZON-CL₄-2021-DATA-01-07: Coordination and Support of the 'Cloud-Edge-IoT' domain (**CSA: 2 x 1,5 M€**)
- HORIZON-CL₄-2021-DATA-01-08: Roadmap for next generation computing and systems technologies (**CSA: 1 x 2 M€**)

Destination 4 – Digital and emerging technologies for competitiveness and fit for the green deal

- ✓ **'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.'
- ✓ **'Making Europe the first digitally led circular, climate-neutral and sustainable economy** through the transformation of its mobility, energy, construction and production systems.'
- **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.

#Photonics #Electronics #Ultra-lowPowerProcessor #6G #AIDiffusion #BioComputing
#Neuro-MorphicComputing #Quantum #Graphene #AI #Data #DigitalSupplyChain
#Efficient_Robust_Safe_Adaptive_Trusted_Robotics

Ultra-low power processors

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-01: Ultra-low-power, secure processors for edge computing (**RIA: 3 x 8 – 10 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-05: Open Source Hardware for ultra-low-power, secure processors (**CSA: 1 x 1,5 M€**)

European Innovation Leadership in Electronics

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-31: Functional electronics for green and circular economy (**RIA: 9 x 3 – 5 M€**)

European Innovation Leadership in Photonics

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-06: Advanced optical communication components (**IA: 6 x 4 – 6 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-07: Advanced Photonic Integrated Circuits (**RIA: 8 x 3 – 5 M€**)

6G and foundational connectivity technologies

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-26: Coordination of European Smart Network actions (**CSA: 1 x 2,5 M€**)

Innovation in AI, Data and Robotics

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-09: AI, Data and Robotics for the Green Deal (**IA: 6 x 3 – 5 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-10: AI, Data and Robotics at work (**IA: 6 x 3 – 5 M€**)

Tomorrow's deployable Robots: efficient, robust, safe, adaptive and trusted

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-11: Pushing the limit of robotics cognition (**RIA: 7 x 5 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-12: European Network of Excellence Centres in Robotics (**RIA: 1 x 11,3 M€**)

European leadership in Emerging Enabling Technologies

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-13: Academia-Industry Forum on Emerging Enabling Technologies (**CSA: 1 x 2,5 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-14: Advanced spintronics: Unleashing spin in the next generation ICs (**RIA: 6 x 2 – 3 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-27: Development of technologies/devices for bio-intelligent manufacturing (**RIA: 4 x 5 – 7 M€**)

Flagship on Quantum Technologies: a Paradigm Shift (1/2)

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-15: Framework Partnership Agreement for developing the first large-scale quantum computers (**FPA: n/a**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-17: Framework Partnership Agreement for developing large scale quantum simulation platform technologies (**FPA: n/a**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-19: Framework Partnership Agreements in Quantum Communications (**FPA: n/a**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-20: Quantum sensing technologies for market uptake (**IA: 3 x 7 – 10 M€**)

What is a 'framework partnership agreement' (FPA)?

A 'framework partnership' is a **long-term cooperation** that sets out an action plan/work programme and the terms and conditions for receiving grants to implement them.

They are typically used when Commission intends to work **with its partners on a regular basis or when there is the need of recurring grants** during the funding programme period.

Framework partnerships set out in a 'framework partnership agreement (FPA)' and implemented through 'specific agreements (SGAs)'.

Highlights

Partners in the FPA and SGAs must be the same. Partners that do not want to be active in a SGA can participate as inactive 'partner not receiving funding'. New partners can be added, but they must first become part of the FPA and can only then be added to the SGAs.

The coordinator for the FPA and all SGAs must be the same. The FPA has no budget; the budget and rules on funding are set out in each SGA (and depend on the type of specific grant).

Flagship on Quantum Technologies: a Paradigm Shift (2/2)

- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-21: Next generation quantum sensing technologies (**RIA: 2 x 3 – 4 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-22: Framework Partnership Agreements for open testing and experimentation and for pilot production capabilities for quantum technologies (**FPA: n/a**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-23: International cooperation with Canada (**RIA: 1 x 2,5 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-XX: Support and coordination of the Quantum Technologies Flagship Initiative (**CSA: 1 x 6,4 M€**)
- HORIZON-CL₄-2021-DIGITAL-EMERGING-01-30: Investing in new emerging quantum computing technologies (**RIA: 1 x 8,6 M€**)

CASE/D4: HORIZON-CL4-2021-DIGITAL-EMERGING-01-09: AI, Data and Robotics for the Green Deal

Innovation Action (70 %) | 6 x EUR 3 – 5 M€ | Opening 15 Apr 2021 | DL 08 Sep 2021

Expected outcome: Innovative AI, data and robotics solutions for resource optimisation and minimisation of waste in any type of sector (from agri-food, to energy, utilities, transport, production, etc.).

Optimised AI, data and robotics (including modular and adaptive solutions) to maximise contribution to the Green Deal.

Advanced physical intelligence and physical performance of robotics solutions in diverse harsh environments serving the Green Deal.

Scope: Proposals are expected to integrate and optimise AI, data and robotics solutions in order to demonstrate, by addressing use-cases scenarios in actual or highly realistic operating environments, how they can directly contribute to the Green Deal. Methodology should be supported by industry or service relevant KPIs, making the case for the added value of such technologies, and demonstrating scalability, and deployment potential.

Destinaatio 5 (2021)

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HORIZON EUROPE

— EU RESEARCH AND INNOVATION PROGRAMME —

CL4: Digitaalitalous ja -teknologia, teollisuus ja avaruus ~15.3 mrd. €

1. Climate neutral, circular and digitised production

2. Increased autonomy in key strategic value chains for resilient industry

3. World leading data and computing technologies

4. Digital and emerging technologies for competitiveness and fit for the green deal

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

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

Destination 5: OPEN STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA

Research and innovation will

- enhance services and applications from Copernicus and Galileo for Earth observation and accurate global Positioning Navigation and Timing (PNT) for EU citizens, the economy and policy making.
- contribute to future secured communications (GOVSATCOM)
- contribute to EU autonomous access to space and competitiveness in space systems
- contribute to European technological competitiveness
- **Continuation of space research in Horizon2020!**

Destination 5: Space

Destination Space is divided to headings

- Foster competitiveness of space systems = **SATELLITES**
- Reinforce our capacity to access to space = **ROCKETS**
- Evolution of Space and ground infrastructures for **GALILEO/EGNOS SATELLITES ETC.**
- Evolution of **services** for Galileo, EGNOS and Copernicus – **PUBLIC SECTOR**
- Development of **applications** for Galileo, EGNOS and Copernicus - **COMMERCIAL**
- Innovative space capabilities: **SSA, GOVSATCOM, Quantum**
- Space entrepreneurship ecosystems (incl. **New Space and start-ups**) and skills
- Targeted and strategic actions supporting the EU space sector - **e.g. SPACE SCIENCE**

Not in Call 2021:

- SSA=Space Situational Awareness
- GOVSATCOM – civil security authorities satellite telecommunications service

Call budgets and deadlines

Call	Budgets (M€)		Deadline
	2021	2022	
HORIZON-CL ₄ -2021-SPACE-01	141		7 Sep 2021
HORIZON-CL ₄ -2021-SPACE-02	32		7 Sep 2021
HORIZON-CL ₄ -2022-SPACE-01		80	6 Sep 2022
HORIZON-CL ₄ -2022-SPACE-02		48	6 Sep 2022
Overall indicative budget	173	128	

Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL **SPACE-BASED INFRASTRUCTURES**, SERVICES, APPLICATIONS AND DATA 2021

Foster competitiveness of space systems

- HORIZON-CL₄-2021-SPACE-01-11: End-to-end **satellite communication systems** and associated services, RIA, budget 12 M€, per project 4 to 6 M€ (2 projects)
- HORIZON-CL₄-2021-SPACE-01-12: Future space ecosystems: **on-orbit operations**, new system concepts, RIA, budget 6 M€, 1-2 M€ per project (3 projects)

Reinforce EU capacity to access and use space

- *HORIZON-CL₄-2021-SPACE-01-21: Reusability for European strategic space launchers - technologies and operation maturation including flight test demonstration*
- *HORIZON-CL₄-2021-SPACE-01-22: Low cost high thrust propulsion for European strategic space launchers - technologies maturation including ground tests*
- *HORIZON-CL₄-2021-SPACE-01-23: New space transportation solutions and services, 2 projects (1-2 M€)*

Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL **SPACE-BASED** INFRASTRUCTURES, **SERVICES**, APPLICATIONS AND DATA 2021

Evolution of **Copernicus services**

- HORIZON-CL4-2021-SPACE-01-41: Copernicus **Climate Change** Service evolution, RIA, 1 project (10-12 M€)
- HORIZON-CL4-2021-SPACE-01-42: Copernicus **Atmosphere** Monitoring Service evolution, RIA, 1 project (6-8 M€)
- HORIZON-CL4-2021-SPACE-01-43: Copernicus **Security and Emergency Services** evolution, RIA, 1 project (4-5 M€)
- HORIZON-CL4-2021-SPACE-01-44: Copernicus evolution for **cross-services thematic** domains, RIA, 2 projects (4-5 M€)

Current Copernicus services related to the Call Topics 41-43 are:

- <https://www.copernicus.eu/en/copernicus-services/climate-change>
- <https://www.copernicus.eu/en/copernicus-services/atmosphere>
- <https://www.copernicus.eu/en/copernicus-services/security> and <https://www.copernicus.eu/en/copernicus-services/emergency>

Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL **SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA** 2021

Innovative space capabilities: SSA, Govsatcom, Quantum

- HORIZON-CL₄-2021-SPACE-01-62: **Quantum technologies for space gravimetry**, RIA , 1 project (15-17 M€)
 - The enhancement of the TRL up to TRL₅ for cold atom interferometry (including Bose-Einstein Condensates) components is a key objective of this call.
 - The scope also covers the development of software simulation tools to analyse the different mission concepts linked to these sensors or processing and analysis of the sensor data.

Targeted and strategic actions supporting the EU space sector

- *HORIZON-CL₄-2021-SPACE-01-81: Space **technologies for European non-dependence** and competitiveness, RIA, budget 12 M€, per project 2-4 M€ (4 projects)*
 - Actions that shall be implemented in 2021 are in the technology areas:
 - [JTF-2021/23-10] - RF components
 - [JTF-2021/23-13] - Passive & RF Passive components
 - [JTF-2021/23-14 A] - Discrete power devices
 - [JTF-2021/23-17] - Very high energy ion accelerators for component, shielding and radiobiology characterization
 - [JTF-2021/23-22 D] - Widespread applications of metallic lead (Pb)

Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL **SPACE-BASED** INFRASTRUCTURES, **SERVICES, APPLICATIONS** AND DATA 2021

Development of **applications** from the EU space programme components

- HORIZON-CL4-2021-SPACE-02-51: **EGNSS and Copernicus** applications fostering the **European Green Deal**, IA, budget 14 M€ (1,5-3 M€ per project – 6 projects)
- HORIZON-CL4-2021-SPACE-02-52: **EGNSS** applications for **Safety and Crisis management**, IA, budget 9 M€ (1,5-3 M€, 4 projects)
- HORIZON-CL4-2021-SPACE-02-53: **EGNSS** applications for the **Digital Age**, IA, budget 9 M€ (1,5-3 M€, 4 projects)

EGNSS is European satellite navigation system consisting of Galileo-satellites and EGNOS-system (EGNOS makes GPS more accurate in Europe).

Copernicus is European Earth Observation system operating Sentinel remote sensing satellites and six Copernicus services (<https://www.copernicus.eu/en/copernicus-services>).

2022 - Call 2022 - and start of Space Partnership?

HORIZON-CL4-2022-SPACE-01-11: Future space ecosystems: on-orbit operations, preparation of orbital demonstration mission
HORIZON-CL4-2022-SPACE-01-12: Technologies and generic building blocks for Electrical Propulsion
HORIZON-CL4-2022-SPACE-01-13: **End-to-end Earth observation systems** and associated services
HORIZON-CL4-2022-SPACE-01-21: Multi sites flexible industrial platform and standardised technology for improving interoperability of European access to space ground facilities
HORIZON-CL4-2022-SPACE-01-41: Copernicus Marine Environment Monitoring Service evolution
HORIZON-CL4-2022-SPACE-01-42: Copernicus Anthropogenic CO₂ Emissions Monitoring & Verification Support (MVS) capacity
HORIZON-CL4-2022-SPACE-01-43: Copernicus Land Monitoring Service evolution
HORIZON-CL4-2022-SPACE-01-62: **Space Weather**
HORIZON-CL4-2022-SPACE-01-72: Education and skills for the EU space sector
HORIZON-CL4-2022-SPACE-01-81: Space tech. for Eur. non-depend. and competitiveness
HORIZON-CL4-2022-SPACE-01-82: **Space science and exploration technologies**
HORIZON-CL4-2022-SPACE-02-51: EGNSS applications for Smart mobility
HORIZON-CL4-2022-SPACE-02-52: Public sector as Galileo and/or Copernicus user
HORIZON-CL4-2022-SPACE-02-54: **Copernicus downstream applications and the European Data Economy**
HORIZON-CL4-2022-SPACE-02-55: Large-scale Copernicus data uptake with AI and HPC
HORIZON-CL4-2022-SPACE-02-56: Designing space-based downstream applications with international partners
HORIZON-CL4-2022-SPACE-02-61: **GOVSATCOM** Service developments and demonstrations

Total budget about 1,9 billion euro (incl. Space Partnership)

Draft proposal for a
European Partnership under Horizon Europe
Globally competitive Space Systems

Version 27 May 2020

About this draft

In autumn 2019 the Commission services asked potential partners to further elaborate proposals for the candidate European Partnerships identified during the strategic planning of Horizon Europe. These proposals have been developed by potential partners based on common guidance and template, taking into account the initial concepts developed by the Commission and feedback received from Member States during early consultation¹. The Commission Services have guided revisions during drafting to facilitate alignment with the overall EU political ambition and compliance with the criteria for Partnerships.

This document is a stable draft of the partnership proposal, released for the purpose of ensuring transparency of information on the current status of preparation (including on the process for developing the Strategic Research and Innovation Agenda). As such, it aims to contribute to further collaboration, synergies and alignment between partnership candidates, as well as more broadly with related R&I stakeholders in the EU, and beyond where relevant.

This informal document does not reflect the final views of the Commission, nor pre-empt the formal decision-making (comitology or legislative procedure) on the establishment of European Partnerships.

Volume: 500 M€ in grants + 500 M€ co-funding
by project participants

Destinaatio 6 (2021)

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HORIZON EUROPE

— EU RESEARCH AND INNOVATION PROGRAMME —

CL4: Digitaalitalous ja -teknologia, teollisuus ja avaruus ~15.3 mrd. €

1. Climate neutral, circular and digitised production

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

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

Expected impact

- **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**
 - Increased **inclusiveness**, by supporting a human-centred approach to technology development that is aligned with European social and ethical values, as well as sustainability
 - Sustainable, high-quality jobs by targeting **skills mismatches**, the need to **empower workers**, and ethical considerations relating to technological progress
- **Key Strategic Orientation 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

Budget, topics and deadlines

2021: Opening: 15 Apr 2021 – Deadline(s): 8 Sep 2021

Total indicative budget per destination 2021	205 M€
Leadership in AI based on trust	79.7 M€
An Internet of Trust	34.4 M€
eXtended Reality (XR)	62.1 M€
Systemic approaches to make the most of the technologies within society and industry	22.4 M€

Leadership in AI based on trust

Autonomy for Europe in AI, world-class technologies that are beneficial to humans individually, organisationally and societally, and adhere to European values, such as our fundamental rights and environmental sustainability. Technologies that industries and citizens will trust, so they could be applied in a wide range of applications and industrial sectors.

HORIZON-CL ₄ -2021-HUMAN-01-01: Verifiable robustness, energy efficiency and transparency for Trustworthy AI: Scientific excellence boosting industrial competitiveness (RIA) TRL 2-3 → TRL 4-5	35.4 M€ 4 M€
HORIZON-CL ₄ -2021-HUMAN-01-02: European coordination, awareness, standardisation & adoption of trustworthy European AI, Data and Robotics (CSA)	12.8 M€ 4-9 M€
HORIZON-CL ₄ -2021-HUMAN-01-03: European Network of AI Excellence Centres: Pillars of the European AI lighthouse (RIA) TRL 2-3 → TRL 4-5	8.9 M€ 8.9 M€
HORIZON-CL ₄ -2021-HUMAN-01-24: Tackling gender, race and other biases in AI (RIA) TRL 3-4 → TRL 5-6	9.8 M€ 3-3.5 M€
HORIZON-CL ₄ -2021-HUMAN-01-27: AI to fight disinformation (RIA)	12.8 M€ 6.4 M€

An Internet of Trust

Trustworthy digital environment, built on a more resilient, sustainable, and decentralised internet, to empower end-users with more control over their data and their digital identity, and to enable new social and business models respecting European values.

HORIZON-CL ₄ -2021-HUMAN-01-04: Trust & data sovereignty on the Internet (RIA)	12 M€
	12 M€
HORIZON-CL ₄ -2021-HUMAN-01-05: Trustworthy open search and discovery (RIA)	17 M€
	8.5 M€
HORIZON-CL ₄ -2021-HUMAN-01-07: Next Generation Internet community-building and outreach (CSA)	2 M€
	2 M€
HORIZON-CL ₄ -2021-HUMAN-01-08: NGI International Collaboration - Transatlantic fellowship programme (CSA)	1.9 M€
	1.9 M€
HORIZON-CL ₄ -2021-HUMAN-01-09: NGI Tech Review (CSA)	1.5 M€
	1.5 M€

eXtended Reality (XR)

Industrial leadership in eXtended Reality technologies and immersive environments, while ensuring the European values of privacy, ethics and inclusiveness.

Digital transformation of education through these technologies.

HORIZON-CL ₄ -2021-HUMAN-01-06: Innovation for Media, including eXtended Reality (IA) TRL 4 → TRL 8	25.6 M€ 8-9 M€
HORIZON-CL ₄ -2021-HUMAN-01-13: eXtended Reality Modelling (RIA) TRL 2 → TRL 5	14.3 M€ 4 M€
HORIZON-CL ₄ -2021-HUMAN-01-14: eXtended Reality for All – Haptics (RIA) TRL 5 → TRL 7	5.9 M€ 5.9 M€
HORIZON-CL ₄ -2021-HUMAN-01-25: eXtended Collaborative Telepresence (IA) TRL 4 → TRL 6-7	13.8 M€ 5-8 M€
HORIZON-CL ₄ -2021-HUMAN-01-28: eXtended Reality Ethics, Interoperability and Impact (CSA)	2.5 M€ 2.5 M€

Systemic approaches to make the most of the technologies within society and industry

Encourage creativity and make the most of the technologies developed elsewhere within society and industry. Testing ideas in local communities; support for IP, standardisation and industry-academia exchanges; art-driven design; and assessments of complex socio-economic systems.

HORIZON-CL ₄ -2021-HUMAN-01-17: Awareness raising on Intellectual property (IP) management for European R&I (CSA)	1 M€ 1 M€
HORIZON-CL ₄ -2021-HUMAN-01-18: Fostering standardisation to boost European industry's competitiveness (CSA)	1 M€ 1 M€
HORIZON-CL ₄ -2021-HUMAN-01-19: Testing innovative solutions on local communities'-demand (IA)	5 M€ 5 M€
HORIZON-CL ₄ -2021-HUMAN-01-20: Piloting a new industry-academy knowledge exchange focussing on companies' needs (CSA)	2 M€ 2 M€
HORIZON-CL ₄ -2021-HUMAN-01-21: Art-driven use experiments and design (RIA) TRL 3 → TRL 5	8.4 M€ 2.8 M€
HORIZON-CL ₄ -2021-HUMAN-01-26: Workforce skills for industry 5.0 (RIA) TRL 4 → TRL 6	5 M€ 5 M€

APPENDIX: SSH Integration in Horizon Europe

Katja Marjanen

Expert, National Contact Point (Culture, Creativity and Inclusive Society)

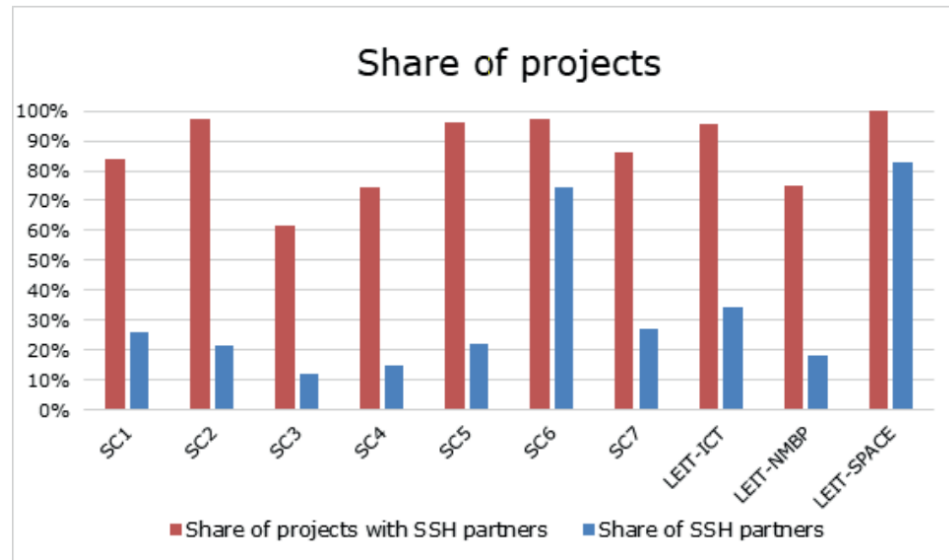
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— EU RESEARCH AND INNOVATION PROGRAMME —

Why is SSH relevant for you?



SSH-integration matters:

1. You will include new perspectives and therefore improve the quality of your project
2. In H2020 majority of funded projects included ssh partners

Integration of social sciences and humanities



FP7

- Programme dedicated to ssh
- ⑩ Working independently



Horizon2020

- SSH cross-cutting issue
- ⑩ Working together

What & why?

- Societal challenges too complex
- Not overcome by a single scientific discipline
- Technical solutions not enough.
- Lasting societal impacts rely on insights from social sciences and the humanities.
- Improved integration of SSH expected to strengthen societal impact, broaden citizen engagement and lead to a better future.

Integration of social sciences and humanities: What's new in Horizon Europe?

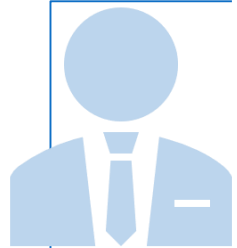
SSH integration is already a cross-cutting principle under Horizon 2020

- SSH-flagging of topics
- Yearly monitoring of SSH integration

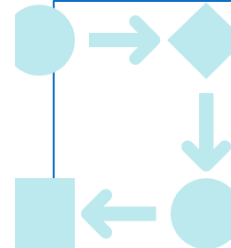
In Horizon Europe SSH integration will be

- More holistic (applying across the entire program and over the entire cycle)
- More explicit (expected societal impacts clearly set out)
- More forceful (explicitly evaluated and followed-up)

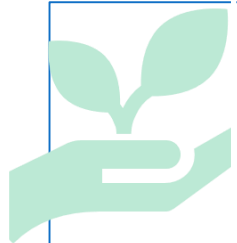
SSH relevant themes in Cluster 4



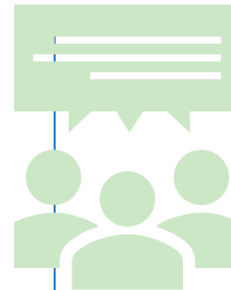
Qualitative research on the nature of job transformations for industry 4.0/5.0



The analysis of human-machines interactions



Business models for sustainable developments



Citizens' participation and public engagement in industrial technologies, as well as cultural heritage research

Different levels of integration: Check the work programme

1. Appropriate expertise from social sciences and humanities (SSH) **should be included.**
2. Demonstrate significant improvements towards a meaningful and **seamless social collaboration** in teams of human workers, autonomous agents and robots by exploiting the latest advancements in AI, robotics and Social Sciences and Humanities (SSH)
3. **Engagement with SSH expertise** is also needed to improve interaction design and to provide expertise on trustworthiness and acceptability by workers, as well as ethical perspective of human-machine collaboration. Gender and intersectionality dimension analysis should be a part of the proposals, where relevant.

How to do ssh integration successfully



Include partners with **relevant** ssh competence

Read carefully what kind of is asked for in the call text
Do not "tick the box" but include only relevant expertise that is needed for the project



Include ssh partners **already in the writing phase**

This will ensure that you get the right expertise already in the project planning phase
The application will be more convincing



Do not leave this to the last minute:
it needs time and good planning

Making sure that interdisciplinary project are successful needs communication and might need a bit more time.

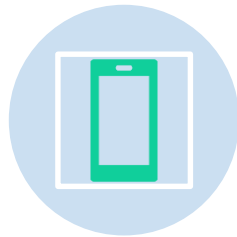
Where to find ssh partners



OWN NETWORKS,
OWN UNIVERSITY



PARTICIPANT
PORTALS PARTNER
SEARCH



NET4SOCIETY
PLATFORM



BROKERAGE EVENTS



ASK NCPS FOR
ADVICE

Kiitos!

Q&A

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