Serviciul pentru Managementul Activităţilor de Cercetare Ştiinţifică
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Apeluri Horizon Europe

WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2021

Data estimata pentru lansare 23 Noiembrie 2021

Nr.crt.	Program	Call	Topic	Deadline	Topic description
1.	Digital, Industry and Space	Extreme data mining, aggregation and analytics technologies and solutions (RIA)	CL4-2022-DATA-01-05	05 April 2022 Brussels time	Proposal results are expected to contribute to the following expected outcomes: provide better technologies, tools and solutions for data mining (searching and processing) of large, constantly growing amounts and varieties of data, and/or extremely sparse/dispersed/heterogeneous/multilingual data (stored centrally or in distributed/decentralized systems), in particular IoT, industrial, business, administrative, environmental, scientific or societal data. Destination *World leading data and computing technologies* This destination will directly support the following Key Strategic Orientations, as outlined in the Strategic Plan: KSO A, 'Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations.' KSO C, 'Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems Proposals for topics under this Destination should set out a credible pathway to contributing to the following expected impact of Cluster 4 as set out in Horizon Europe Strategic Plan:

Nr.crt.	Program	Call	Topic	Deadline	Topic description
					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. The Commission estimates that an EU contribution of around EUR 5.00 million would allow these outcomes to be addressed appropriately. Activities are expected to start at **TRL 3** and achieve **TRL 5** by the end of the project
2.	**Digital, Industry and Space**	**Technologies and solutions for data trading, monetizing, exchange and interoperability (AI, Data and Robotics Partnership) (IA)**	**CL4-2022-DATA-01-04**	05 April 2022 Brussels time	Proposal results are expected to contribute to the following expected outcomes: improve the digital technologies, solutions and interoperable frameworks for data markets and data economy (e.g. industrial, administrative and societal/cultural data platforms/data spaces), allowing for data assets to be discoverable, efficiently and fairly priced and shared/traded in a secured, user-friendly, compliant and energy-efficient way; promote the development of a European industrial ecosystem of the data economy capable of ensuring digital autonomy; develop training material to endow workers in this occupational group with the right skillset in order to deploy the new technologies Destination *World leading data and computing technologies* This destination will directly support the following Key Strategic Orientations, as outlined in the Strategic Plan: KSO A, 'Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations.'

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					KSO C, 'Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems Proposals for topics under this Destination should set out a credible pathway to contributing to the following expected impact of Cluster 4 as set out in Horizon Europe Strategic Plan: Globally attractive, secure and dynamic data-agile economy, by developing and enabling the uptake of the next-generation computing and data technologies and infrastructures (including space infrastructure and data), enabling the European single market for data with the corresponding data spaces and a trustworthy artificial intelligence ecosystem. The Commission estimates that an EU contribution of between EUR 10.00 and 13.00 million would allow these outcomes to be addressed appropriately. Activities are expected to start at **TRL 4** and achieve **TRL 7** by the end of the project.
3.	**Digital, Industry and Space**	**Programming tools for decentralised intelligence and swarms (RIA)**	**CL4-2022-DATA-01-03**	05 April 2022 Brussels time	Proposal results are expected to contribute to the following expected outcomes: Agile and secure architectures for collaborative smart nodes with decentralised or swarm intelligence, which build on European strengths in embedded sensors and devices and wireless communication, both non-cellular and mobile 5G networks. Programming environments for smart edge-connected nodes and dynamic groups of nodes across the device-edge-cloud continuum, which reduce the complexity of programming and maintenance. Dynamic open environments and tools, which stimulate open architectures and interfaces, interoperability and avoiding vendor lock-in, open source where appropriate. Reinforced Europe's position in the market of next generation smart systems (sensors and devices) integrated in an evolving Internet of Things and cyber-physical ecosystems with strong capacities at the edge.

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					The Commission estimates that an EU contribution of between EUR 4.00 and 8.00 million would allow these outcomes to be addressed appropriately
4.	**Digital, Industry and Space**	**Cognitive Cloud: AI-enabled computing continuum from Cloud to Edge (RIA)**	**HORIZON-CL4-2022-DATA-01-02**	05 April 2022 Brussels time	Proposal results are expected to contribute to the following expected outcomes: A new AI-enabled Cloud-edge framework (Cognitive Cloud) that will automatically adapt to the growing complexity and data deluge by integrating seamlessly and securely diverse computing and data environments, spanning from core cloud to edge. This framework will respond and adapt intelligently to changes in application behaviour and data variability offering automatic deployment, mobility and secure adaptability of services from cloud to edge to diverse users and contexts. Resource management should take into account the openness and trustworthiness of the underlying resource management layers. The Cognitive Cloud will interface with all the layers in the computing continuum plane and will learn through the monitoring and management of resources deployed on Cloud/Edge. Applying AI-techniques will cater for dynamic load balancing to optimise energy efficiency and maintaining balanced data traffic and high, distributed, reliable throughput from cloud to edge according to the application and user needs and the underlying infrastructures. The framework will also dynamically adapt the processing capacity of the cloud to the varying supply of green energy in order to optimise its environmental footprint. Application developers will be empowered with greater control over network, computing and data infrastructures and services, and the end-user will benefit from seamless access to a continuous service environment. Destination *World leading data and computing technologies* This destination will directly support the following Key Strategic Orientations, as outlined in the Strategic Plan: KSO A, ‘Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate

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					and steer the digital and green transitions through human-centred technologies and innovations.' KSO C, 'Making Europe the first digitally led circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems Activities are expected to start at **TRL 2** and achieve **TRL 5** by the end of the project. The Commission estimates that an EU contribution of between EUR 4.00 and 6.00 million would allow these outcomes to be addressed appropriately. Expected impact Proposals for topics under this Destination should set out a credible pathway to contributing to world-leading data and computing technologies, and more specifically to one or several of the following impacts: Improved European leadership in the global data economy Maximised social and economic benefits from the wider and more effective use of data Reinforced Europe's ability to manage urgent societal challenges (e.g. data for crisis management, digital for clean energy).
5	**Digital, Industry and Space**	**Methods for exploiting data and knowledge for extremely precise outcomes (analysis, prediction, decision support), reducing complexity and presenting insights**	**HORIZON-CL4-2022-DATA-01-01**	05 April 2022 Brussels time	Proposal results are expected to contribute to the following expected outcomes: Improving automated ways for extracting meaning and providing insights from data extremely fast and/or accurately in order to optimize decision making (ranging from crisis/emergency management to predictive maintenance) or action planning, as well as demonstrating how these improvements can have great positive impacts for society, people, economy, or the environment. Scope: The actions under this topic are expected to exploit "extreme data": (defined as data that exhibits one or more of the following characteristics, to an extent that makes current technologies fail: increasing volume, speed, variety;

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		in understandable way (RIA)			complexity/diversity/multilinguality of data; the dispersed data sources; sparse/missing/insufficient data/extreme variations in values) to push the frontiers of analytics, prediction, simulation and visualisation to provide extremely precise, timely and useful results from data and knowledge, to support (human or automated) decision-making, saving lives or otherwise providing great positive impact (economic, societal, environmental) compared to traditional methods of decision making. Integrity and ethical aspects of the outcomes should be in line with the principles of responsible/trustworthy AI. The use of European data sources (such as Copernicus, Galileo/EGNOS for satellite data) is encouraged in the use cases, where appropriate. The Commission estimates that an EU contribution of between EUR 8.00 million and EUR 12.00 million would allow these outcomes to be addressed appropriately. Activities are expected to start at TRL 2-3 and achieve TRL 4-5 by the end of the project.

Artificial Intelligence and Robotics

Data estimata pentru lansare 21 Decembrie 2021

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1.	Digital, Industry and Space	A HUMAN-CENTRED AND ETHICAL DEVELOPMENT OF DIGITAL AND INDUSTRIAL TECHNOLOGIES 2022	HORIZON-CL4-2022-HUMAN-01-01	05 April 2022 Brussels time	Scope: Build the next level of perception, visualisation, interaction and collaboration between humans and AI systems working together as partners to achieve common goals, sharing mutual understanding and learning of each other's abilities and respective roles. Each proposal will focus on one of the two following research objectives, and clearly identify it: **Reach truly mixed human-AI initiatives for human empowerment**. The approaches should combine the best of human and machine knowledge and capabilities including shared and sliding autonomy in interaction, addressing reactivity, and fluidity of interaction and making systems transparent, fair and intuitive to use, which will play a key role in acceptance. The systems should adapt to the user rather than the opposite, based on analysis, understanding and anticipation about human behaviour and expectations. **Trustworthy hybrid decision-support**, including approaches for mixed and sliding decision-making, for context interpretation, for dealing with uncertainty, transparent anticipation, reliability, human-centric planning and decision-making, interdependencies, and augmented decision-making. All proposals should adopt a human-centred development of trustworthy AI and investigate and optimise ways of human-AI interaction, key for acceptance and democratisation of AI, to allow any user to take full advantage of the huge benefits such technology can offer, regardless of their age, race, gender or capabilities. This includes development of methods to improve transparency, in particular for human users, in terms of explainability, expected levels of performance which are

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					guaranteed/verifiable and corresponding confidence levels, accountability and responsibility, as well as perceived trust and fairness. Destination A human-centred and ethical development of digital and industrial technologies. Expected impact Proposals for topics under this Destination should set out a credible pathway to contributing to a human-centred and ethical development of digital and industrial technologies, and more specifically to one or several of the following impacts: 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. The Commission estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately. Activities are expected to start at TRL2-**TRL 3** and achieve TRL4-**TRL 5** by the end of the project

Sursa informaţiilor: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

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