

Horizon Europe Funding Opportunities | 2021-2022

Cluster 4 - Digital, Industry and Space

ISERD is the interface between the Israeli government and the EU, for all the activities of the Framework Programme. Our goal is to promote participation of Israeli entities in European research and innovation (R&I) activity and to increase Israel's scientific and industrial collaboration with the European R&I ecosystem.

Horizon Europe (HEU)

HEU is a 95-billion-euro funding programme for R&I, that covers all major scientific and technological disciplines, and encourages collaborative projects (consortia) for a joint goal.

- Consortium –
 - ✓ At least 3 partners from 3 different countries participating in the programme
 - ✓ Out of the 3, at least one partner must be from an EU country
 - ✓ A partner can be any legal entity – university, company, agency, organisation, etc...

- Funding Tools –

Action	Funding*	Technology Readiness Level	Main Characteristics
RIA – Research & Innovation Action	100% + 25%	Low TRL (4-6)	Basic and applied research , technology development and integration, testing and validation - small-scale prototype in laboratory or simulated environment
IA – Innovation Action	70% + 25%	High TRL (6-8)	Prototyping , testing, demonstrating, piloting, large-scale product validation and market replication
CSA - Coordination & Support Action	100% + 25%		Networking , coordination or support services , policy dialogues and mutual learning exercises and studies

* Non-profit: always 100% + 25% overhead

** Some IA calls are 60% instead of 70% - specified in the tables below

DISCLAIMER: The participation of Israeli entities, as associated country members in Horizon Europe projects is subject to the signing of the 'Association Agreement' to the programme between Israel and the EU, before the project's Grant Agreement (GA) is signed.

[HEU Orientation Presentation](#)

[Events](#)

[Previous Funded Projects](#)

[Cluster 4 Work Program](#)

For further Information:

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Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
DESTINATION 1 – CLIMATE NEUTRAL, CIRCULAR AND DIGITISED PRODUCTION				
D1 2021 Call				
Call Opening: 22.06.2021				
Green, flexible, and advanced manufacturing				
HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics system for smart manufacturing <i>(AI, Data and Robotics - Made in Europe Partnerships)</i>	Start: TRL 5 End: TRL 7	28 (8-10 per project)	IA	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste <i>(Made in Europe Partnership)</i>	Start: TRL 5 End: TRL 7	27 (8-10 per project)	IA (60%)	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-03: Laser-based technologies for green manufacturing <i>(Photonics - Made in Europe Partnerships)</i>	Start: TRL 3-4 End: TRL 6	26 (5-7 per project)	RIA	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-05: Manufacturing technologies for bio-based materials <i>(Made in Europe Partnership)</i>	Start: TRL 4 End: TRL 6	20 (4-6 per project)	RIA	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-07: Artificial Intelligence for sustainable, agile manufacturing <i>(AI, Data and Robotics - Made in Europe Partnerships)</i>	Start: TRL 4 End: TRL 7	18 (4-6 per project)	IA	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-08: Data-driven Distributed Industrial Environments <i>(Made in Europe Partnership)</i>	Start: TRL 4 End: TRL 7 (portfolio areas)	24 (4-8 per project)	IA	23.09.2021
A new way to build, accelerating disruptive change in construction				
HORIZON-CL4-2021-TWIN-TRANSITION-01-10: Digital permits and compliance checks for buildings and infrastructure	Start: TRL 5 End: TRL 7	15 (~5 per project)	IA	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-11: Automated tools for the valorisation of construction waste	Start: TRL 4 End: TRL 6	21 (6-10 per project)	RIA	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-12: New breakthrough technologies for technological sovereignty in construction	Start: TRL 4 End: TRL 6	24 (8-10 per project)	RIA	23.09.2021
Hubs for circularity, a stepping stone towards climate neutrality and circularity in industry				
HORIZON-CL4-2021-TWIN-TRANSITION-01-14: Deploying industrial-urban symbiosis solutions for the utilization of energy, water, industrial waste and by-products at regional scale <i>(Processes4Planet Partnership)</i>	Start: TRL 4 End: TRL 6	28 (8-12 per project)	RIA	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-16: Hub for European Circularity Community of Practice (ECOP) platform <i>(Processes4Planet Partnership)</i>	-	2 (2 per project)	CSA	23.09.2021
Enabling circularity of resources in the process industries, including waste, water and CO ₂ /CO				

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2021-TWIN-TRANSITION-01-17: Plastic waste as a circular carbon feedstock for industry <i>(Processes4Planet Partnership)</i>	Start: TRL 5 End: TRL 7	39 (12-18 per project)	IA (60%)	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-18: Carbon Direct Avoidance in steel: Electricity and hydrogen-based metallurgy <i>(Clean Steel Partnership)</i>	Start: TRL 5-6 End: TRL 7-8	28 (6-8 per project)	IA (60%)	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-19: Improvement of the yield of the iron and steel making <i>(Clean Steel Partnership)</i>	Start: TRL 6 End: TRL 8	14 (4-5 per project)	IA (60%)	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-20: Reducing environmental footprint, improving circularity in extractive and processing value chains	Start: TRL 5 End: TRL 7	36 (~12 per project)	IA	23.09.2021
Integration of Renewables and Electrification in process industry				
HORIZON-CL4-2021-TWIN-TRANSITION-01-21: Design and optimisation of energy flexible industrial processes <i>(Processes4Planet Partnership)</i>	Start: TRL 5 End: TRL 7	39 (12-18 per project)	IA (60%)	23.09.2021
HORIZON-CL4-2021-TWIN-TRANSITION-01-22: Adjustment of Steel process production to prepare for the transition towards climate neutrality <i>(Clean Steel Partnership)</i>	Start: TRL 6 End: TRL 8	14 (4-5 per project)	IA (60%)	23.09.2021
D1 2022 Call Call Opening: 12.10.2021				
Green, flexible, and advanced manufacturing				
HORIZON-CL4-2022-TWIN-TRANSITION-01-01: Rapid reconfigurable production process chains <i>(Made in Europe Partnership)</i>	Start: TRL 5 End: TRL 7	27.5 (8-10 per project)	IA	30.03.2022
HORIZON-CL4-2022-TWIN-TRANSITION-01-02: Products with complex functional surfaces <i>(Made in Europe Partnership)</i>	Start: TRL 4 End: TRL 6	21.5 (4-6 per project)	RIA	30.03.2022
HORIZON-CL4-2022-TWIN-TRANSITION-01-03: Excellence in distributed control and modular manufacturing <i>(Made in Europe Partnership)</i>	Start: TRL 4 End: TRL 6	21.5 (4-6 per project)	RIA	30.03.2022
HORIZON-CL4-2022-TWIN-TRANSITION-01-04: Intelligent work piece handling in a full production line <i>(Made in Europe Partnership)</i>	Start: TRL 4 End: TRL 6	21.5 (4-6 per project)	RIA	30.03.2022
Advanced digital technologies for manufacturing				

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2022-TWIN-TRANSITION-01-06: ICT Innovation for Manufacturing Sustainability in SMEs (I4MS2) <i>(Made in Europe Partnership)</i>	Start: TRL 5 End: TRL 8	30 (4-8 per project)	IA	30.03.2022
HORIZON-CL4-2022-TWIN-TRANSITION-01-07: Digital tools to support the engineering of a Circular Economy <i>(Made in Europe Partnership)</i>	Start: TRL 3-4 End: TRL 6	22 (3-6 per project)	RIA	30.03.2022
A new way to build, accelerating disruptive change in construction				
HORIZON-CL4-2022-TWIN-TRANSITION-01-09: Demonstrate the use of Digital Logbook for buildings	Start: TRL 5 End: TRL 7	9 (4.5 per project)	IA	30.03.2022
Hubs for circularity, a stepping stone towards climate neutrality and circularity in industry				
HORIZON-CL4-2022-TWIN-TRANSITION-01-10: Circular flows for solid waste in urban environment <i>(Processes4Planet Partnership)</i>	Start: TRL 5 End: TRL 7	42.5 (12-18 per project)	IA	30.03.2022
Enabling circularity of resources in the process industries, including waste and CO ₂ /CO				
HORIZON-CL4-2022-TWIN-TRANSITION-01-11: Valorisation of CO/CO₂ streams into added-value products of market interest <i>(Processes4Planet Partnership)</i>	Start: TRL 5 End: TRL 7	42.5 (12-18 per project)	IA	30.03.2022
HORIZON-CL4-2022-TWIN-TRANSITION-01-13: Raw material preparation for clean steel production <i>(Clean Steel Partnership)</i>	Start: TRL 6 End: TRL 8	14 (4-5 per project)	IA	30.03.2022
Integration of Renewables and Electrification in process industry				
HORIZON-CL4-2022-TWIN-TRANSITION-01-15: New electrochemical conversion routes for the production of chemicals and materials in process industries <i>(Processes4Planet Partnership)</i>	Start: TRL 3-4 End: TRL 5-6	30 (8-12 per project)	RIA	30.03.2022
HORIZON-CL4-2022-TWIN-TRANSITION-01-16: Modular and hybrid heating technologies in steel production <i>(Clean Steel Partnership)</i>	Start: TRL 5 End: TRL 7	10 (3 per project)	IA	30.03.2022
HORIZON-CL4-2022-TWIN-TRANSITION-01-17: Integration of hydrogen for replacing fossil fuels in industrial applications <i>(Processes4Planet Partnership)</i>	Start: TRL 5 End: TRL 7	42.5 (12-18 per project)	IA	30.03.2022
DESTINATION 2 – INCREASED AUTONOMY IN KEY STRATEGIC VALUE CHAINS FOR RESILIENT INDUSTRY				
D2 2021 Call Call Opening: 22.06.2021				
Novel paradigms to establish resilient and circular value chains				
HORIZON-CL4-2021-RESILIENCE-01-01: Ensuring circularity of composite materials <i>(Processes4Planet Partnership)</i>	Start: TRL 3 End: TRL 6	24.7 (8-9 per project)	RIA	23.09.2021

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
Raw materials for EU strategic autonomy and successful transition to a climate-neutral and circular economy				
HORIZON-CL4-2021-RESILIENCE-01-03: Identifying future availability of secondary raw materials	Start: N/A End: TRL 3-5	13.5 (~4.5 per project)	RIA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-04: Developing climate-neutral and circular raw materials	Start: N/A End: TRL 6-8	36 (~12 per project)	RIA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-05: Building EU-Africa partnerships on sustainable raw materials value chains	-	8 (8 per project)	CSA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-06: Innovation for responsible EU sourcing of primary raw materials, the foundation of the Green Deal	Start: N/A End: TRL 3-5	30 (~7.5 per project)	RIA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-07: Building innovative value chains from raw materials to sustainable products	Start: N/A End: TRL 6-8	36 (~12 per project)	IA	23.09.2021
Green and Sustainable Materials				
HORIZON-CL4-2021-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	-	4 (3-4 per project)	CSA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-09: Promote Europe's availability, affordability, sustainability and security of supply of essential chemicals and materials	Start: TRL 5 End: TRL 7	28 (7-10 per project)	IA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-10: Paving the way to an increased share of recycled plastics in added value products	Start: TRL 3 End: TRL 6	23 (5-7 per project)	RIA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-11: Safe- and sustainable-by-design polymeric materials	Start: TRL 3 End: TRL 5	19 (4-5 per project)	RIA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-12: Safe- and sustainable-by-design metallic coatings and engineered surfaces	Start: TRL 3 End: TRL 5	19 (4-5 per project)	RIA	23.09.2021
Materials for the benefit of society and the environment and materials for climate-neutral industry				
HORIZON-CL4-2021-RESILIENCE-01-14: Development of more energy efficient electrically heated catalytic reactors	Start: TRL 4-5 End: TRL 6	33 (7-10 per project)	IA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-16: Creation of an innovation community for solar fuels and chemicals	-	4 (3-4 per project)	CSA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-17: Advanced materials for hydrogen storage	Start: TRL 3 End: TRL 5	21 (4-6 per project)	RIA	23.09.2021

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2021-RESILIENCE-01-20: Antimicrobial, Antiviral, and Antifungal Nanocoatings	Start: TRL 3 End: TRL 6	23 (4-6 per project)	RIA	23.09.2021
Materials and data cross-cutting actions				
HORIZON-CL4-2021-RESILIENCE-01-25: Biomaterials database for Health Applications	-	6 (2-4 per project)	CSA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-26: Sustainable Industry Commons	Start: TRL 4 End: TRL 6+	6 (2-4 per project)	RIA	23.09.2021
Improving the resilience and preparedness of EU businesses, especially SMEs and Startups				
HORIZON-CL4-2021-RESILIENCE-01-27: Innovation Radar, Tech Due Diligence and Venture Building for strategic digital technologies	-	4 (2.5-4 per project)	CSA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-28: Re-opening industrial sites preparatory action – Promoting a sustainable strategy for Europe’s industrial future	-	2 (1 per project)	CSA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-29: 'Innovate to transform' support for SME's sustainability transition	N/A	10 (~5 per project)	CSA FSTP	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-31: European Technological and Social Innovation Factory	-	5 (3-5 per project)	RIA	23.09.2021
HORIZON-CL4-2021-RESILIENCE-01-32: Social and affordable housing district demonstrator	N/A	10 (~10 per project)	IA	23.09.2021
D2 2022 Call Call Opening: 15.10.2021				
Novel paradigms to establish resilient and circular value chains				
HORIZON-CL4-2022-RESILIENCE-01-01: Circular and low emission value chains through digitalisation <i>(Processes4Planet Partnership)</i>	N/A	25.3 (6-8 per project)	RIA	30.03.2022
Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy				
HORIZON-CL4-2022-RESILIENCE-01-02: Monitoring and supervising system for exploration and future exploitation activities in the deep sea	Start: N/A End: TRL 3-5	14 (~7 per project)	RIA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-03: Streamlining cross-sectoral policy framework throughout the extractive life-cycle in environmentally protected areas	-	2.4 (~2.4 per project)	CSA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-04: Developing digital platforms for the small scale extractive industry	Start: N/A End: TRL 6-8	15 (~5 per project)	IA	30.03.2022

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2022-RESILIENCE-01-05: Technological solutions for tracking raw material flows in complex supply chains	Start: N/A End: TRL 3-5	13.5 (~4.5 per project)	RIA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-06: Sustainable and innovative mine of the future	Start: N/A End: TRL 6-8	36 (~12 per project)	IA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-07: Innovative solutions for efficient use and enhanced recovery of mineral and metal by-products from processing of raw materials	Start: N/A End: TRL 6-8	36 (~12 per project)	IA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-08: Earth observation technologies for the mining life cycle in support of EU autonomy and transition to a climate-neutral economy	Start: N/A End: TRL 3-5	13.5 (~4.5 per project)	RIA	30.03.2022
Green and Sustainable Material				
HORIZON-CL4-2022-RESILIENCE-01-10: Innovative materials for advanced (nano)electronic components and systems	Start: TRL 3 End: TRL 5	20 (3-5 per project)	RIA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-11: Advanced lightweight materials for energy efficient structures	Start: TRL 3 End: TRL 5	20 (3-5 per project)	RIA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-12: Functional multi-material components and structures	Start: TRL 3 End: TRL 6	20 (4-6 per project)	RIA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-23: Safe- and sustainable-by-design organic and hybrid coatings	Start: TRL 3 End: TRL 5	20 (3-5 per project)	RIA	30.03.2022
Materials for the benefit of society and the environment and materials for climate neutral Industry				
HORIZON-CL4-2022-RESILIENCE-01-13: Smart and multifunctional biomaterials for health innovations	Start: TRL 3 End: TRL 5	20 (3-5 per project)	RIA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-14: Membranes for gas separations - membrane distillation	Start: TRL 4 End: TRL 7	21 (6-8 per project)	IA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-16: Building and renovating by exploiting advanced materials for energy and resources efficient management	Start: TRL 5 End: TRL 7	21 (5-7 per project)	IA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-24: Novel materials for supercapacitor energy storage	Start: TRL 3 End: TRL 6	23 (4-6 per project)	RIA	30.03.2022
Materials and data cross-cutting actions				
HORIZON-CL4-2022-RESILIENCE-01-19: Advanced materials modelling and characterisation	Start: TRL 3 End: TRL 5	18 (4-6 per project)	RIA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-20: Climate Neutral and Circular Innovative Materials Technologies Open Innovation Test Beds	Start: TRL 5 End: TRL 7	34 (10-12 per project)	IA	30.03.2022

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2022-RESILIENCE-01-25: Optimised Industrial Systems and Lines through digitalisation	Start: N/A End: TRL 6	15 (4-5 per project)	IA	30.03.2022
Improving the resilience and preparedness of EU businesses, especially SMEs and Startups				
HORIZON-CL4-2022-RESILIENCE-01-21: Leveraging standardisation in Digital Technologies	-	4.5 (~4.5 per project)	CSA	30.03.2022
HORIZON-CL4-2022-RESILIENCE-01-26: 'Innovate to transform' support for SME's sustainability transition	-	4.5 (~4.5 per project)	CSA	30.03.2022
D2 PCP Call Call Opening: 12.10.2021				
Improving the resilience and preparedness of EU businesses, especially SMEs and Startups				
HORIZON-CL4-2022-RESILIENCE-02-01-PCP: Boosting economic recovery and strategic autonomy in Strategic Digital Technologies through pre-commercial procurement	-	9 (~9 per project)	PCP	30.03.2022
DESTINATION 3 – WORLD LEADING DATA AND COMPUTING TECHNOLOGIES				
D3 2021 Call Call Opening: 22.06.2021				
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 <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 2-3 End: TRL 4-5	52 (8-11 per project)	RIA	21.10.2021
HORIZON-CL4-2021-DATA-01-03: Technologies for data management <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 5 End: TRL 8	30 (~5 per project)	IA	21.10.2021
From Cloud to Edge to IoT for European Data				
HORIZON-CL4-2021-DATA-01-05: Future European platforms for the Edge: Meta Operating Systems	Start: TRL 4 End: TRL 5	54 (8-12 per project)	RIA, FSTP	21.10.2021
HORIZON-CL4-2021-DATA-01-07: Coordination and Support of the 'Cloud-Edge-IoT' domain	-	3 (~1.5 per project)	CSA	21.10.2021
HORIZON-CL4-2021-DATA-01-08: Roadmap for next generation computing and systems technologies	-	2 (~2 per project)	CSA	21.10.2021
D3 2022 Call Call Opening: 23.11.2021				
Data sharing in the common European data spaces				
HORIZON-CL4-2022-DATA-01-04: Technologies and solutions for data trading, monetizing, exchange and interoperability <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 4 End: TRL 7	52 (10-13 per project)	IA	05.04.2022
Strengthening Europe's data analytics capacity				

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2022-DATA-01-01: Methods for exploiting data and knowledge for extremely precise outcomes (analysis, prediction, decision support), reducing complexity and presenting insights in understandable way	Start: TRL 2-3 End: TRL 4-5	33 (8-12 per project)	RIA	05.04.2022
HORIZON-CL4-2022-DATA-01-05: Extreme data mining, aggregation and analytics technologies and solutions	Start: TRL 3 End: TRL 5	30 (~5 per project)	RIA	05.04.2022
From Cloud to Edge to IoT for European Data				
HORIZON-CL4-2022-DATA-01-02: Cognitive Cloud: AI-enabled computing continuum from Cloud to Edge	Start: TRL 2 End: TRL 5	50 (4-6 per project)	RIA	05.04.2022
HORIZON-CL4-2022-DATA-01-03: Programming tools for decentralised intelligence and swarms	Start: TRL 2 End: TRL 5	40 (4-8 per project)	RIA	05.04.2022
DESTINATION 4 – DIGITAL AND EMERGING TECHNOLOGIES FOR COMPETITIVENESS AND FIT FOR THE GREEN DEAL				
D4-01 2021 Call				
Call Opening: 22.06.2021				
Ultra-low power processors				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-01: Ultra-low-power, secure processors for edge computing	Start: TRL 2-3 End: TRL 4-5	26 (8-10 per project)	RIA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-05: Open Source Hardware for ultra-low-power, secure processors	-	2 (~2 per project)	CSA	21.10.2021
European Innovation Leadership in Electronics				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-31: Functional electronic for green and circular economy	Start: TRL 2-3 End: TRL 4-5	35 (3-5 per project)	RIA	21.10.2021
European Innovation Leadership in Photonics				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-06: Advanced optical communication components <i>(Photonics Partnership)</i>	Start: TRL 3-4 End: TRL 5-6	26 (4-6 per project)	IA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-07: Advanced Photonic Integrated Circuits <i>(Photonics Partnership)</i>	Start: TRL 2-3 End: TRL 4-5	39 (3-5 per project)	RIA	21.10.2021
6G and foundational connectivity technologies				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-26: Coordination of European smart Network actions	-	3 (~3 per project)	CSA	21.10.2021
Innovation in AI, Data and Robotics				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-09: AI, Data and Robotics for the Green Deal <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 3-5 End: TRL 6-7	27 (3-5 per project)	IA FSTP	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-10: AI, Data and Robotics at work <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 3-5 End: TRL 6-7	22 (3-5 per project)	IA FSTP	21.10.2021

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
Tomorrow's deployable Robots: efficient, robust, safe, adaptive and trusted				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-11: Pushing the limit of robotics cognition <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 2-3 End: TRL 4-5	44.5 (~5 per project)	RIA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-12: European Network of Excellence Centres in Robotics	Start: TRL 2-3 End: TRL 4-5	11.5 (~11.5 per project)	RIA FSTP	21.10.2021
European leadership in Emerging Enabling Technologies				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-13: Academia-Industry Forum on Emerging Enabling Technologies	-	2.5 (~2.5 per project)	CSA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-14: Advanced spintronics: Unleashing spin in the next generation ICs	Start: TRL 2 End: TRL 4	17 (2-3 per project)	RIA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-27: Development of technologies/devices for bio-intelligent manufacturing	Start: TRL 2 End: TRL 4	22.5 (5-7 per project)	RIA	21.10.2021
Flagship on Quantum Technologies: a Paradigm Shift				
HORIZON-CL4-2021-DIGITAL-EMERGING-01-21: Next generation quantum sensing technologies	Start: TRL 2-3 End: TRL 4-5 <i>Eligibility multinational</i>	13.5 (~6.75 per project)	RIA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-23: International cooperation with Canada	Start: TRL 1-2 End: TRL 2-3	4 (~1.33 per project)	RIA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-30: Investing in new emerging Quantum computing technologies	Start: TRL 2-3 End: TRL 4-5 <i>Eligibility multinational</i>	10 (~10 per project)	RIA	21.10.2021
HORIZON-CL4-2021-DIGITAL-EMERGING-01-32: Support and coordination of the Quantum Technologies Flagship Initiative	<i>Eligibility multinational</i>	6.4 (~6.4 per project)	CSA	21.10.2021
D4-02 2021 Call Call Opening: 28.10.2021				
Flagship on Quantum Technologies: a Paradigm Shift				
HORIZON-CL4-2021-DIGITAL-EMERGING-02-15: Framework Partnership Agreement for developing the first large-scale quantum computers	<i>Eligibility</i>	N/A	FPA	27.01.2022
HORIZON-CL4-2021- DIGITAL-EMERGING-02-16: Basic Science for Quantum Technologies	Start: TRL 2 End: TRL 4 <i>Eligibility multinational</i>	16 (2-3 per project)	RIA	27.01.2022
HORIZON-CL4-2021-DIGITAL-EMERGING-02-17: Framework Partnership Agreement for developing large scale Quantum simulation platform technologies	<i>Eligibility</i>	N/A	FPA	27.01.2022

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2021-DIGITAL-EMERGING-02-19: Framework Partnership Agreements in Quantum Communications	Eligibility	N/A	FPA	27.01.2022
HORIZON-CL4-2021-DIGITAL-EMERGING-02-20: Quantum sensing technologies for market uptake	Start: TRL 4-5 End: TRL 6-7 Eligibility	23 (7-10 per project)	IA	27.01.2022
HORIZON-CL4-2021-DIGITAL-EMERGING-02-22: Framework Partnership Agreements for open testing and experimentation and for pilot production capabilities for Quantum technologies	Eligibility	N/A	FPA	27.01.2022
HORIZON-CL4-2021- DIGITAL-EMERGING-02-10: Strengthening the Quantum software ecosystem for quantum computing platform	Start: TRL 2-3 End: TRL 4-5 Eligibility	12 (5-7 per project)	RIA	27.01.2022
Other Actions Not Subject to Calls for Proposals				
HORIZON-CL4-QUANTUM-01-SGA – Developing the first large-scale quantum computers	Start: TRL 4-5 End: TRL 6-7 Eligibility	40 (18-20 per project)	SGA (100%)	Second/Third quarter of 2022
HORIZON-CL4-QUANTUM-02-SGA – Developing large scale quantum simulation platform technologies	Start: TRL 4-5 End: TRL 6-7 Eligibility	16.6 (16 per project)	SGA (100%)	Second/Third quarter of 2022
HORIZON-CL4-QUANTUM-03-SGA – Building the Quantum Internet	Start: TRL 2-4 End: TRL 4-6 Eligibility	24 (24 per project)	SGA (100%)	Second/Third quarter of 2022
HORIZON-CL4-QUANTUM-04-SGA – Quantum encryption and future quantum network technologies	Start: TRL 4-5 End: TRL 6-7 Eligibility	25 (25 per project)	SGA (100%)	Second/Third quarter of 2022
HORIZON-CL4-QUANTUM-05-SGA – Supporting open testing and experimentation for quantum technologies in Europe	Eligibility	19 (19 per project)	SGA (100%)	Second/Third quarter of 2022
HORIZON-CL4-QUANTUM-06-SGA – Supporting experimental production capabilities for quantum technologies in Europe	Eligibility	19 (19 per project)	SGA (100%)	Second/Third quarter of 2022
D4-01 2022 Call				
Call Opening: 23.11.2021				
Ultra-low power processors				
HORIZON-CL4-2022-DIGITAL-EMERGING-01-26: Open source for cloud-based services	Start: TRL 4 End: TRL 7	22 (4-6 per project)	RIA	05.04.2022
European Innovation Leadership in Electronics				
HORIZON-CL4-2022-DIGITAL-EMERGING-01-38: International cooperation in semiconductors	-	3 (~3 per project)	CSA	05.04.2022
European Innovation Leadership in Photonics				
HORIZON-CL4-2022-DIGITAL-EMERGING-01-03: Advanced multi-sensing systems (Photonics Partnership)	Start: TRL 2 End: TRL 5	48 (3-5 per project)	RIA	05.04.2022
6G and foundational connectivity technologies				

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2022-DIGITAL-EMERGING-01-30: European Enabling technologies for Beyond 5G/6G RAN disaggregated architectures	Start: TRL 2-3 End: TRL 4-5	13 (~13 per project)	RIA	05.04.2022
HORIZON-CL4-2022-DIGITAL-EMERGING-01-39: Ultra low energy and secure networks	Start: TRL 2-3 End: TRL 6	13 (~13 per project)	RIA	05.04.2022
HORIZON-CL4-2022-DIGITAL-EMERGING-01-05: AI, Data and Robotics for Industry optimisation (including production and services) <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 3-5 End: TRL 6-7	19 (3-5 per project)	IA FSTP	05.04.2022
Tomorrow's deployable Robots: efficient, robust, safe, adaptive and trusted				
HORIZON-CL4-2022-DIGITAL-EMERGING-01-06: Pushing the limit of physical intelligence and performance	Start: TRL 2-3 End: TRL 4-5	28.5 (~4 per project)	RIA	05.04.2022
HORIZON-CL4-2022-DIGITAL-EMERGING-01-07: Increased robotics capabilities demonstrated in key sectors <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 3-5 End: TRL 6-7	36 (~6 per project)	IA FSTP	05.04.2022
European leadership in Emerging Enabling Technologies				
HORIZON-CL4-2022-DIGITAL-EMERGING-01-35: Advanced characterisation methodologies to assess and predict the health and environmental risks of nanomaterials	Start: TRL 3 End: TRL 5	17.5 (2-3 per project)	RIA	05.04.2022
D4-02 2022 Call Call Opening: 16.06.2022				
Graphene: Europe in the lead				
HORIZON-CL4-2022-DIGITAL-EMERGING-02-17: New generation of advanced electronic and photonic 2D materials-based devices, systems and sensors	Start: TRL 3-4 End: TRL 5	16.5 (~16.5 per project)	RIA	16.11.2022
HORIZON-CL4-2022-DIGITAL-EMERGING-02-18: 2D materials-based devices and systems for energy storage and/or harvesting	Start: TRL 3-4 End: TRL 5	9 (~9 per project)	RIA	16.11.2022
HORIZON-CL4-2022-DIGITAL-EMERGING-02-19: 2D materials-based devices and systems for biomedical applications	Start: TRL 3-4 End: TRL 5	6 (~6 per project)	RIA	16.11.2022
HORIZON-CL4-2022-DIGITAL-EMERGING-02-20: 2D-material-based composites, coatings and foams	Start: TRL 4-5 End: TRL 6-7	9 (~9 per project)	IA	16.11.2022
HORIZON-CL4-2022-DIGITAL-EMERGING-02-22: Supporting the coordination of the Graphene Flagship projects	-	3 (~3 per project)	CSA	16.11.2022
DESTINATION 5 – OPEN STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA				
Foster competitiveness of space systems				
D5 2021 Call Call Opening: 28.10.2021				

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2021-SPACE-01-11: End-to-end satellite communication systems and associated services	End: TRL 5-6 Eligibility	12 (4-6 per project)	IA	16.02.2022
HORIZON-CL4-2021-SPACE-01-12: Future space ecosystems: on-orbit operations, new system concepts	End: TRL 5-6	6 (1-2 per project)	RIA	16.02.2022
Reinforce EU capacity to access and use space				
HORIZON-CL4-2021-SPACE-01-21: Reusability for EU strategic space launchers - technologies and operation maturation including flight test demonstration	End: TRL 5-6 Eligibility	39 (30-39 per project)	RIA	16.02.2022
HORIZON-CL4-2021-SPACE-01-22: Low cost high thrust propulsion for EU strategic space launchers - technologies maturation including ground tests	End: TRL 3-4 Eligibility	19.8 (15-19 per project)	RIA	16.02.2022
HORIZON-CL4-2021-SPACE-01-23: New space transportation solutions and services	N/A Eligibility	3 (1-1.5 per project)	RIA	16.02.2022
Evolution of Copernicus services				
HORIZON-CL4-2021-SPACE-01-41: Copernicus Climate Change Service evolution	End: TRL 5-6	11 (10-11 per project)	RIA	16.02.2022
HORIZON-CL4-2021-SPACE-01-42: Copernicus Atmosphere Monitoring Service evolution	End: TRL 5-6	7.5 (6-7.5 per project)	RIA	16.02.2022
HORIZON-CL4-2021-SPACE-01-43: Copernicus Security and Emergency Services evolution	End: TRL 5-6 Eligibility	5 (4-5 per project)	RIA	16.02.2022
HORIZON-CL4-2021-SPACE-01-44: Copernicus evolution for cross-services thematic domains	End: TRL 5-6	5.6 (~3 per project)	RIA	16.02.2022
Innovative space capabilities: SSA, Govsatcom, Quantum				
HORIZON-CL4-2021-SPACE-01-62: Quantum technologies for space gravimetry	End: TRL 5 Eligibility	17 (15-17 per project)	RIA	16.02.2022
Targeted and strategic actions supporting the EU space sector				
HORIZON-CL4-2021-SPACE-01-81: Space technologies for European non-dependence and competitiveness	End: TRL 6-7 Eligibility	10.32 (2-3 per project)	RIA	16.02.2022
D5 2022 Call Call Opening: 28.10.2021				
Foster competitiveness of space systems				
HORIZON-CL4-2022-SPACE-01-11: Future space ecosystems: on-orbit operations, preparation of orbital demonstration mission	End: TRL 6	26 (20-26 per project)	RIA	16.02.2022
HORIZON-CL4-2022-SPACE-01-12: Technologies and generic building blocks for Electrical Propulsion	End: TRL 5-6	5.1 (1-2 per project)	IA	16.02.2022

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2022-SPACE-01-13: End-to-end Earth observation systems and associated services	End: TRL 6	8.1 (2-3 per project)	RIA	16.02.2022
Reinforce EU capacity to access and use space				
HORIZON-CL4-2022-SPACE-01-21: Multi sites flexible industrial platform and standardised technology for improving interoperability of European access to space ground facilities	End: TRL 5-6 Eligibility	2 (1-2 per project)	RIA	16.02.2022
Evolution of services of the EU space programme components: Copernicus				
HORIZON-CL4-2022-SPACE-01-41: Copernicus Marine Environment Monitoring Service evolution	End: TRL 5-6	10 (8-10 per project)	RIA	16.02.2022
HORIZON-CL4-2022-SPACE-01-42: Copernicus Anthropogenic CO₂ Emissions Monitoring & Verification Support (MVS) capacity	End: TRL 5-6	6 (5-6 per project)	RIA	16.02.2022
HORIZON-CL4-2022-SPACE-01-43: Copernicus Land Monitoring Service evolution	End: TRL 5-6	5 (4-5 per project)	RIA	16.02.2022
Innovative space capabilities: SSA, GOVSATCOM, Quantum				
HORIZON-CL4-2022-SPACE-01-62: Space Weather	End: TRL 3-4	2 (0.5-1 per project)	RIA	16.02.2022
Space entrepreneurship ecosystems (including "New Space" and start-ups) and skills				
HORIZON-CL4-2022-SPACE-01-72: Education and skills for the EU space sector	-	3 (2-3 per project)	CSA	16.02.2022
Targeted and strategic actions supporting the EU space sector				
HORIZON-CL4-2022-SPACE-01-81: Space technologies for European non-dependence and competitiveness	End: TRL 5-7 Eligibility	10.5 (2-3 per project)	RIA	16.02.2022
HORIZON-CL4-2022-SPACE-01-82: Space science and exploration technologies	End: TRL 3-4	8 (1-1.5 per project)	RIA	16.02.2022
Other Actions Not Subject to Calls for Proposals				
HORIZON-CL4-SSA-SST-MS: New & improved EUSST Missions and services	End: TRL 6-7 Eligibility	8	RIA (Unlimited Subcontracting)	2022 budget
HORIZON-CL4-SSA-SST-STM-AE: System Architecture and evolutions	Eligibility	6	RIA	2022 budget
HORIZON-CL4-SSA-SST-SB: Space-Based SST (missions, system and sensors network)	Eligibility	6	RIA	2022 budget
HORIZON-CL4-SSA-SST-SP: Sensors and Processing	Eligibility	25	IA 45% - FP	2022 budget
HORIZON-CL4-SSA-SST-SD: Networking, Security & Data sharing	Eligibility	7	IA	2022 budget

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
DESTINATION 6 – A HUMAN-CENTRED AND ETHICAL DEVELOPMENT OF DIGITAL AND INDUSTRIAL TECHNOLOGIES				
D6 2021 Call				
Call Opening: 22.06.2021				
Leadership in AI based on trust				
HORIZON-CL4-2021-HUMAN-01-01: Verifiable robustness, energy efficiency and transparency for Trustworthy AI: Scientific excellence boosting industrial competitiveness <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 2-3 End: TRL 4-5	36 (~4 per project)	RIA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-02: European coordination, awareness, standardisation & adoption of trustworthy European AI, Data and Robotics <i>(AI, Data and Robotics Partnership)</i>	-	13 (4-9 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-03: European Network of AI Excellence Centres: Pillars of the European AI lighthouse	Start: TRL 2-3 End: TRL 4-5	9 (~9 per project)	RIA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-24: Tackling gender, race and other biases in AI	Start: TRL 3-4 End: TRL 5-6	10 (3-3.5 per project)	RIA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-27: AI to fight disinformation	Start: TRL 3-4 End: TRL 5-6	13 (~6.5 per project)	RIA	21.10.2021
An Internet of Trust				
HORIZON-CL4-2021-HUMAN-01-04: Trust & data sovereignty on the Internet	N/A	12 (~12 per project)	RIA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-05: Trustworthy open search and discovery	N/A	17 (~8.5 per project)	RIA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-07: Next Generation Internet community-building and outreach	-	2 (~2 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-08: NGI International Collaboration - Transatlantic fellowship programme	-	2 (~2 per project)	CSA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-09: NGI Tech Review	-	1.5 (~1.5 per project)	CSA	21.10.2021
eXtended Reality (XR)				
HORIZON-CL4-2021-HUMAN-01-13: eXtended Reality Modelling	Start: TRL 2 End: TRL 5	14.5 (4.8 per project)	RIA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-14: eXtended Reality for All – Haptics	Start: TRL 5 End: TRL 7	6 (~6 per project)	RIA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-25: eXtended Collaborative Telepresence	Start: TRL 4 End: TRL 6-7	14 (5-8 per project)	IA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-06: Innovation for Media, including eXtended Reality	Start: TRL 4 End: TRL 8	26 (8-9 per project)	IA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-28: eXtended Reality Ethics, Interoperability and Impact	-	2.5 (~2.5 per project)	CSA	21.10.2021

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
Systemic approaches to make the most of the technologies within society and industry				
HORIZON-CL4-2021-HUMAN-01-17: Awareness raising on Intellectual property (IP) management for European R&I	-	1 (~1 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-18: Fostering standardisation to boost European industry's competitiveness	-	1 (~1 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-19: Testing innovative solutions on local communities'-demand	-	5 (~5 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-20: Piloting a new industry-academy knowledge exchange focusing on companies' needs	-	2 (~2 per project)	CSA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-21: Art-driven use experiments and design	Start: TRL 3 End: TRL 5	8.5 (~2.8 per project)	IA FSTP	21.10.2021
HORIZON-CL4-2021-HUMAN-01-29: Support for transnational activities of National Contact Points in the thematic area of Digital	-	2.5 (~2.5 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-30: Support for transnational activities of National Contact Points in the thematic area of Industry	-	2 (~2 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-31: Support for transnational activities of National Contact Points in the thematic area of Space	-	1 (~1 per project)	CSA	21.10.2021
HORIZON-CL4-2021-HUMAN-01-26: Workforce skills for industry 5.0	Start: TRL 4 End: TRL 6	5 (~5 per project)	RIA	21.10.2021
D6 2022 Call Call Opening: 23.11.2021				
Leadership in AI based on trust				
HORIZON-CL4-2022-HUMAN-01-01: AI for human empowerment <i>(AI, Data and Robotics Partnership)</i>	Start: TRL 2-3 End: TRL 4-5	16 (~4 per project)	RIA	05.04.2022
HORIZON-CL4-2022-HUMAN-01-02: European Network of AI Excellence Centres: Expanding the European AI lighthouse	Start: TRL 2-3 End: TRL 4-5	34.5 (11.5~ per project)	RIA FSTP	05.04.2022
An Internet of Trust				
HORIZON-CL4-2022-HUMAN-01-03: Internet architecture and decentralised technologies	-	22 (~11 per project)	RIA FSTP	05.04.2022
HORIZON-CL4-2022-HUMAN-01-05: Next Generation Safer Internet: Technologies to identify digital Child Sexual Abuse Material (CSAM)	Start: TRL 3 End: TRL 7	2 (~2 per project)	RIA	05.04.2022
HORIZON-CL4-2022-HUMAN-01-07: NGI International Collaboration - USA and Canada	-	6 (~6 per project)	RIA FSTP	05.04.2022
eXtended Reality (XR)				

Topic	Expected TRL	Topic Budget [M€]	Action	Deadline [dd.mm.yyyy]
HORIZON-CL4-2022-HUMAN-01-14: eXtended Reality Technologies	Start: TRL 2 End: TRL 4-5	19 (5-8 per project)	RIA	05.04.2022
HORIZON-CL4-2022-HUMAN-01-19: eXtended Reality Learning - Engage and Interact	Start: TRL 4 End: TRL 6-7	21.5 (5-8 per project)	IA FSTP	05.04.2022