



HORIZON EUROPE WORK PROGRAMME 2021/2022: CLUSTER 4 – DIGITAL, INDUSTRY, SPACE

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ČVUT, 15/04/2021, 09.30–11.00

FROM H2020 TO HORIZON EUROPE

What is new?

- Integration of 3 programme areas (ICT, NMBP, SPACE) into one WP “Cluster 4”
- More complex workprogramme, links to [partnerships](#) and other initiatives
- Topics set into larger context, some important topics (robotics, 5G/6G) shifted to other programmes
- Emphasis on sustainability, environmental aspects, responsibility in research and innovation, gender and standardization (strategic priorities: [European Green Deal](#), [Europe fit for the digital age](#), other priorities)
- Shortened page limit of application [template](#), new features in template (e.g. researches table, [DNSH](#), [gender equality plan](#))

What stays the same?

- All calls are single-stage process
- Similar opening and closing dates for all calls in 2021
- Funding rate (RIA, IA, CSA)
- Evaluation process, Call – [register as an expert](#)
- [Cascade funding](#) known as Financial Support to Third Parties (FSTP), Open Innovation Test Beds (OITB)



CLUSTER 4 – DIGITAL, INDUSTRY & SPACE

Key strategic orientations (KSO) – expected impacts in Cluster 4

- [KSO A](#) Promoting an **open strategic autonomy** by leading the development of key digital, enabling and emerging technologies, sectors and value
- [KSO B](#) Restoring Europe's ecosystems and biodiversity, and **managing sustainably natural resources**
- [KSO C](#) Making Europe the first **digitally led circular, climate-neutral and sustainable economy**
- [KSO D](#) Creating a more **resilient, inclusive and democratic** European society



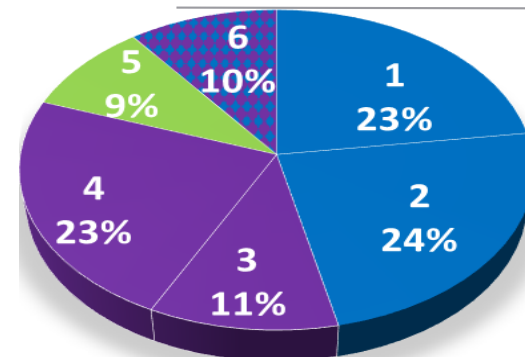
WORK PROGRAMME STRUCTURE – 6 DESTINATIONS

Key strategic orientations (KSO)

**WP Cluster 4
2021 – 2022:
budget 3172 mil €,
nearly 200 topics**



Total budget in 2021 - 2022 calls **3172 mil. €**
CI-4 Budget breakdown among 6 Destinations



DESTINATION 1

Call - Climate neutral, circular and digitised production

- Call ID: **TWIN-TRANSITION**, **30 topics** in 2021 - 2022 (**9** RIA / **20** IA / **1** CSA)
- Foreseen budget **724.1 M€**
- Opening 15/04/2021 -> deadline **23/09/2021**, deadline 2022 tbd

SECTION

Green, flexible and advanced manufacturing

Advanced digital technologies for manufacturing

A new way to build, accelerating disruptive change in construction

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

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

Integration of Renewables and Electrification in process industry

Focus of topics: AI robotics for smart manufacturing, zero-defect manufacturing, laser-based technologies for green manufacturing, technologies for bio-based materials / AI and data-driven industries / tools for valorisation of construction waste / industrial-urban symbiosis in utilization of energy, water, industrial waste / plastic waste as sustainable carbon feedstock for industry, electricity and hydrogen based metalurgy / optimization of energy flexible industrial processes / adjustment of steel process production to prepare for the transition towards climate neutrality / other

OVERVIEW OF CALL TOPICS

<https://horizontevropa.cz/cs/struktura-programu-he/globalni-vyzvy-konkurenceschopnost/klastr-4-digitalizace-prumysl-vesmir/vyzvy>

DESTINATION 1 - topics	17	13	Climate neutral, circular and digitised production	Action	M€/topic	M€/total	# proj	Partnership(s)	Opens	Ddl
Section	4	4	Green, flexible and advanced manufacturing			103,5		Made in Europe = FoF	15 Apr 21	23 Sep 21
TWIN-TRANSITION-01-2021			AI enhanced robotics system for smart manufacturing	IA	8 - 12	30	3	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-02-2021			Zero-defect manufacturing towards zero-waste	IA	9 - 12	27,5	3	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-03-2021			Laser-based technologies for green manufacturing	RIA	5 - 7	26	4	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-05-2021			Manufacturing technologies for bio-based materials	RIA	4 - 6	20	4	Made in Europe / BBI	15 Apr 21	23 Sep 21
TWIN-TRANSITION-01-2022			Rapid reconfigurable production process chains	IA	8 - 12	27,5	3	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-02-2022			Products with complex functional surfaces	RIA	4 - 6	20	4	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-04-2022			Excellence in distributed control and modular manufacturing	RIA	4 - 6	20	4	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-05-2022			Intelligent work piece handling in a full production line	RIA	4 - 8	20	4	Made in Europe	15 Apr 21	23 Sep 21
Section	2	2	Advanced digital technologies for manufacturing			41,5			15 Apr 21	23 Sep 21
TWIN-TRANSITION-07-2021			Artificial Intelligence for sustainable, agile manufacturing	IA	3 - 8	19	3	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-08-2021			Data-driven Distributed Industrial Environments	IA	4 - 8	22,5	3	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-06-2022			ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2)	IA	4 - 8	21	3	Made in Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-07-2022			Digital tools to support the engineering of a Circular Economy	RIA	3 - 6	22	3	Made in Europe	15 Apr 21	23 Sep 21
Section	3	1	A new way to build, accelerating disruptive change in construction			60		Build 4 Europe	15 Apr 21	23 Sep 21
TWIN-TRANSITION-10-2021			Digital permits and compliance checks for buildings and infrastructure	IA	5	15	3		15 Apr 21	23 Sep 21
TWIN-TRANSITION-11-2021			Automated tools for the valorisation of construction waste	RIA	6 - 10	21	3		15 Apr 21	23 Sep 21
TWIN-TRANSITION-12-2021			New breakthrough technologies for technological sovereignty in construction	IA	10 - 15	24	3		15 Apr 21	23 Sep 21
TWIN-TRANSITION-10-2022			Demonstrate the use of Digital Logbook for buildings	IA	4,5	9	2		15 Apr 21	23 Sep 21
Section	2	1	Hubs for circularity, a stepping stone towards climate neutrality and circularity in industry			29,5		Processes 4 Planet	15 Apr 21	23 Sep 21
TWIN-TRANSITION-14-2021			Deploying industrial-urban symbiosis solutions for the utilization of energy, water, industrial waste and by-products at regional scale	RIA	8 - 12	27,5	3	Processes 4 Planet = SPIRE	15 Apr 21	23 Sep 21
TWIN-TRANSITION-16-2021			Hub for European Circularity Community of Practice (ECOP) platform	CSA	2	2	3	Processes 4 Planet	15 Apr 21	23 Sep 21



DESTINATION 2

Call - Increased autonomy in key strategic value chains for resilient industry

- Call ID: **RESILIENCE**, **43 topics** in 2021 - 2022 (**20** RIA / **12** IA / **10** CSA / 1 PCP)
- Foreseen budget **750.3 M€**
- Opening 15/04/2021 -> deadline **23/09/2021**, deadline 2022 tbd

SECTION

Novel paradigms to establish resilient and circular value chains

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

Green and sustainable materials

Materials for the benefit of society and the environment and materials for decarbonising industry

Materials and data cross-cutting actions

Improving the resilience and preparedness of EU businesses, especially SMEs and startups

Focus of topics: circularity of multi-material products / climate-neutral and circular raw materials, EU-Africa partnership on raw-materials / safe- and sustainable-by-design materials / materials for hydrogen storage, functional nanocoatings / biomaterials for health applications / open innovation testbeds / re-opening industrial sites, support to SME in sustainability transition / other



DESTINATION 3

Call - World leading data and computing technologies

- Call ID: **DATA**, **10 topics** in 2021 - 2022 (**6** RIA / **2** IA / **2** CSA)
- Foreseen budget **346.0 M€**
- Opening 15/04/2021 -> deadline **08/09/2021**, deadline 2022 tbd

SECTION

Data sharing in the common European data space

Strengthening Europe's data analytics capacity

From Cloud to Edge to IoT for European Data

High-end computing for exascale performance & beyond

Focus of topics: trustworthy digital technologies / responsible and fair data operations / secure and energy efficient data management tools / data markets and data economy / extreme data mining, aggregation and analytics technologies / higher-level operating systems for smart Internet of Things / other

DESTINATION 4

Call - Digital and emerging technologies for competitiveness and fit for the green deal

- Call ID: **DIGITAL-EMERGING**, **41 topics** in 2021 - 2022 (**19** RIA / **7** IA / **5** CSA / **4** FPA / **6** SGA)
- Provisional budget **733.5 M€**, Opening 15/04/2021 -> deadline **08/09/2021**, deadline 2022 tbd

SECTION

Ultra-low power processors

European Innovation Leadership in Electronics

European Innovation Leadership in Photonics

6G and foundational connectivity technologies

Innovation in AI, data and robotics

Tomorrow's deployable Robots

Leadership in Emerging Enabling Technologies

Flagship on Quantum Technologies: a Paradigm Shift

Graphene: Europe in the lead

Focus of topics: ultra-low power secure microprocessors, microcontrollers and accelerators / advanced optical communication components / new generation of photonic integrated circuits and devices / 6G Europe wide platform / innovative AI, data and robotics solutions for resource optimisation / AI, Data and Robotics at work / human-robot interaction / European Network of Excellence Centres in Robotics / spintronics / technologies for bio-intelligent manufacturing / quantum technologies / advanced electronic and photonic 2D materials-based devices, systems and sensors / other

DESTINATION 5

Call - Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data

- Call ID: **SPACE**, **31 topics** in 2021 - 2022 (**22** RIA / **7** IA / **1** CSA / **1** PCP)
- Provisional budget **292.7 M€**, Opening 06/05/2021 -> deadline **07/09/2021**, deadline 2022 tbd

SECTION

Foster competitiveness of space systems

Reinforce EU capacity to access and use space

Evolution of space and ground infrastructure for Galileo/EGNOS

Evolution of services for Galileo, EGNOS and Copernicus

Development of application for Galileo, EGNOS and Copernicus

Innovative space capabilities: SSA, Govsatcom, Quantum

Space entrepreneurship ecosystem (including "New Space", start-ups) and skills

Targeted and strategic actions supporting the EU space sector

Focus of topics: end-to-end satellite communication systems and associated services / on-orbit operations, new system concepts / new space transportation solutions and service / Copernicus services evolution: climate change, atmosphere/land/CO₂ emissions monitoring / quantum technologies for space gravimetry / applications for smart mobility / designing space-based downstream applications with international partners / education and skills for the EU space sector / public sector as Galileo and/or Copernicus user / Large-scale Copernicus data uptake with AI and HPC / other

DESTINATION 6

Call - A human-centred and ethical development of digital and industrial technologies

- Call ID: **HUMAN**, **29 topics** in 2021 - 2022 (**16** RIA / **4** IA / **9** CSA)
- Foreseen budget **327 M€**
- Opening 15/04/2021 -> deadline **08/09/2021**, deadline 2022 tbd

SECTION

Leadership in AI based on trust

An Internet of Trust

eXtended Reality (XR)

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

Focus of topics: trustworthy AI technologies / greener AI / social aware AI / standardisation / European Network of AI Excellence Centres - AI lighthouse / gender, race and other biases in AI / disinformation fight / the trustworthy open search and discovery on the Internet / NGI / Art-driven use experiments and design / XR modelling - telepresence - learning - haptics hardware / awareness raising on IPR / testing innovative solutions on local communities` demand / workforce skills for industry 5.0 / other

EU PARTNERSHIPS

Altogether portfolio of **49 partnerships** in Pillar 2 – **9** relevant for **Cluster 4**

- **High Performance Computing *** *EuroHPC*
- **Key Digital Technologies (KDT) *** *ECSEL*
- **Smart Networks and Services (SNS) *** *5G*
- **Artificial Intelligence, Data and Robotics** *Robotics, Big Data*
- **Photonics** *Photonics*
- **Clean Steel - Low Carbon Steelmaking** *Clean Steel*
- **European Metrology *** *EURAMET*
- **Made in Europe** *Factories of the Future (FoF)*
- **Processes4Planet** *Sustainable Process Industry (SPIRE)*
- **Globally Competitive Space Systems** ***NEW***

* *Institutionalised (Joint Undertakings)*
Co-programmed (contractual PPPs)

https://ec.europa.eu/info/horizon-europe/european-partnerships-horizon-europe_en

YOUR QUESTIONS





CALL-TO-ACTION

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