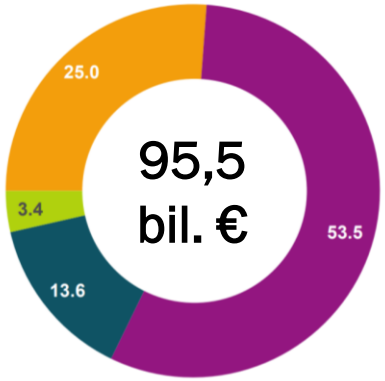
TECHNOLOGY CENTRE CAS

HORIZON EUROPE
RELEVANT CALLS IN CLUSTER 4 DIGITAL, INDUSTRY AND SPACE

Petr Pracna - **National contact for Cluster 4**
18/10/2021
Czech University of Life Sciences, Prague

HORIZON EUROPE PROGRAMME PILLARS

PILLAR 1 — 25 bil. € — Excellent Science	PILLAR 2 — 53,5 bil. € — Global Challenges and European Industrial Competitiveness	PILLAR 3 — 13,6 bil € — Innovative Europe
European Research Council	**Clusters** (Top-down) ▪ Health ▪ Culture, Creativity and Inclusive Society ▪ Civil Security for Society ▪ Digital, Industry and Space ▪ Climate, Energy and Mobility ▪ Food, Bioeconomy, Natural Resources, Agriculture and Environment	European Innovation Council
Marie Sklodowska-Curie Actions		European Innovation Ecosystems
Research Infrastructures	Joint Research Centre (JRC)	European Institute of Innovation and Technology



Widening Participation and Strengthening the European Research Area 3,4 bil.€

WORK PROGRAMME STRUCTURE – Cluster 4



DESTINATION 1

Call - Climate neutral, circular and digitised production

- Call ID: TWIN-TRANSITION, 13 topics in 2022 (4 RIA / 9 IA), Foreseen budget 334.5 M€
- Opening 12/10/2021 -> deadline 30/03/2022

TOPIC	Link to FT portal
Rapid reconfigurable production process chains (**IA**)	2022-TWIN-TRANSITION-01-01
Products with complex functional surfaces (RIA)	2022-TWIN-TRANSITION-01-02
Excellence in distributed control and modular manufacturing (RIA)	2022-TWIN-TRANSITION-01-03
Intelligent work piece handling in a full production line (**RIA**)	2022-TWIN-TRANSITION-01-04
ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2) (IA)	2022-TWIN-TRANSITION-01-06
Digital tools to support the engineering of a Circular Economy (RIA)	2022-TWIN-TRANSITION-01-07
Demonstrate the use of Digital Logbook for buildings (IA)	2022-TWIN-TRANSITION-01-09
Circular flows for solid waste in urban environment (**IA**)	2022-TWIN-TRANSITION-01-10
Valorisation of CO/CO2 streams into added-value products of market interest (**IA**)	2022-TWIN-TRANSITION-01-11
Raw material preparation for clean steel production (IA)	2022-TWIN-TRANSITION-01-13
New electrochemical conversion routes for the production of chemicals and materials in process industries (IA)	2022-TWIN-TRANSITION-01-15
Modular and hybrid heating technologies in steel production (IA)	2022-TWIN-TRANSITION-01-16
Integration of hydrogen for replacing fossil fuels in industrial applications (IA)	2022-TWIN-TRANSITION-01-17

DESTINATION 2 (1/2)

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

- Call ID: RESILIENCE, 22 topics in 2022 (11 RIA / 7 IA / 3 CSA / 1 PCP), Foreseen budget 411.2 M€
- Opening 12/10/2021 -> deadline 30/03/2022

TOPIC	Link to FT portal
Circular and low emission value chains through digitalisation (RIA)	2022-RESILIENCE-01-01
Monitoring and supervising system for exploration and future exploitation activities in the deep sea (RIA)	2022-RESILIENCE-01-02
Streamlining cross-sectoral policy framework throughout the extractive life-cycle in environmentally protected areas(CSA)	2022-RESILIENCE-01-03
Developing digital platforms for the small scale extractive industry (RIA)	2022-RESILIENCE-01-04
Technological solutions for tracking raw material flows in complex supply chains (IA)	2022-RESILIENCE-01-05
Sustainable and innovative mine of the future (IA)	2022-RESILIENCE-01-06
Innovative solutions for efficient use and enhanced recovery of mineral and metal by-products from processing of raw materials (IA)	2022-RESILIENCE-01-07
Earth observation technologies for the mining life cycle in support of EU autonomy and transition to a climate-neutral economy (RIA)	2022-RESILIENCE-01-08
Innovative materials for advanced (nano)electronic components and systems (RIA)	2022-RESILIENCE-01-10
Advanced lightweight materials for energy efficient structures (RIA)	2022-RESILIENCE-01-11

DESTINATION 2 (2/2)

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

TOPIC	Link to FT portal
Functional multi-material components and structures (RIA)	2022-RESILIENCE-01-12
Safe- and sustainable-by-design organic and hybrid coatings (RIA)	2022-RESILIENCE-01-23
Smart and multifunctional biomaterials for health innovations (RIA)	2022-RESILIENCE-01-13
Membranes for gas separations - membrane distillation (IA)	2022-RESILIENCE-01-14
Building and renovating by exploiting advanced materials for energy and resources efficient management (IA)	2022-RESILIENCE-01-16
Novel materials for supercapacitor energy storage (RIA)	2022-RESILIENCE-01-24
Advanced materials modelling and characterization (RIA)	2022-RESILIENCE-01-19
Climate Neutral and Circular Innovative Materials Technologies Open Innovation Test Beds (IA)	2022-RESILIENCE-01-20
Optimized Industrial Systems and Lines through digitalisation (IA)	2022-RESILIENCE-01-25
Leveraging standardisation in Strategic Sustainability and Digital Technologies (CSA)	2022-RESILIENCE-01-21
'Innovate to transform' support for SME's sustainability transition (CSA)	2022-RESILIENCE-01-26
Boosting economic recovery and strategic autonomy in Strategic Digital Technologies through pre-commercial procurement (PCP)	2022-RESILIENCE-02-01

DESTINATION 3

Call - World leading data and computing technologies

- Call ID: DATA, 5 topics in 2022 (4 RIA / 1 IA), Foreseen budget 205 M€
- Opening 23/11/2021 -> deadline 05/04/2022

TOPIC	Link to FT portal
Technologies and solutions for data trading, monetizing, exchange and interoperability (IA)	*2022-DATA-01-04*
Methods for exploiting data and knoledge for extremely precise outcomes (analysis, prediction, decision, support), reducing complexity and presenting insights in understandable way (RIA)	*2022-DATA-01-01*
Extreme data mining, aggregation and analytics technologies and solutions (RIA)	*2022-DATA-01-05*
Cognitive Cloud: AI-enabled computing continuum from Cloud to Edge (RIA)	*2022-DATA-01-02*
Programming tools for decentralised intelligence and swarms (**RIA**)	*2022-DATA-01-03*

DESTINATION 4

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

- Call ID: DIGITAL-EMERGING, 14 topics in 2022 (9 RIA / 3 IA / 2 CSA), Provisional budget 243.5 M€
- Opening 23/11/2021 -> deadline 05/04/2022, Graphene topics only 16/06/2022 -> 16/11/2022

TOPIC	Link to FT Portal
Open source for cloud-based services (RIA)	2022-DIGITAL-EMERGING-01-26
International cooperation in semiconductors (CSA)	2022-DIGITAL-EMERGING-01-38
Advanced multi-sensing systems (RIA)	2022-DIGITAL-EMERGING-01-03
European Enabling technologies for Beyond 5G/6G RAN disaggregated architectures (RIA)	2022-DIGITAL-EMERGING-01-30
Ultra low energy and secure networks (RIA)	2022-DIGITAL-EMERGING-01-39
AI, data and robotics for industry optimisation (including production and services) (IA)	2022-DIGITAL-EMERGING-01-05
Pushing the limit of physical intelligence and performance (RIA)	2022-DIGITAL-EMERGING-01-06
Increased robotics capabilities demonstrated in key sectors (IA)	2022-DIGITAL-EMERGING-01-07
Advanced characterisation methodologies to assess and predict the health and environmental risks of nanomaterials (RIA)	2022-DIGITAL-EMERGING-01-35
New generation of advanced electronic and photonic 2D materials-based devices, systems and sensors (RIA)	2022-DIGITAL-EMERGING-02-17
2D materials-based devices and systems for energy storage and/or harvesting (RIA)	2022-DIGITAL-EMERGING-02-18
2D materials-based devices and systems for biomedical applications (RIA)	2022-DIGITAL-EMERGING-02-19
2D-material-based composites, coatings and foams (**IA**)	2022-DIGITAL-EMERGING-02-20
Supporting the coordination of the Graphene Flagship projects (CSA)	2022-DIGITAL-EMERGING-02-22

DESTINATION 5 (1/2)

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

Call ID: SPACE, 36 topics in 2021-2022, Opening 28/10/2021 -> deadline 16/02/2022* (excl. SSA-SST and EUSPA)

TOPIC	Topic code
End to end satellite communication systems and associated services (RIA)	*2021-SPACE-01-11*
Future space ecosystems: on-orbit operations, new system concepts (RIA)	*2021-SPACE-01-12*
Future space ecosystems: on-orbit operations, preparation of orbital demonstration mission	*2022-SPACE-01-11*
Technologies and generic building blocks for Electrical Propulsion	*2022-SPACE-01-12*
End-to-end Earth observation systems and associated services	*2022-SPACE-01-13*
Reusability for European strategic space launchers - technologies and operation maturation including flight test demonstration (RIA)	*2021-SPACE-01-21*
Low cost high thrust propulsion for European strategic space launchers - technologies maturation including ground tests (RIA)	*2021-SPACE-01-22*
New space transportation solutions and services	*2021-SPACE-01-23*
Multi sites flexible industrial platform and standardised technology for improving interoperability of European access to space ground facilities	*2022-SPACE-01-21*
Copernicus Climate Change Service evolution (RIA)	*2021-SPACE-01-41*
Copernicus Atmosphere Monitoring Service evolution (RIA)	*2021-SPACE-01-42*
Copernicus Security and Emergency Services evolution (RIA)	*2021-SPACE-01-43*
Copernicus evolution for cross-services thematic domains (RIA)	*2021-SPACE-01-44*
Copernicus Marine Environment Monitoring Service evolution (RIA)	*2022-SPACE-01-41*
Copernicus Anthropogenic CO_2 Emissions Monitoring & Verification Support (MVS) capacity (RIA)	*2022-SPACE-01-42*
Copernicus Land Monitoring Service evolution (RIA)	*2022-SPACE-01-43*

DESTINATION 5 (2/2)

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

TOPIC	Topic code
Quantum technologies for space gravimetry (RIA)	*2021-SPACE-01-62*
Space Weather (RIA)	*2022-SPACE-01-62*
Education and skills for the EU space sector (CSA)	*2022-SPACE-01-72*
Space technologies for European non-dependence and competitiveness (RIA)	*2021-SPACE-01-81*
Space technologies for European non-dependence and competitiveness (RIA)	*2022-SPACE-01-81*
Space science and exploration technologies (RIA)	*2022-SPACE-01-82*
New & improved EUSST Missions and Services (RIA)	*HORIZON-CL4-SSA-SST-MS*
SST & STM system architecture and evolutions (RIA)	*HORIZON-CL4-SSA-SST-STM-AE*
Space-based SST (mission, system and sensors network) (RIA)	*HORIZON-CL4-SSA-SST-SB*
SST Sensors and Processing (RIA)	*HORIZON-CL4-SSA-SST-SP*
SST Networking, Security & Data sharing (IA)	*HORIZON-CL4-SSA-SST-SD*
EGNSS and Copernicus applications fostering the European Green deal (IA)	*EUSPA-2021-SPACE-02-51*
EGNSS applications for Safety and Crisis management (IA)	*EUSPA-2021-SPACE-02-52*
EGNSS applications for the Digital Age (IA)	*EUSPA-2021-SPACE-02-53*
EGNSS applications for Smart mobility	*EUSPA-2022-SPACE-02-51*
Public sector as Galileo and/or Copernicus us	*EUSPA-2022-SPACE-02-52*
Copernicus downstream applications and the European Data Economy (IA)	*EUSPA-2022-SPACE-02-54*
Large-scale Copernicus data uptake with AI and HPC (RIA)	*EUSPA-2022-SPACE-02-55*
Designing space-based downstream applications with international partners (RIA)	*EUSPA-2022-SPACE-02-56*
GOVSATCOM Service developments and demonstrations (RIA)	*EUSPA-2022-SPACE-02-61*

DESTINATION 6

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

- Call ID: HUMAN, 7 topics in 2022 (6 RIA / 1 IA), Foreseen budget 121 M€
- Opening 23/11/2021 -> deadline 05/04/2022

TOPIC	Link to FT portal
AI for human empowerment (RIA)	2022-HUMAN-01-01
European Network of AI Excellence Centres: Expanding the European AI lighthouse (RIA)	2022-HUMAN-01-02
Internet architecture and decentralised technologies (RIA)	2022-HUMAN-01-03
Next Generation Safer Internet: Technologies to identify digital Child Sexual Abuse Material (CSAM) (RIA)	2022-HUMAN-01-05
NGI International Collaboration - USA and Canada (RIA)	2022-HUMAN-01-07
eXtended Reality Learning - Engage and Interact (IA)	2022-HUMAN-01-19
eXtended Reality Technologies (RIA)	2022-HUMAN-01-14

FTOP (Funding and Tender Opportunities Portal)



- Work programmes
- Overview of calls
- Lists of topics
- Electronic submission / reporting
- Partner search
- Overview of funded projects

content



Web TC

- HE programme – Pillar / Cluster structure (+ Missions / Partnerships)
- Horizontal agendas – financial, legal
  + e-learning
- Overview of calls
- Calendar with events
- NICER services

ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon

links

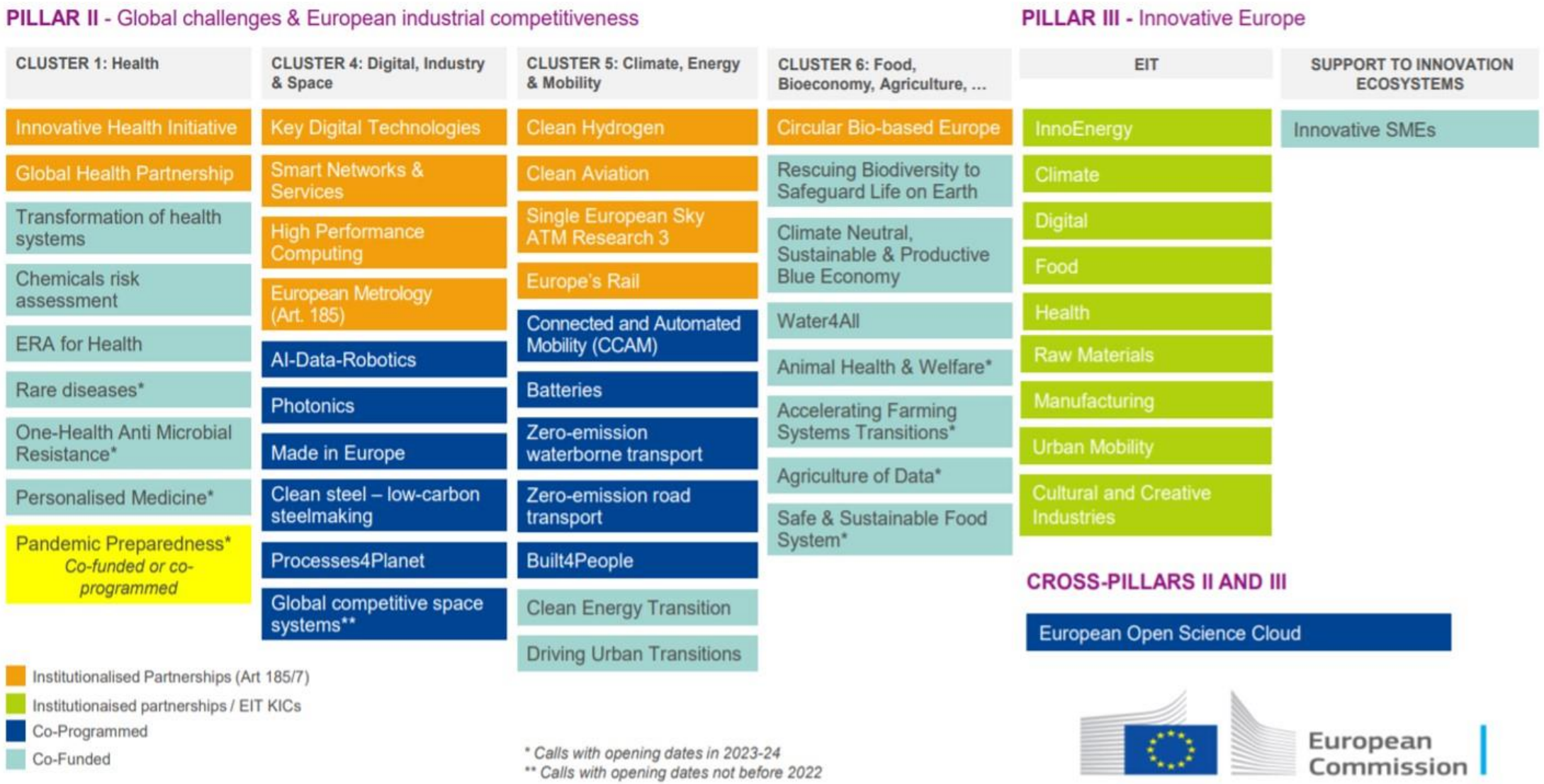
www.horizontevropa.cz

Overview of topics in Cluster 4 calls / Destination 1

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

European partnerships in HE (49)



European partnerships in HE – Cluster 4

Out of total **49** partnerships – **10** relevant for **Cluster 4**

HE	H2020
High Performance Computing	*EuroHPC*
Key Digital Technologies (KDT)	*ECSEL*
Smart Networks and Services (SNS)	*5G*
Artifical 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*

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

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

Other iniciatives

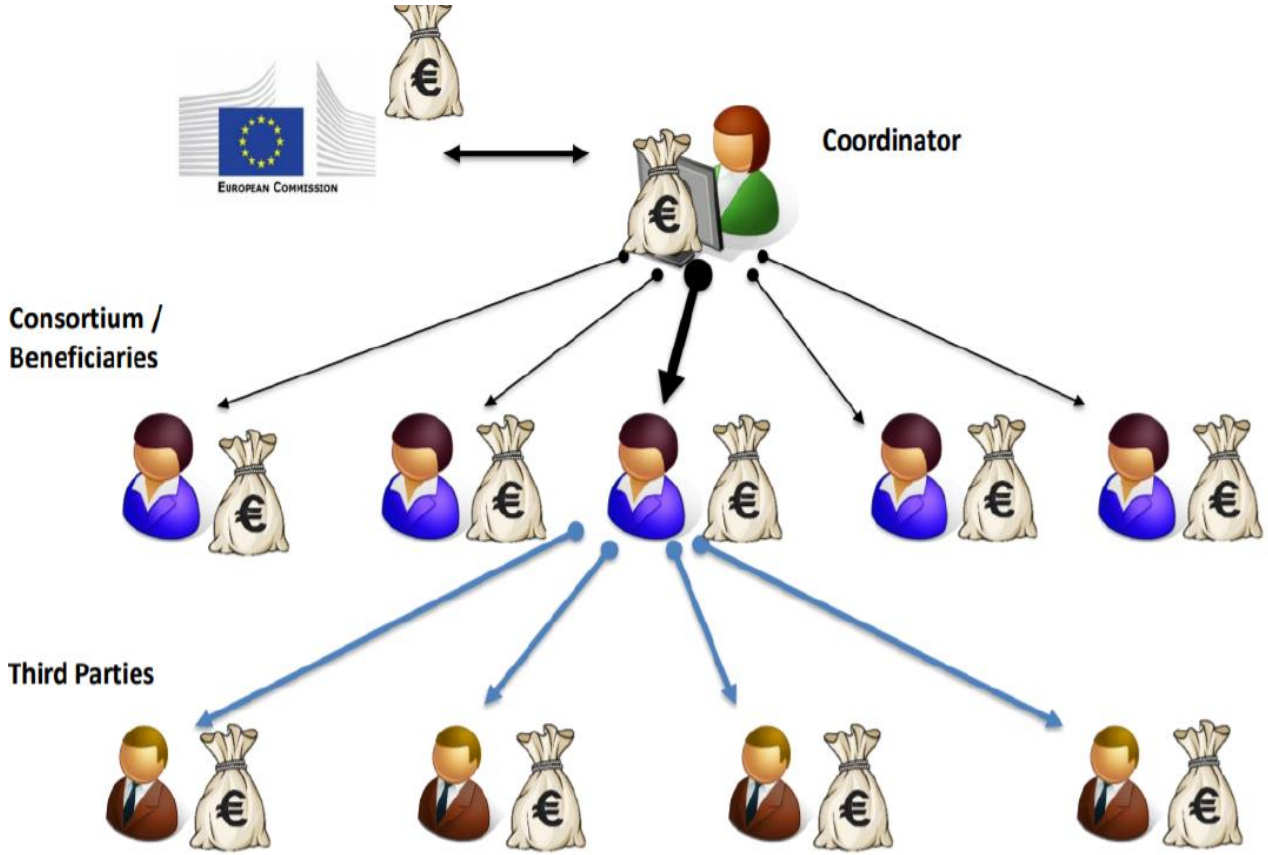
- ERA-NETs – calls opened typically 1x / year, funding of beneficiaries by national providers
  smaller projects, prevailing research projects (RIA), more ´bottom-up´ approach
  Quant ERA (MŠMT/TAČR>>), M-ERA.NET, EuroNanoMed, CHIST-ERA, ERA-MIN
  Aquatic Pollutants , BioDivRestore, **Positive Energy Districts**, EnerDigit
  INFO – dedicated webs of individual ERA-NETs + TAČR (MŠMT) < **web TC**



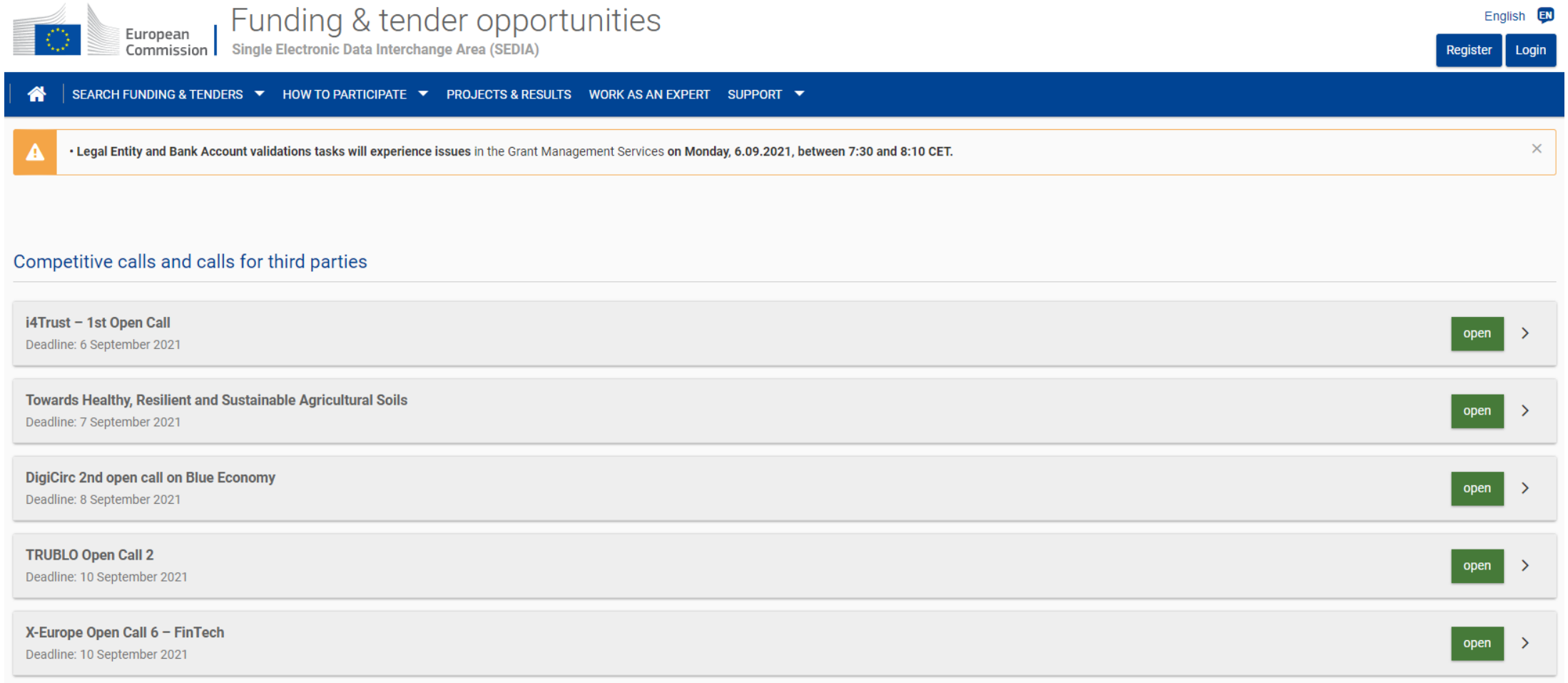
- Cascading funding – typical for pro ICT projects (**DIH** - Digital Innovation Hubs)
  Internal calls of project consortia > financial support + business development support
  INFO - dedicated webs of individual DIHs + FTOP < **web TC**

FSTP - FINANCIAL SUPPORT TO THE THIRD PARTIES

- Some H2020 projects provide so-called Cascading grants, in which the beneficiary(ies) is appointed to launch call(s) providing **Funding Support to Third Parties**
- This type of grants typically addresses SMEs and start-ups in the ICT field and provides support in the range 50 000 – 100 000 €
- List of open (forthcoming) FSTP calls is available in the Funding & Tenders Portal

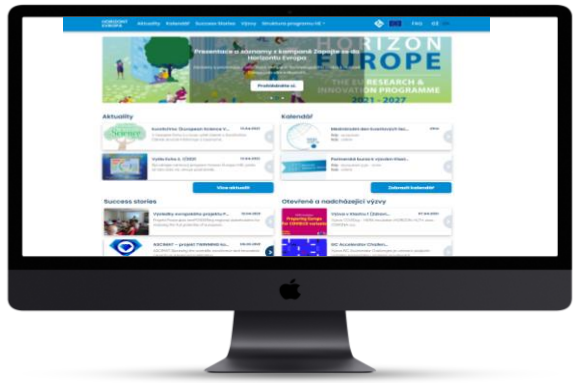


LIST OF FSTP CALLS ON FTOP

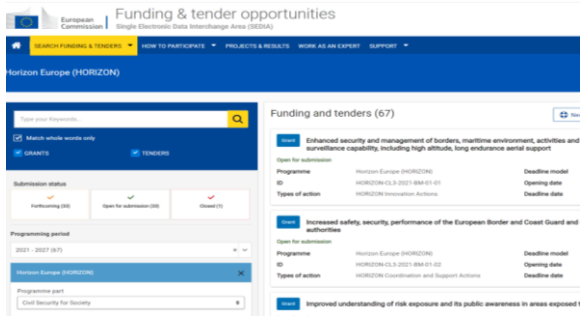


INFORMATION SOURCES

Web TC – **Horizon Europe** – **Cluster 4**



Funding & Tender Opportunities Portal – Cluster 4 – **Calls**



Youtube recordings of the **Cluster 4 INFODAY** organized by the European Commission (July 2021)

Follow the TC web for forthcoming events EC/national



CALL-TO-ACTION

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YOUR QUESTIONS

